

***Case No COMP/M.6944 - THERMO FISHER SCIENTIFIC/
LIFE TECHNOLOGIES***

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**REGULATION (EC) No 139/2004
MERGER PROCEDURE**

Article 6(1)(b) in conjunction with Art 6(2)

Date: 26/11/2013

***In electronic form on the EUR-Lex website under document
number 32013M6944***



EUROPEAN COMMISSION

Brussels, 26.11.2013
C(2013) 8535 final

In the published version of this decision, some information has been omitted pursuant to Article 17(2) of Council Regulation (EC) No 139/2004 concerning non-disclosure of business secrets and other confidential information. The omissions are shown thus [...]. Where possible the information omitted has been replaced by ranges of figures or a general description.

PUBLIC VERSION

MERGER PROCEDURE

To the notifying party

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Dear Sir/Madam,

Subject: Case No COMP/M.6944 – THERMO FISHER SCIENTIFIC/ LIFE TECHNOLOGIES
Commission decision pursuant to Article 6(1)(b) in conjunction with Article 6(2) of Council Regulation No 139/2004¹

1. On 7 October 2013, the European Commission received a notification of a proposed concentration pursuant to Article 4 of Council Regulation (EC) No 139/2004¹ (the "Merger Regulation") by which the undertaking Thermo Fisher Scientific Inc. ("Thermo Fisher" or "the Notifying Party", USA) intends to acquire within the meaning of Article 3(1)(b) of the Merger Regulation sole control over Life Technologies Corporation ("Life Technologies", USA) by way of purchase of shares ("the Transaction").² Thermo Fisher and Life Technologies are designated hereinafter as the "Parties" or the "Merged Entity".

I. THE PARTIES

2. **Thermo Fisher** is active in the production and supply of analytical instruments and laboratory consumables (e.g. reagents) across almost the entire experimental sciences spectrum including life sciences, chemistry and physics. It also operates a strong multi-brand distribution business for science products, Customer Channel Group ("CCG"). Thermo Fisher was formed in 2006 through the merger of Thermo Electron and Fisher Scientific. It is headquartered in Massachusetts (USA).
3. **Life Technologies** is a global biotechnology company. It is specialised in producing analytical instruments and laboratory consumables for life sciences. It was formed in 2008 through the merger of Invitrogen Corporation and Applied Biosystems, Inc. It is headquartered in California (USA).

II. THE TRANSACTION

4. The Transaction entails the acquisition of sole control by Thermo Fisher over Life Technologies by way of purchase of 100% shares of Life Technologies. The Transaction therefore constitutes a concentration within the meaning of Article 3(1)(b) of the Merger Regulation.

III. EU DIMENSION

5. The undertakings concerned have a combined aggregate world-wide turnover of more than EUR 5,000 million (Thermo Fisher: EUR 9,731 million; Life Technologies: EUR 2,955 million). The two of them have an EU-wide turnover in excess of EUR 250 million (Thermo Fisher: EUR [...]; Life Technologies: EUR [...]), but they do not

¹ OJ L 24, 29.1.2004, p. 1. With effect from 1 December 2009, the Treaty on the Functioning of the European Union ("TFEU") has introduced certain changes, such as the replacement of "Community" by "Union" and "common market" by "internal market". The terminology of the TFEU will be used throughout this decision.

² Publication in the Official Journal of the European Union No C 296, 12.10.2013, p. 3.

achieve more than two-thirds of their aggregate EU-wide turnover within one and the same Member State.³

6. Therefore, the Transaction has an EU dimension pursuant to Article 1(2) of the Merger Regulation.

IV. RELEVANT MARKETS AND COMPETITIVE ASSESSMENT

IV.A. INTRODUCTION TO THE LIFE SCIENCES INDUSTRY

7. The Transaction concerns the supply of laboratory equipment and consumables for life sciences.⁴
8. The laboratory equipment (or "instruments") bring samples and reagents together and measure the result, e.g. thermal cyclers, qPCR instruments, gel boxes, magnetic bead-based purification instruments, etc.
9. Consumables are the wide range of different products necessary for and consumed in the operation of analytical instruments. They include for example reagents (e.g. enzymes, dyes, antibodies, etc.), chemicals, cell culture sera and media, or plastic products (e.g. pipette, tubes, etc.).
10. The Parties' products, in the areas of cell culture, molecular biology, particles, protein biology, are mainly supplied to (i) research and scientific laboratories in universities, research institutions, government agencies and the private sector such as in pharmaceutical and biotech companies, (ii) bioproduction customers in the pharmaceutical and biotech sectors who use the products as input for their bioproduction processes of e.g. pharmaceutical products, (iii) other original equipment manufacturers ("OEMs"), (iv) customers in the applied science space, e.g. hospitals and clinical diagnostic laboratories for diagnostics products, government agencies for forensic DNA detection products or food safety analytical tools for the food industry.
11. The present decision analyses in detail the competitive effects of the Transaction with respect to (i) media and sera for cell culture, (ii) small interfering RNA ("siRNA") and microRNA ("miRNA") within the gene silencing area, (iii) delivery systems (transfection), (iv) high fidelity polymerase, hot start polymerase, other specialty reagents and reverse transcriptase ("RT") enzymes within the nucleic acid ("NA") amplification area, (v) magnetic beads based instruments and molecular weight standards within the NA purification area, (vi) polymer-based magnetic beads to original OEMs within the particles area, (vii) sequence specific primers ("SSP") within

³ Given that the agreement between the Parties was concluded prior to Croatia's accession to the European Union on 1 July 2013, Croatia is neither considered for the purposes of the assessment of Union Dimension nor for the purposes of the competitive assessment of this Transaction.

⁴ With respect to all product areas, the present Decision refers to market shares of 2012. The market investigation has not pointed to significant fluctuations of the Parties' market shares during previous years. This is without prejudice to analysis in specific sections of the present Decision.

the area of human leukocyte antigen ("HLA") typing, (viii) filter fluorometers and (ix) distribution of laboratory and life science products.⁵

12. With respect to several other product areas, namely (i) short hairpin RNA ("shRNA"), (ii) NA amplification instruments, (iii) Taq polymerase reagents, (iv) NA amplification reagents sold in ready-to-use kits, (v) electrophoresis gel boxes for DNA, (vi) cloning, (vii) sodium dodecyl sulphate polyacrylamide gel electrophoresis ("SDS-PAGE"), (viii) Western blotting, (ix) protein modification and (x) dyes, on the basis of the market investigation, the Commission has concluded that the Transaction does not raise serious doubts as to its compatibility with the internal market. In particular, the Commission has taken into account a number of factors, such as the combined shares of the Parties,⁶ the limited increment post-Transaction under any of the alternative market definitions considered,⁷ the large number of multinational competitors⁸ and the absence of capacity constraints on competitors to expand their output quickly.⁹ In addition, in general, such product areas are fast-moving industries characterised by a high level of innovation. During the last decades, a number of techniques and products have become redundant and new technologies have been developed.¹⁰ Furthermore, on these product areas, no third parties have put forward substantiated claims according to which competition would be significantly impeded, and the Commission's analysis supports this view. With respect to these product areas, therefore, reference is made to the present paragraph regarding the considerations that led the Commission to conclude that the Transaction does not raise serious doubts.¹¹
13. As mentioned above, the large number of multinational competitors in products for life sciences would include companies such as Sigma-Aldrich (active in products for molecular biology, protein biology, cell culture, and market leader in the area of shRNA), BioRad (active in products for molecular biology, protein biology, transplant

⁵ See sections 17, IV.C.2, IV.D.1, IV.D.2, IV.D.3, IV.D.4, IV.E, IV.F, IV.H and IV.I of the present Decision.

⁶ For example, the Parties' combined market shares are generally below 35% under any of the alternative market definitions considered.

⁷ For example, the increment is generally below 1% under any of the alternative market definitions considered.

⁸ For example, in Taq polymerase, the Commission market reconstruction confirmed that at least 13 other players independent from the Parties are active.

⁹ For example, in the areas of SDS Page and dyes all competitors stated that they would be able to increase their output as a result of an increase in demand. See replies to question 48 of the Commission's request for information pursuant to Article 11 of the Merger Regulation addressed to competitors of 9 October 2013.

¹⁰ For instance, dPCR is a new technology which has been recently introduced and allows for absolute quantification of the PCR product. According to the Notifying Party, this technology is expected to replace existing PCR techniques within the next years. Similar considerations have been taken into account also in past cases where the Commission reviewed transactions in the life sciences sector as elements supporting a clearance decision. See for example Case COMP M.5264 *Invitrogen / Applied Biosystems*, paragraphs 70-73.

¹¹ See also in that regard, Case COMP M.5253 *Sanofi-Aventis / Zentiva*.

diagnostic, and market leader in the area of SDS page and electrophoresis gel boxes), Qiagen (active in products for molecular biology, particles, and market leader in the area of RT-PCR kits), Merck Millipore (active in products for cell culture, particles, etc.), Promega (active in products for molecular biology, protein biology, particles, and market leader in the area of Taq polymerase), GE Healthcare (active in products for protein biology, cell culture, molecular biology, etc.), etc.

IV.B. MARKET INVESTIGATION

14. The Commission has sent a large number of requests for information pursuant to Article 11 of the Merger Regulation addressed to market participants and the Parties, and has received additional submissions from third parties. The Commission has also carried out a market reconstruction exercise for a number of affected markets and has used the reconstructed market shares for the purposes of its assessment in these markets. Finally, the Commission has requested transaction data from the Parties and made use of such data for the purposes of its assessment.
15. In addition, given the worldwide scope of the Parties' activities, the Commission cooperated closely with the competition authorities of several jurisdictions outside the EEA during the pre-notification and phase I stages of this case. This international cooperation involved *inter alia* a mutual exchange of evidence, consisting mainly of internal documents of the Parties, with the Federal Trade Commission ("FTC") in the United States and with the Australian Competition and Consumer Commission ("ACCC").

IV.C. CELL CULTURE

16. Cell culture is the process by which cells are grown under controlled conditions, generally outside of their natural environment. Cell culture is one of the major tools used in cellular and molecular biology, since it provides excellent model systems for studying the normal physiology and biochemistry of cells and the effects of drugs and toxic compounds on the cells. It is also used in the development of biological compounds (e.g. vaccines, therapeutic proteins).
17. Cell culture media and cell culture sera are a range of products which supply nutrients to human, animal, insect and plant cells growing in vitro (i.e. outside the living organisms). Media are water-based liquids and sera are blood-based liquids. Generally, customers blend sera with media to facilitate cell culture.

IV.C.1 Cell culture media

18. In cell culture, media are used to facilitate the growth of cells. Media are water-based liquids that can be provided in liquid or in dry powder format. Dry powder media has to be hydrated with water or with process liquids. Process liquids are water-based buffers and saline solutions which facilitate the cell culture process and ensure that the cell culture environment remains at a constant pH.
19. Thermo Fisher and Life Technologies are both active in the supply of media for cell culture, under the brand names HyClone and Gibco, respectively.

IV.C.1.a Product market definition

20. The Notifying Party submits that media can be divided into two distinct product markets on the basis of whether they are sold to bioproduction customers or customers in the research sector. The Notifying Party also considers that process liquids form a distinct product market from media for cell culture.¹²
21. In previous cases, the Commission has not defined media product markets. Although some decisions referred to media, the Commission did not reach conclusions relating to this sector.¹³
22. In the present case, on the basis of the market investigation, media for cell culture can be divided into different potential product markets in accordance with the following four criteria.
23. First, on the basis of the customer groups to which the product is supplied, media can be divided into (i) a potential product market encompassing media sold to *bioproduction* customers, and (ii) a potential product market encompassing media sold to the *research* sector. There appear to be significant differences between the two customer groups in terms of purchasing patterns, pricing and expected quality.¹⁴
24. Second, media can be divided into (i) a potential product market encompassing media sold in *liquid* form, and (ii) a potential product market encompassing media sold in *dry* form. There appear to be significant differences between those two forms of media in terms of pricing, performance, suitability, purchasing patterns and equipment required for their production.¹⁵ Moreover, the majority of customers would not switch from dry media to liquid media or vice versa in case of price increase or of shortages in availability.¹⁶
25. Third, media can be divided into (i) a potential product market encompassing *standard basal* media, (ii) a potential product market encompassing *custom* media, and (iii) a potential product market encompassing *proprietary* media. In general, customers can buy a standard basal medium (based on publicly available formulations), a custom medium (internally developed medium which is later outsourced for manufacturing) or

¹² Form CO, paragraphs C.6.127 - C.6.157.

¹³ See case COMP/M.5264 *Invitrogen / Applied Biosystems*, paragraph 3.

¹⁴ See replies to question 12 of the Commission's request for information pursuant to Article 11 of the Merger Regulation addressed to competitors of 8 October 2013.

¹⁵ See replies to questions 25 and 26 of the Commission's request for information pursuant to Article 11 of the Merger Regulation addressed to competitors of 8 October 2013; See replies to question 26 of the Commission's request for information pursuant to Article 11 of the Merger Regulation addressed to bioproduction customers of 8 October 2013; See replies to question 26 of the Commission's request for information pursuant to Article 11 of the Merger Regulation addressed to research customers of 8 October 2013.

¹⁶ See replies to questions 27 and 28 of the Commission's request for information pursuant to Article 11 of the Merger Regulation addressed to bioproduction customers of 8 October 2013; See replies to questions 27 and 28 of the Commission's request for information pursuant to Article 11 of the Merger Regulation addressed to research customers of 8 October 2013.

a proprietary medium from a supplier. There appear to be significant differences between those three forms of media in terms of purchasing patterns. Furthermore, especially for the production of several types of custom and proprietary media a high level of know-how, investment and time is required.¹⁷

26. Fourth, media can be divided into (i) a potential product market encompassing *chemically defined* media, and (ii) a potential product market encompassing *non-chemically defined* media. Chemically-defined media are serum free media that do not contain any proteins and are fully defined chemical entities. There appear to be significant differences between those two forms of media, since chemically defined media can eliminate the animal-derived component risk, and thus perform better, are priced higher and are provided by fewer suppliers than non-chemically defined media.¹⁸
27. Finally, according to the market investigation process liquids appear to form a product market distinct from media for cell culture, because the former are mostly commodity products with publicly available formulas and they are used in a wide variety of scientific fields beyond cell culture.¹⁹
28. In view of the above, the Commission considers that media for cell culture is most likely divided into further potential product markets. However, the precise product market definition regarding media for cell culture can be left open, since the commitments proposed by the Parties eliminate serious doubts under any plausible market definition.

IV.C.1.b Geographic market definition

29. The Notifying Party submits that the geographic scope of all media product markets is global or at least EEA-wide mainly due to low transport costs, the absence of regulatory barriers and the global presence of manufacturers.²⁰

¹⁷ See replies to questions 29-32 of the Commission's request for information pursuant to Article 11 of the Merger Regulation addressed to competitors of 8 October 2013; See replies to questions 31 and 33 of the Commission's request for information pursuant to Article 11 of the Merger Regulation addressed to bioproduction customers of 8 October 2013; See replies to questions 31 and 33 of the Commission's request for information pursuant to Article 11 of the Merger Regulation addressed to research customers of 8 October 2013.

¹⁸ See replies to question 34 of the Commission's request for information pursuant to Article 11 of the Merger Regulation addressed to competitors of 8 October 2013; See replies to question 37 of the Commission's request for information pursuant to Article 11 of the Merger Regulation addressed to bioproduction customers of 8 October 2013; See replies to question 37 of the Commission's request for information pursuant to Article 11 of the Merger Regulation addressed to research customers of 8 October 2013.

¹⁹ See replies to questions 39 and 40 of the Commission's request for information pursuant to Article 11 of the Merger Regulation addressed to competitors of 8 October 2013; See replies to questions 40 and 41 of the Commission's request for information pursuant to Article 11 of the Merger Regulation addressed to bioproduction customers of 8 October 2013; See replies to questions 40 and 41 of the Commission's request for information pursuant to Article 11 of the Merger Regulation addressed to research customers of 8 October 2013.

²⁰ Form CO, paragraphs C.6.158 – C.6.166.

30. There are no previous Commission decisions as to the scope of the geographic markets for media products.
31. It appears in the present case, according to the market investigation, that manufacturers process the relevant products at centralised sites, which are subsequently shipped from those sites to regional distribution hubs around the world. Moreover, EEA and non-EEA customers have the same preferences and technical/commercial needs. On the other hand, several respondents claimed that there are significant transport costs, regulatory barriers and taxes for suppliers who do not confine their activity to the EEA.²¹
32. However, the precise definition of the relevant geographic market regarding media for cell culture can be left open, as the commitments proposed by the Parties eliminate the serious doubts identified by the Commission as regards the compatibility of the Transaction with the internal market.

IV.C.1.c Assessment

33. Media is a rapidly growing area of cell culture. The potential for viral contamination associated with animal serum is one of the factors that have led manufacturers to formulate media that minimise or entirely dispense with the need for material sourced from animals. Drugs and vaccines are increasingly serum free. Thermo Fisher estimates that the value of the total media market in the EEA was approximately EUR [...] in 2012, comprising approximately EUR [...] in bioproduction sales and EUR [...] in research sales. Demand for media is growing more rapidly than demand for sera.²²
34. Life Technologies is the strongest player across most of the cell culture media products while Thermo Fisher is a significant competitor across a wide number of them. The Commission's market reconstruction has provided the following market shares in the different plausible markets.
35. The market reconstruction indicates the following market shares for the different potential product markets:

²¹ See replies to questions 42-45 of the Commission's request for information pursuant to Article 11 of the Merger Regulation addressed to competitors of 8 October 2013; See replies to questions 44-46 of the Commission's request for information pursuant to Article 11 of the Merger Regulation addressed to bioproduction customers of 8 October 2013; See replies to questions 44-46 of the Commission's request for information pursuant to Article 11 of the Merger Regulation addressed to research customers of 8 October 2013.

²² Form CO, paragraph C.6.3.

A) Bioproduction customers

Table 1– Parties' and competitors' market shares in the supply of media to bioproduction customers in the EEA in 2012

Market shares	EEA							
	TF	LT	TF+LT	Sigma Aldrich	BD	Lonza	Others	MKT - Size € m
Media (all)	[5-10]%	[30-40]%	[40-50]%	[30-40]%	[10-20]%	[5-10]%	[0-5]%	[...]
Media in liquid form	[5-10]%	[40-50]%	[40-50]%	[20-30]%	[0-5]%	[10-20]%	[10-20]%	[...]
Media in dry form	[5-10]%	[30-40]%	[40-50]%	[30-40]%	[20-30]%	[5-10]%	[0-5]%	[...]
Custom Media	[0-5]%	[30-40]%	[30-40]%	[50-60]%	[0-5]%	[0-5]%	[5-10]%	[...]
Proprietary Media	[10-20]%	[40-50]%	[50-60]%	[10-20]%	[30-40]%	[0-5]%	[0-5]%	[...]
Standard Basal Media	[0-5]%	[30-40]%	[30-40]%	[5-10]%	[0-5]%	[50-60]%	[0-5]%	[...]
Chemically defined Media	[10-20]%	[50-60]%	[70-80]%	[0-5]%	[0-5]%	[20-30]%	[0-5]%	[...]
Non-chemically defined media	[0-5]%	[30-40]%	[30-40]%	[30-40]%	[10-20]%	[0-5]%	[0-5]%	[...]
Process liquids	[10-20]%	[10-20]%	[20-30]%	[30-40]%	[0-5]%	[10-20]%	[20-30]%	[...]

Source: Commission's market reconstruction

Table 2 – Parties' and competitors' market shares in the supply of media to bioproduction customers at global level in 2012

Market shares	Global							
Product	TF	LT	TF+LT	Sigma Aldrich	BD	Lonza	Others	MKT - Size € m
Media (all)	[10-20]%	[30-40]%	[50-60]%	[20-30]%	[10-20]%	[0-5]%	[0-5]%	[...]
Media in liquid form	[20-30]%	[40-50]%	[60-70]%	[20-30]%	[0-5]%	[5-10]%	[10-20]%	[...]
Media in dry form	[10-20]%	[30-40]%	[40-50]%	[20-30]%	[10-20]%	[0-5]%	[0-5]%	[...]
Custom Media	[10-20]%	[30-40]%	[40-50]%	[40-50]%	[0-5]%	[0-5]%	[5-10]%	[...]
Proprietary Media	[10-20]%	[40-50]%	[60-70]%	[10-20]%	[20-30]%	[0-5]%	[0-5]%	[...]
Standard Basal Media	[0-5]%	[40-50]%	[40-50]%	[10-20]%	[0-5]%	[30-40]%	[0-5]%	[...]
Chemically defined Media	[20-30]%	[60-70]%	[80-90]%	[0-5]%	[0-5]%	[10-20]%	[0-5]%	[...]
Non-chemically defined media	[10-20]%	[30-40]%	[40-50]%	[30-40]%	[10-20]%	[0-5]%	[0-5]%	[...]
Process liquids	[30-40]%	[10-20]%	[40-50]%	[20-30]%	[0-5]%	[20-30]%	[10-20]%	[...]

Source: Commission's market reconstruction

B) Research customers

Table 3 – Parties' and competitors' market shares in the supply of media to research customers in the EEA in 2012

Market shares	EEA							
	Thermo	Life	Combined	Sigma Aldrich	Merk Millipore	Lonza	Others	MKT - Size € m
Media (all)	[0-5]%	[50-60]%	[50-60]%	[5-10]%	[5-10]%	[20-30]%	[10-20]%	[...]
Media in liquid form	[0-5]%	[50-60]%	[50-60]%	[5-10]%	[5-10]%	[20-30]%	[5-10]%	[...]
Media in dry form	[0-5]%	[20-30]%	[20-30]%	[10-20]%	[0-5]%	[0-5]%	[60-70]%	[...]
Custom Media	[0-5]%	[5-10]%	[5-10]%	[30-40]%	[5-10]%	[40-50]%	[10-20]%	[...]
Proprietary Media	[0-5]%	[30-40]%	[30-40]%	[10-20]%	[0-5]%	[40-50]%	[5-10]%	[...]
Standard Basal Media	[0-5]%	[50-60]%	[50-60]%	[0-5]%	[5-10]%	[30-40]%	[0-5]%	[...]
Chemically defined Media	[0-5]%	[10-20]%	[10-20]%	[0-5]%	[0-5]%	[80-90]%	[0-5]%	[...]
Non-chemically defined media	[0-5]%	[50-60]%	[50-60]%	[10-20]%	[5-10]%	[20-30]%	[5-10]%	[...]
Process liquids	[0-5]%	[50-60]%	[50-60]%	[40-50]%	[0-5]%	[0-5]%	[0-5]%	[...]

Source: Commission's market reconstruction

Table 4– Parties' and competitors' market shares in the supply of media to research customers at global level in 2012

Market shares	Global							
Product	TF	LT	TF+LT	Sigma Aldrich	Merk Millipore	Lonza	Others	MKT - Size € m
Media (all)	[0-5]%	[60-70]%	[60-70]%	[5-10]%	[0-5]%	[10-20]%	[5-10]%	[...]
Media in liquid form	[0-5]%	[60-70]%	[60-70]%	[5-10]%	[0-5]%	[20-30]%	[5-10]%	[...]
Media in dry form	[0-5]%	[40-50]%	[40-50]%	[10-20]%	[0-5]%	[0-5]%	[40-50]%	[...]
Custom Media	[0-5]%	[10-20]%	[10-20]%	[20-30]%	[5-10]%	[10-20]%	[30-40]%	[...]
Proprietary Media	[0-5]%	[40-50]%	[40-50]%	[10-20]%	[0-5]%	[30-40]%	[10-20]%	[...]
Standard Basal Media	[0-5]%	[60-70]%	[60-70]%	[0-5]%	[0-5]%	[20-30]%	[5-10]%	[...]
Chemically defined Media	[0-5]%	[10-20]%	[10-20]%	[0-5]%	[10-20]%	[70-80]%	[0-5]%	[...]
Non-chemically defined media	[0-5]%	[60-70]%	[60-70]%	[5-10]%	[0-5]%	[10-20]%	[10-20]%	[...]
Process liquids	[0-5]%	[50-60]%	[60-70]%	[30-40]%	[0-5]%	[0-5]%	[5-10]%	[...]

Source: Commission's market reconstruction

36. The above reconstruction indicates that, although the Parties have strong positions in almost all potential media markets, the Merged Entity appears to be particularly strong in sales of liquid media, proprietary media and chemically defined media to bioproduction customers in the EEA and worldwide.
37. During the market investigation almost all competitors and several customers expressed concerns regarding the position of the Merged Entity in media cell culture.²³ In their

²³ See replies to questions 86-88 of the Commission's request for information pursuant to Article 11 of the Merger Regulation addressed to competitors of 8 October 2013; See replies to questions 77-79 of the

responses to the questionnaires, competitors and customers generally point out that the Merged Entity would be the clear market leader in the supply of media for cell culture.²⁴ The Parties appear to be particularly close competitors to each other, together with Sigma Aldrich and (to a lesser extent) Lonza, in terms of their product portfolio quality, range, customer relationships and price positioning.²⁵

38. In its internal documents, Thermo Fisher describes itself as a [...] and presents Life Technologies as [...].²⁶
39. Competitors and customers do not foresee any new entry in the next three years. There seem to be important barriers to entry since a supplier needs significant time and investment in order to establish the necessary track record and reliability. Reliability appears to be the main consideration for bioproduction customers, while some research customers can be more price-sensitive. The importance of track record and reliability in media cell culture is also illustrated by GE Healthcare's recent decision to massively suspend shipments and to withdraw already shipped media due to traceability concerns.²⁷
40. Moreover, even large bioproduction customers appear unable to produce media themselves due to the required specialised equipment and know-how, as well as the absence of economies of scale.²⁸ Customers are also unable to sponsor the entry of new competitors.²⁹

Commission's request for information pursuant to Article 11 of the Merger Regulation addressed to bioproduction customers of 8 October 2013; See replies to questions 80-82 of the Commission's request for information pursuant to Article 11 of the Merger Regulation addressed to research customers of 8 October 2013.

²⁴ See replies to questions 62 and 63 of the Commission's request for information pursuant to Article 11 of the Merger Regulation addressed to competitors of 8 October 2013; See replies to questions 55-56 of the Commission's request for information pursuant to Article 11 of the Merger Regulation addressed to bioproduction customers of 8 October 2013; See replies to questions 55-56 of the Commission's request for information pursuant to Article 11 of the Merger Regulation addressed to research customers of 8 October 2013.

²⁵ See replies to questions 72-74 of the Commission's request for information pursuant to Article 11 of the Merger Regulation addressed to competitors of 8 October 2013; See replies to questions 70-72 of the Commission's request for information pursuant to Article 11 of the Merger Regulation addressed to bioproduction customers of 8 October 2013; See replies to questions 73-75 of the Commission's request for information pursuant to Article 11 of the Merger Regulation addressed to research customers of 8 October 2013.

²⁶ See slide [...] in Thermo Fisher's internal presentations provided by the Parties to the FTC; see also slide entitled [...] in Thermo Fisher's internal presentations provided by the Parties to the FTC.

²⁷ See letter by GE Healthcare to its customers dated 31 May 2013 provided by the Parties to the FTC.

²⁸ However, some customers claim that they have the possibility to produce process liquids themselves.

²⁹ See replies to questions 61.2, 70 and 80-83 of the Commission's request for information pursuant to Article 11 of the Merger Regulation addressed to competitors of 8 October 2013; See replies to questions 61 and 75-76 of the Commission's request for information pursuant to Article 11 of the Merger Regulation addressed to bioproduction customers of 8 October 2013; See replies to questions 61 and

41. In view of the above, the Commission concludes that the Transaction raises serious doubts as to its compatibility with the internal market regarding media for cell culture. However, the commitments proposed by the Parties would effectively eliminate the serious doubts raised under any plausible market definition, as analysed in section V.A.1 of the present Decision.

IV.C.2 Cell culture sera

42. In cell culture, sera are blended with media to facilitate the growth of cells. Sera are blood-based animal by-products which provide nutrients, proteins, growth factors and other components to promote cell growth.
43. A variety of sera can be used for cell culture: foetal bovine serum (FBS)³⁰, calf serum³¹, adult bovine serum³², sera from other species³³ and engineered sera products.³⁴ According to the Notifying Party, FBS is the most widely used sera representing 73% of all sera used for bioproduction customers and 92% of all sera used for research customers in the EEA.
44. Thermo Fisher and Life Technologies are both active in the supply of sera for cell culture, under the brand names HyClone and Gibco, respectively.

IV.C.2.a Product market definition

45. The Notifying Party submits that sera can be divided into two distinct product markets depending on whether they are sold to bioproduction customers or customers in the research sector. Moreover, the Notifying Party submits that each type of sera (i.e. FBS, calf sera, adult bovine, etc.) forms a distinct product market. With particular regards to FBS, the Notifying Party also considers that its geographic origin is of great importance from a demand-side point of view, in particular for bioproduction customers. On that basis, the Notifying Party claims that FBS can be segmented according to its origin, namely (i) Australia and New Zealand origin; (ii) US and Canadian origin; and (iii) South American (EU approved) origin.³⁵

78-79 of the Commission's request for information pursuant to Article 11 of the Merger Regulation addressed to research customers of 8 October 2013.

- ³⁰ FBS is obtained from the blood of foetuses of healthy, pre-partum bovine dams that have been fit for human consumption through *ante* and/or *post-mortem* veterinary inspection.
- ³¹ Calf serum is defined as the liquid fraction of clotted blood derived from healthy, slaughtered bovine calves or donor calves, aged from 20 days up to 12 months, deemed fit for human consumption through *ante* and/or *post-mortem* veterinary inspection.
- ³² Adult bovine serum is defined as the liquid fraction of clotted blood derived from healthy, slaughtered cattle or donor herds 12 months of age or older deemed fit for human consumption through *ante* and/or *post-mortem* veterinary inspection.
- ³³ Sera from other species include porcine, equine, goat, chicken, sheep and other animal sera.
- ³⁴ Engineered sera products are considered as low quality serum that has been augmented with a combination of nutrients to improve performance.
- ³⁵ Form CO, paragraphs C.6.26 - C.6.58.

46. In previous cases, the Commission has not defined sera product markets. Although some decisions referred to sera, the Commission did not reach conclusions relating to this area.³⁶
47. In the present case, according to the market investigation, it appears that sera can be divided into different potential product markets on the basis of the following three criteria.
48. First, on the basis of the customer groups to which the product is supplied, sera can be divided into (i) a potential product market encompassing sera sold to *bioproduction* customers, and (ii) a potential product market encompassing sera sold to the *research* sector. The results of the market investigation confirmed in line with the Notifying Party's view that there are significant differences between these two customer groups in terms of purchasing patterns, pricing and expected quality.³⁷
49. Second, sera can be divided on the basis of their animal type, i.e. FBS (the most widely used), calf sera, bovine adult sera and other species. The market investigation in the present case confirmed that sera from different types of animals are distinct products as they fulfil different needs. Moreover, customers indicated that they would not switch from FBS to other types of sera in case of price increase or of shortages in availability.³⁸
50. Third, sera can be divided on the basis of their geographic origin into (i) a potential product market encompassing sera from *Australia*, (ii) a potential product market encompassing sera from *New Zealand*, (iii) a potential product market encompassing sera from *Australia and New Zealand*, (iv) a potential product market encompassing sera from *the US*, (v) a potential product market encompassing sera from *Canada*, (vi) a potential product market encompassing sera from *the US and Canada*, and (vii) a potential product market encompassing sera from *South American countries (EU approved)*. The market investigation in the present case showed that there are significant differences between the geographic origin of sera in terms of quality and that customers have distinct preferences as to specific origins of sera due to differences in the risk of cattle disease, price and availability.³⁹ Moreover, the market investigation

³⁶ See case COMP/M.5264 *Invitrogen / Applied Biosystems*, paragraph 3; see case M.285 *Pasteur Mérieux / Merck*, paragraph 4.

³⁷ See replies to question 12 of the Commission's request for information pursuant to Article 11 of the Merger Regulation addressed to competitors of 8 October 2013.

³⁸ See replies to questions 13-16 of the Commission's request for information pursuant to Article 11 of the Merger Regulation addressed to competitors of 8 October 2013. See replies to questions 13-16 of the Commission's request for information pursuant to Article 11 of the Merger Regulation addressed to bioproduction customers of 8 October 2013. See replies to questions 13-16 of the Commission's request for information pursuant to Article 11 of the Merger Regulation addressed to research customers of 8 October 2013.

³⁹ See replies to questions 13-16 of the Commission's request for information pursuant to Article 11 of the Merger Regulation addressed to competitors of 8 October 2013. See replies to questions 13-16 of the Commission's request for information pursuant to Article 11 of the Merger Regulation addressed to bioproduction customers of 8 October 2013. See replies to questions 13-16 of the Commission's request for information pursuant to Article 11 of the Merger Regulation addressed to research customers of 8 October 2013.

showed that although the majority of customers considered that Australian origin sera and New Zealand origin sera might be substitutable in terms of quality and performance, most of them also stated that prices of New Zealand sera are higher and they have not switched from one country to another. The same arguments applied for US origin sera and Canadian origin sera.⁴⁰

51. On the basis of the above considerations, it is likely that there are separate product markets for (i) bioproduction customers and research customers; (ii) types of sera from different animals (FBS, calf, bovine, etc.); and (iii) geographic origins. However, the precise product market definition regarding sera for cell culture can be left open, since the commitments proposed by the Parties would eliminate any serious doubts under any plausible market definition.

IV.C.2.b Geographic market definition

52. The Notifying Party submits that the relevant geographic market for sera products is at least EEA-wide in scope mainly due to low transport costs, the absence of regulatory barriers and the global presence of manufacturers.⁴¹
53. There are no previous Commission decisions as to the scope of the geographic markets for sera products.
54. The market investigation in the present case showed that manufacturers process the relevant products at centralised sites, which are subsequently shipped from those sites to regional distribution hubs around the world. Moreover, EEA and non-EEA customers have the same preferences and technical/commercial needs. On the other hand, several respondents claimed that there are significant transport costs, regulatory barriers and taxes for suppliers who do not confine their activity to the EEA.⁴²
55. However, the precise definition of the relevant geographic market regarding sera for cell culture can be left open, as the commitments proposed by the Parties eliminate the serious doubts identified by the Commission as regards the compatibility of the Transaction with the internal market.

⁴⁰ See replies to questions 20 and 21 of the Commission's request for information pursuant to Article 11 of the Merger Regulation addressed to bioproduction customers of 8 October 2013. See replies to questions 20 and 21 of the Commission's request for information pursuant to Article 11 of the Merger Regulation addressed to research customers of 8 October 2013.

⁴¹ Form CO, paragraphs C.6.61 – C.6.70.

⁴² See replies to questions 42-45 of the Commission's request for information pursuant to Article 11 of the Merger Regulation addressed to competitors of 8 October 2013. See replies to questions 44-46 of the Commission's request for information pursuant to Article 11 of the Merger Regulation addressed to bioproduction customers of 8 October 2013. See replies to questions 44-46 of the Commission's request for information pursuant to Article 11 of the Merger Regulation addressed to research customers of 8 October 2013.

IV.C.2.c Assessment

56. The Notifying Party estimates that the value of the total sera market in the EEA was approximately EUR [...] in 2012, comprising approximately EUR [...] in bioproduction sales and EUR [...] in research sales.⁴³
57. Life Technologies is the strongest player across most of the cell culture sera products with its brand Gibco, while Thermo Fisher is a significant competitor in most of them with its brand HyClone. The Parties' brands are well recognised in the markets for sera as high quality products.
58. The main area of overlap between the Parties' activities is the supply of FBS to the bioproduction sector and to the research sector.⁴⁴ The Transaction would bring together the number one (Life) and number three (Thermo) player in this segment.
59. According to the Notifying Party, the market shares in the different plausible markets for FBS in 2012 are the following.

A) Bioproduction customers

Table 5– Parties' and competitors' market shares in the supply of sera to bioproduction customers in the EEA level in 2012

Market shares	EEA							
	Thermo	Life	Combined	Sigma Aldrich	GE	Merck Millipore	Others	Market Size (EUR m)
Australian and New Zealand FBS	[10-20]%	[30-40]%	[40-50]%	[20-30]%	[5-10]%	[0-5]%	[20-30]%	[...]
Australian FBS	[5-10]%	[20-30]%	[20-30]%	[20-30]%	[10-20]%	[5-10]%	[20-30]%	[...]
New Zealand FBS	[10-20]%	[30-40]%	[50-60]%	[20-30]%	[5-10]%	[0-5]%	[10-20]%	[...]
US and Canadian FBS	[20-30]%	[5-10]%	[30-40]%	[30-40]%	[5-10]%	[5-10]%	[20-30]%	[...]
US FBS	[20-30]%	[5-10]%	[30-40]%	[20-30]%	[10-20]%	[5-10]%	[20-30]%	[...]

Source: Parties' estimates.

⁴³ Form CO, paragraph C.6.2.

⁴⁴ The Parties also overlap in the supply of sera from different type of animals such as adult bovine sera, calf sera, equine sera and porcine sera. As FBS represent the most widely type of sera used (see paragraph 49) and the proposed commitments submitted by the Notifying Party removes the serious doubts in relation to any of possible markets, these types of sera products are not further considered on this Decision.

Table 6– Parties' and competitors' market shares in the supply of sera to bioproduction customers at global level in 2012

Market shares	Global							
Product	Thermo	Life	Combined	Sigma Aldrich	GE	Merck Millipore	Others	Market Size (EUR m)
Australian and New Zealand FBS	[10-20]%	[20-30]%	[30-40]%	[20-30]%	[5-10]%	[0-5]%	[20-30]%	[...]
Australian FBS	[5-10]%	[10-20]%	[20-30]%	[20-30]%	[5-10]%	[5-10]%	[30-40]%	[...]
New Zealand FBS	[10-20]%	[30-40]%	[40-50]%	[20-30]%	[5-10]%	[0-5]%	[20-30]%	[...]
US and Canadian FBS	[10-20]%	[0-5]%	[20-30]%	[20-30]%	[5-10]%	[5-10]%	[40-50]%	[...]
US FBS	[20-30]%	[0-5]%	[20-30]%	[20-30]%	[5-10]%	[5-10]%	[40-50]%	[...]
Canadian FBS	[0-5]%	[0-5]%	[0-5]%	[5-10]%	-	[0-5]%	[90-100]%	[...]
South American (EU approved) FBS	[10-20]%	[0-5]%	[10-20]%	[20-30]%	[5-10]%	[5-10]%	[40-50]%	[...]

Source: Parties' estimates.

B) Research customers⁴⁵

Table 7– Parties' and competitors' market shares in the supply of sera to research customers in the EEA level in 2012

Market shares	EEA							
Product	Thermo	Life	Combined	Sigma Aldrich	GE	Merck Millipore	Others	Market Size (EUR m)
US and Canadian FBS*	[10-20]%	[20-30]%	[30-40]%	[20-30]%	[10-20]%	[5-10]%	[20-30]%	[...]
US FBS	[10-20]%	[20-30]%	[30-40]%	[20-30]%	[10-20]%	[5-10]%	[20-30]%	[...]
South American (EU approved) FBS	[0-5]%	[20-30]%	[20-30]%	[20-30]%	[10-20]%	[5-10]%	[30-40]%	[...]

Source: Parties' estimates. *Regarding sales to research customers, the Parties' activities do overlap in the supply of FBS Canadian in the EEA.

⁴⁵ Regarding sales to research customers, the Parties' activities do overlap neither in the supply of FBS Australian origin nor in the supply of FBS New Zealand origin.

Table 8– Parties' market shares in the supply of sera to research customers at global level in 2012

Market shares	Global			
Product	Thermo	Life	Combined	Market Size
US and Canadian FBS	[10-20]%	[20-30]%	[30-40]%	[...]
US FBS	[10-20]%	[20-30]%	[30-40]%	[...]
Canadian FBS	[10-20]%	[10-20]%	[30-40]%	[...]
South American (EU approved) FBS	[10-20]%	[10-20]%	[20-30]%	[...]

Source: Parties' estimates.

60. The Notifying Party claims that the Transaction would not lead to a significant impediment to effective competition in the supply of FBS. First, there are many alternative suppliers of sera⁴⁶ and the Parties will continue to face competition constraints from at least five of them: Sigma Aldrich, Merck Millipore, GE Healthcare (PAA), Moregate and Atlanta Biologicals. Second, the Parties will not have a strong position in the procurement of raw sera, the crucial input for FBS⁴⁷. Third, entry and expansion into the sale of sera is relatively easy, especially for abattoirs and/or intermediaries of raw sera. Finally, bioproduction customers are strong buyers who use their volume of business and ability to sponsor entry and directly source from abattoirs to constrain sera suppliers.
61. During the market investigation, almost all competitors and several customers raised concerns as regards the impact of the Transaction in sera for cell culture.⁴⁸
62. First, respondents to the market investigation indicated that the Parties would achieve a strong position in the supply of sera, with a dominant position in particular in FBS of New Zealand and Australian origin. In their responses to the questionnaires, the vast majority of competitors and customers have indicated that Life Technologies is at

⁴⁶ In the supply of FBS from New Zealand and Australia, other suppliers mentioned by the Notifying Party are Serana, South Pacific, JR Scientific, etc. In the supply of FBS from US and Canada, other suppliers mentioned by the Notifying Party are Corning, SeraLab, Seradigm, etc.

⁴⁷ Raw sera are the liquid portion left after blood is allowed to clot. It is separated from raw blood through spinning and then frozen for further filtering and processing.

⁴⁸ See replies to questions 86-89 of the Commission's request for information pursuant to Article 11 of the Merger Regulation addressed to competitors of 8 October 2013. See replies to questions 77-81 of the Commission's request for information pursuant to Article 11 of the Merger Regulation addressed to bioproduction customers of 8 October 2013. See replies to questions 80-84 of the Commission's request for information pursuant to Article 11 of the Merger Regulation addressed to research customers of 8 October 2013.

present the clear market leader in the supply of sera and the Parties appear to be close competitors.⁴⁹

63. The Parties' internal documents confirmed the findings of the market investigation. They showed that the Parties' combined market shares would be in the range of [60-70]% in the supply of FBS of Australian and New Zealand origin with only two competitors considered significant, namely Sigma Aldrich and Moregate.⁵⁰

[...]

64. The Parties' internal documents also showed that Life Technologies is the market leader and Thermo Fisher is its closest competitor.⁵¹
65. Second, the Parties' internal document also showed that the Parties currently have a strong position in the procurement of sera from different origins and that the availability of raw serum, mainly from Australia and New Zealand, is scarce.⁵²
66. Third, competitors and customers do not foresee any new entry in the next three years. There seem to be important barriers to entry since a supplier needs several years and significant investments in order to become established as a recognized supplier of sera. Reliability appears to be the main consideration for bioproduction customers, while some research customers can be more price-sensitive.⁵³
67. Furthermore, it appears that abattoirs are also extremely unlikely to possess the facilities and technical expertise necessary to engage in the sterile filtration of raw sera and the dispensing of the final product, in order to sell processed FBS. Moreover, it appears that customers are unable to be in contact with abattoirs and/or intermediaries for FBS, mainly because of budget constraints, knowledge and technical barriers, staffing requirements, logistical barriers and quality control requirements across batches.⁵⁴

⁴⁹ See replies to questions 63 and 74-76 of the Commission's request for information pursuant to Article 11 of the Merger Regulation addressed to competitors of 8 October 2013. See replies to questions 56, 71 and 72 of the Commission's request for information pursuant to Article 11 of the Merger Regulation addressed to bioproduction customers of 8 October 2013. See replies to questions 56, 74 and 75 of the Commission's request for information pursuant to Article 11 of the Merger Regulation addressed to research customers of 8 October 2013.

⁵⁰ See slide [...] in Life Technologies' internal presentations provided by the Parties to the FTC; see also slide [...] in Thermo Fisher's internal presentations provided by the Parties to the FTC.

⁵¹ See slide [...] in Life Technologies' internal presentations dated 9/2/2013 provided by the Parties to the FTC; see also slide [...] in Thermo Fisher's internal presentations provided by the Parties to the FTC.

⁵² See Thermo Fisher's presentation [...] dated on April 8, 2013.

⁵³ See replies to questions 83 and 84 of the Commission's request for information pursuant to Article 11 of the Merger Regulation addressed to competitors of 8 October 2013. See replies to questions 76 of the Commission's request for information pursuant to Article 11 of the Merger Regulation addressed to bioproduction customers of 8 October 2013. See replies to questions 79 of the Commission's request for information pursuant to Article 11 of the Merger Regulation addressed to research customers of 8 October 2013.

⁵⁴ Information provided by the Australian Competition and Consumer Commission.

68. Finally, even large bioproduction customers appear unable to sponsor the entry of new competitors.⁵⁵
69. In view of the above, the Commission concludes that the Transaction raises serious doubts as to its compatibility with the internal market regarding sera for cell culture. However, the commitments proposed by the Parties would effectively eliminate the serious doubts raised under any plausible market definition, as analysed in section V.A.1 of the present Decision.

IV.D. MOLECULAR BIOLOGY

70. Molecular biology is the study of the molecular components present in the cells of living organisms, primarily RNA and DNA. The study of molecular biology and, in particular, the function of genes within cells is an important activity for academic and bio-industrial researchers.
71. This section analyses the following product areas within molecular biology: gene silencing, transfection, NA amplification, NA purification and cloning.

IV.D.1 Gene silencing

IV.D.1.a Product market definition

72. Gene silencing (also known as “gene modulation”) is the process by which the expression of a particular gene is inhibited (i.e. the gene is “switched off”). The most common downstream application for gene silencing products is gene function studies (e.g. to study what happens when a gene is switched off).
73. Gene silencing is achieved through a process known as RNAi. RNAi normally requires (i) an effector reagent to silence the gene and (ii) a delivery system to cause the effector to enter the particular cell.⁵⁶
74. Traditionally, there have been two main types of effectors: small interfering RNA (siRNA) and short hairpin RNA (shRNA). In addition, in the last years a third type of effector has been developed: microRNA (miRNA), which can be in turn divided into mimics⁵⁷ and inhibitors.⁵⁸ Effectors can be sold as standalone reagents or as bundle of reagents (libraries).

⁵⁵ See replies to questions 60 of the Commission’s request for information pursuant to Article 11 of the Merger Regulation addressed to bioproduction customers of 8 October 2013.

⁵⁶ Product market definition for delivery systems (transfection) is discussed in section IV.D.2 below.

⁵⁷ miRNA mimics are small, double-stranded RNAs that mimic endogenous miRNAs, which may or may not be chemically modified. These enable miRNA functional analysis by upregulation of miRNA activity, which results in the suppression of gene translation.

⁵⁸ miRNA inhibitors are small, chemically modified single-stranded RNA molecules designed to specifically bind to and inhibit endogenous miRNA molecules and enable miRNA functional analysis by down-regulation of miRNA activity. This has the net effect of increasing gene translation.

75. The Commission addressed gene silencing in Case COMP/M.5264 *Invitrogen/Applied Biosystems*. However, the product market definition was left open as the transaction under review did not give rise to any affected market regardless of the definition retained (i.e. whether effectors and delivery systems were to be considered together or separately, or whether a further segmentation within each of effectors and delivery systems was made).
76. The Notifying Party submits that within the effectors area, a distinction can be drawn between siRNA, shRNA and miRNA. The Notifying Party does not consider it necessary or appropriate to further segment these categories between libraries and standalone reagents.
77. The results of the market investigation confirmed the segmentation between siRNA, shRNA and miRNA.
78. From a demand-side viewpoint, customers referred to significant differences in prices and usage between these effectors. As one customer stated: “*siRNA are small RNA molecule you deliver into the cytosol in order to get an inhibition of the gene expression. shRNA are plasmid DNA you have to deliver into the nucleus in order to get an inhibition of the gene expression. Depending on the application and the cell types we work with siRNA or shRNA can be completely inefficient.*”⁵⁹ As another customer explained, siRNA and miRNA should be distinguished from each other as “*although they belong to same pathway their role is completely different. siRNA degrade mRNA while miRNA inhibits translation without degrading mRNA.*” As a result of these differences, the majority of customers indicated that they would not switch from one of these effectors to another as a result of a non-transitory 5-10% price increase.⁶⁰
79. From a supply-side perspective, the majority of competitors indicated that it is not possible to manufacture siRNA, shRNA and miRNA with the same equipment and technology.⁶¹ As a result, competitors in general stated that it would not be possible for a supplier active in the manufacturing of one effector to start swiftly and without any significant costs to produce a different effector.⁶²
80. Within each category of effector, a further segmentation between standalone reagents and libraries does not seem appropriate. Even if from a demand-side there has been a traditional distinction between standalone reagents and libraries, such distinction appears is softening as the relative importance of libraries vis-à-vis standalone reagents in terms of sales volume is decreasing over time.⁶³ Moreover, from a supply-side

⁵⁹ See replies to question 13 of the Commission’s request for information pursuant to Article 11 of the Merger Regulation addressed to customers of 8 October 2013.

⁶⁰ See replies to questions 10-12 of the Commission’s request for information pursuant to Article 11 of the Merger Regulation addressed to customers of 8 October 2013.

⁶¹ See replies to question 12 of the Commission’s request for information pursuant to Article 11 of the Merger Regulation addressed to competitors of 8 October 2013.

⁶² See replies to question 13, 14 and 15 of the Commission’s request for information pursuant to Article 11 of the Merger Regulation addressed to competitors of 8 October 2013.

⁶³ See See Annex 1.01 attached to Thermo Fisher's response to the Commission's Article 11 request of 21 October 2013 – [...].

perspective, the manufacturers of libraries and standalone reagents are essentially the same and many competitors confirmed that switching between standalone reagents and libraries could occur swiftly and without incurring a significant cost.⁶⁴

81. In view of the above, the Commission concludes that there are separate markets for siRNA, shRNA and miRNA.

IV.D.1.b Geographic market definition

82. The Commission concluded in *Invitrogen/Applied Biosystems* that the markets for gene silencing were at least EEA-wide.
83. The Notifying Party submits, relying on Commission precedents, that the relevant geographic market is at least EEA-wide, and possibly global, in scope.
84. The market investigation in the present case has confirmed that the relevant geographic markets are likely to be global in scope. In particular, while some customers stated that there are differences in the price of effectors between the EEA and the rest of the world,⁶⁵ the majority of customers stated that there are no significant barriers to sourcing effectors from outside the EEA.⁶⁶ With specific regard to transport costs, most customers confirmed that such costs remain below 10%.⁶⁷
85. In view of the above, the Commission concludes that the relevant geographic markets in gene silencing reagents are global in scope.

IV.D.1.c Assessment

86. The Commission's market reconstruction exercise has shown that the combined shares of the Parties are generally [...] than those estimated by the Parties in the Form CO.⁶⁸
87. The tables below shows the market shares of the Parties and their competitors in the markets for siRNA, shRNA and miRNA reagents, according to the Commission's market reconstruction.
88. The Decision will analyse in detail siRNA and miRNA. With respect to shRNA, in the light of the elements mentioned in paragraph 12 above, the Transaction does not give rise to serious doubts as to its compatibility with the internal market.

⁶⁴ See replies to questions 21-30 of the Commission's request for information pursuant to Article 11 of the Merger Regulation addressed to competitors of 8 October 2013.

⁶⁵ See replies to question 31 of the Commission's request for information pursuant to Article 11 of the Merger Regulation addressed to customers of 8 October 2013.

⁶⁶ See replies to question 30 of the Commission's request for information pursuant to Article 11 of the Merger Regulation addressed to customers of 8 October 2013.

⁶⁷ See replies to question 33 of the Commission's request for information pursuant to Article 11 of the Merger Regulation addressed to customers of 8 October 2013.

⁶⁸ See Form CO.

Table 9 – Parties and competitors market shares in the supply of gene silencing reagents worldwide in 2012

Product		Worldwide market shares and market size							MKT Size - € m
		TF	LT	TF+ LT	Qiagen	Sigma Aldrich	IDT	Others	
Gene silencing	siRNA	[40-50]%	[20-30]%	[70-80]%	[10-20]%	[5-10]%	[0-5]%	[5-10]%	[...]
	shRNA	[20-30]%	[0-5]%	[30-40]%	[0-5]%	[50-60]%	[0-5]%	[5-10]%	[...]
	miRNA	[20-30]%	[50-60]%	[70-80]%	[10-20]%	[0-5]%	[0-5]%	[5-10]%	[...]

Source: Commission's market reconstruction

A) siRNA

89. While mainly used at present for research purposes, siRNA is expected in the future to be extended to pharmacological and agricultural applications. Consequently, its market value is potentially to increase significantly in the coming years.⁶⁹
90. Thermo Fisher and Life Technologies are respectively the first and the second manufacturers of siRNA reagents worldwide.
91. According to the Parties' internal documents, the Parties are the closest competitors on the siRNA market. They appear to have the widest siRNA reagents portfolio, and seem to compete fiercely as main drivers for innovation in the sector. In particular, Thermo Fisher is seen by Life Technologies as [...] ⁷⁰ and notably as [...] ⁷¹. As for Thermo Fisher's views on Life Technologies, the slide below shows that Life Technologies is [...] ⁷².

[...]

92. Moreover, Life Technology's internal documents also show that [...] ⁷³.
93. On the basis of the Parties' internal documents, the only remaining significant competitors producing siRNA reagents, Qiagen and Sigma Aldrich, would have [...] for instance is considering as [...]. As for [...], it is considered as having [...] compared to Life Technologies and Thermo Fisher. ⁷⁴ Both competitors appear to [...] ⁷⁵.

⁶⁹ See Annex 1.01 attached to Thermo Fisher's response to the Commission's Article 11 request of 21 October 2013 – [...].

⁷⁰ See Annex 1.01 attached to Thermo Fisher's response to the Commission's Article 11 request of 21 October 2013 – [...].

⁷¹ See Annex 1.01 attached to Thermo Fisher's response to the Commission's Article 11 request of 21 October 2013 – [...].

⁷² See Thermo Fisher's presentation [...] provided by the Parties to the FTC.

⁷³ See Annex 1.01 attached to Thermo Fisher's response to the Commission's Article 11 request of 21 October 2013 – [...].

⁷⁴ See Annex 1.01 attached to Thermo Fisher's response to the Commission's Article 11 request of 21 October 2013 – [...].

94. In addition, competition in the market for siRNA appears to be influenced to an appreciable extent by IP rights. The most significant intellectual property related to siRNA reagents are the so called "Tuschl patents", for which the Massachusetts Institute of Technology (MIT) is the licensing agent. In particular, the Tuschl I patent protects siRNA duplex designs of a certain length (from 19-mer to 23-mer).
95. Thermo Fisher and Life Technologies are two out of the only four licensees of the Tuschl patents, along with Qiagen and Sigma Aldrich. Whilst some competitors have found possible ways to manufacture and commercialise siRNA without being licensees of the Tuschl patents (e.g. IDT), the position enjoyed by the four licensees clearly shows that such patents provide an important competitive advantage against other manufacturers.
96. This competitive advantage has been confirmed by competing firms, which stressed that "*[a]ll other suppliers are excluded from selling siRNA into the research market*" and that "*[i]t is almost impossible to use RNA interference (siRNAs) without infringing one of the Tuschl patents*".⁷⁶
97. A potential impact on competition resulting from the Transaction in siRNA have also been confirmed by the numerous and generally substantiated concerns raised by almost all competitors and by a number of customers which replied to the Commission's requests for information.⁷⁷
98. In view of the above, the Transaction raises serious doubts regarding siRNA reagents. However, the proposed commitments would effectively remove the serious doubts raised, as analysed in section V.B.2 of the present Decision.

B) miRNA

99. The market for miRNA represents a relatively small part of the gene silencing industry. However, miRNA is becoming increasingly popular among scientists and that the overall market size is expected to experience double digit growth in the coming years.⁷⁸
100. Life Technologies is clearly the leading producer and supplier of miRNA reagents, [...] ⁷⁹ and a worldwide market share exceeding 50%. [...] ⁸⁰ [...].⁸¹

⁷⁵ See Thermo Fisher's presentation [...] provided by the Parties to the FTC.

⁷⁶ See replies to question 42 of the Commission's request for information pursuant to Article 11 of the Merger Regulation addressed to competitors of 8 October 2013.

⁷⁷ See replies to questions 58 and following of the Commission's request for information pursuant to Article 11 of the Merger Regulation addressed to competitors of 8 October 2013.

⁷⁸ See Annex 1.01 attached to Thermo Fisher's response to the Commission's Article 11 request of 21 October 2013 – [...].

⁷⁹ See Annex 1.01 attached to Thermo Fisher's response to the Commission's Article 11 request of 21 October 2013 – [...].

⁸⁰ See Annex 1.01 attached to Thermo Fisher's response to the Commission's Article 11 request of 21 October 2013 – [...].

101. In turn, Thermo Fisher is the clear number two in the market. Life Technologies sees Thermo Fisher as [...].⁸² [...].⁸³

[...]

102. The Commission's market investigation has also shown that the companies that the Notifying Party has identified as significant competitors (i) have very limited activities, or (ii) are not active at all at production level [...]. In practice, therefore, the Transaction would almost amount to a merger to monopoly with respect to miRNA reagents.

103. Additional barriers to entry appear to be constituted by the fact that miRNA is a relatively young technology, where Life Technologies and Thermo Fisher enjoy a significant first-mover advantage. Each of Thermo Fisher and Life Technologies hold or have applied for IP rights in the area of miRNA.⁸⁴

104. Finally, the majority of competitors and some customers have also pointed out that the Transaction may result in a reduction of competition as regards miRNA.⁸⁵

105. In view of the above, the Transaction raises serious doubts regarding miRNA reagents. However, the proposed commitments would effectively remove the serious doubts raised, as analysed in section V.B.2 of the present Decision.

IV.D.2 Delivery systems (Transfection)

IV.D.2.a Product market definition

106. Delivery systems are used to introduce external material (including siRNA effectors and other materials such as proteins) into a cell. Delivery can be either physical (electric or ballistic) or chemical (transfection).

107. The Parties' activities overlap only with respect to transfection reagents.

108. Transfection is a widely used chemical technology in a broad range of applications across cell types, such as transient gene expression studies, protein and antibody production and generation of stable cell lines. While certain transfection reagents are marketed for specific uses (e.g. in RNAi), each is capable of being used across multiple applications.

⁸¹ See Annex 1.01 attached to Thermo Fisher's response to the Commission's Article 11 request of 21 October 2013 – [...].

⁸² See Annex 1.01 attached to Thermo Fisher's response to the Commission's Article 11 request of 21 October 2013 [...].

⁸³ See Annex 1.01 attached to Thermo Fisher's response to the Commission's Article 11 request of 21 October 2013 – [...].

⁸⁴ See Thermo Fisher's response to the Commission's Article 11 request of 21 October 2013.

⁸⁵ See replies to questions 58 and following of the Commission's request for information pursuant to Article 11 of the Merger Regulation addressed to competitors of 8 October 2013.

109. The primary method for chemical transfection (also referred to as lipofection) involves using lipids. The lipids form complexes called liposomes, which are made up of material similar to the cell membrane and which are therefore capable of readily fusing with the cell membrane to introduce materials such as effectors.
110. The Notifying Party consider that transfection should be distinguished from other means of delivery such as electric delivery and ballistic delivery. The Notifying Party does not consider any further segmentation of the transfection reagents category to be appropriate, for example by reference to reagents used in the transfection of siRNA. According to the Notifying Party, while transfection reagents may be marketed as being particularly effective for certain applications, all transfection reagents are designed to, and do, achieve the same outcome, i.e. making cells permeable to allow for the introduction of external material into the cell.
111. The majority of customers confirmed that there are significant differences between the various types of delivery systems in terms of price, performance and suitability to particular processes.⁸⁶ With regard to a possible distinction within transfection, the Commission has not found any element suggesting that the market definition proposed by the Parties (i.e. a single market for all transfection reagents) would not be appropriate.
112. In view of the above, the Commission concludes that there is one separate market for transfection reagents.

IV.D.2.b Geographic market definition

113. The Commission concluded in *Invitrogen/Applied Biosystems* that the market for transfection is at least EEA-wide in scope.
114. The Notifying Party submits, relying on Commission precedents, that the relevant geographic market is at least EEA-wide, and possibly global, in scope.
115. The market investigation has also confirmed that the relevant geographic markets are likely to be global in scope. In particular, while some customers are of the view that there are differences in the price of transfection reagents between the EEA and the rest of the world,⁸⁷ the majority of customers considered that there are no significant barriers to sourcing transfection reagents from outside the EEA.⁸⁸ With specific regard to transport costs, most customers confirmed that such costs remain below 5%.⁸⁹

⁸⁶ See replies to question 63 of the Commission's request for information pursuant to Article 11 of the Merger Regulation addressed to customers of 8 October 2013.

⁸⁷ See replies to question 69 of the Commission's request for information pursuant to Article 11 of the Merger Regulation addressed to customers of 8 October 2013.

⁸⁸ See replies to question 68 of the Commission's request for information pursuant to Article 11 of the Merger Regulation addressed to customers of 8 October 2013.

⁸⁹ See replies to question 71 of the Commission's request for information pursuant to Article 11 of the Merger Regulation addressed to customers of 8 October 2013.

116. In view of the above, the Commission concludes that the relevant geographic market for transfection reagents is global in scope.

IV.D.2.c Assessment

117. The table below shows the market shares of the Parties and their competitors in the market for transfection according to the results of the Commission's market reconstruction exercise.

Table 10 – Parties and competitors market shares in the supply of transfection worldwide in 2012

Worldwide market shares and market size								
Product	TF	LT	TF+ LT	Qiagen	Promega	Roche	Others	MKT Size - € m
Transfection	[0-5]%	[60-70]%	[60-70]%	[5-10]%	[10-20]%	[5-10]%	[10-20]%	[...]

Source: Commission's market reconstruction

118. While most competitors replying to the Commission's requests for information expressed a negative view on the impact of the Transaction in transfection, only one of customer stated that the Transaction could result in an increase of prices.

119. Moreover, while Life Technologies' position in the transfection area is significant thanks to its leading product line Lipofectamine, Thermo Fisher is only a small player in this field through its TurboFect and DharmaFect products. As a result, the increment brought about to Life Technologies' market share would be *de minimis* (below 5%).

120. Further, when questioned about potential Life Technologies' competitors, many customers referred to Qiagen, Roche and Promega, and not to Thermo Fisher, as established players which will remain active on the market.⁹⁰

121. The Commission has not found any element in its market investigation showing that Thermo Fisher currently represents an important competitive constraint for Life Technologies. In this respect, a majority of customers stated that Thermo Fisher does not enjoy any particular advantage with regard to the main competition drivers in the market.⁹¹

122. In view of the above considerations, the Commission therefore concludes that the Transaction does not raise serious doubts with respect to transfection.

IV.D.3 Nucleic Acid ("NA") Amplification

123. NA amplification comprises technologies for amplifying (or copying) a segment of a nucleic acid (DNA or RNA) to enable further analysis of the sample. This is most

⁹⁰ See replies to question 74.1 of the Commission's request for information pursuant to Article 11 of the Merger Regulation addressed to customers of 8 October 2013.

⁹¹ See replies to question 74.1 of the Commission's request for information pursuant to Article 11 of the Merger Regulation addressed to customers of 8 October 2013.

commonly achieved through the use of Polymerase Chain Reaction ("PCR") techniques. The PCR sector comprises instruments and reagents used in PCR processes.

IV.D.3.a Product market definition

Instruments

124. The Notifying Party relies on the Commission's conclusion in *Invitrogen/Applied Biosystems*⁹² where the Commission concluded that separate markets exist for instruments and reagents.
125. With regard to instruments, the Notifying Party submits that it is appropriate to differentiate between (i) thermal cyclers, and (ii) qPCR instruments. The market investigation has brought no elements pointing to a different conclusion on these product markets.

Reagents

126. As for reagents, this area includes standard reagents (i.e. buffers, dNTPs and other ancillary reagents) and differentiated reagents. The Notifying Party submits that standard reagents constitute a separate market. In *Invitrogen/Applied Biosystems*, the Commission concluded that a distinction should be made between standard and differentiated reagents. The market investigation has brought no elements pointing to a different conclusion on these product markets. The market for standard reagents is not affected and is hence not discussed further in this decision. The Commission's assessment therefore concerns differentiated reagents only.
127. Differentiated reagents are sold (i) on a standalone basis, and (ii) in ready-to-use kits.
 - (i) Reagents sold on a standalone basis
128. In *Invitrogen/Applied Biosystems*, the Commission considered further segmentations within differentiated reagents as follows: between (i) Taq DNA polymerase and (ii) non-Taq DNA polymerase; (iii) for Reverse Transcriptase ("RT") enzymes; and between (iv) dye-based and (v) probe-based detection chemistries.
129. In line with the Commission decision in *Invitrogen/Applied Biosystems*, the Notifying Party submits that Taq polymerase constitutes a separate market. The market investigation has confirmed that Taq polymerase is a separate product market from non-Taq polymerase.
130. However, the Notifying Party departs from *Invitrogen/Applied Biosystems* when submitting that the non-Taq thermostable category comprises various enzymes that have been modified for different use and comprise distinct product markets, namely (i) high fidelity polymerase enzymes; (ii) hot start polymerase enzymes; (iii) speciality enzymes, although it also submits that there is a relatively high-degree of supply-side substitutability between the different non-Taq thermostable polymerases.

⁹² Case COMP M.5264, paragraph 51.

131. For the non-Taq polymerase area, the market investigation pointed at the absence of demand-side substitutability⁹³, and limited supply-side substitutability⁹⁴ between the different non-Taq polymerases (high fidelity, hot start, other specialty). IP rights cover specific categories of non-Taq polymerases (e.g. there are specific IP rights for high fidelity polymerase)⁹⁵, and know-how represents a significant barrier to entry for specific categories of non-Taq polymerase. In light of the above, the Commission concludes that high fidelity, hot start and other specialty polymerase reagents constitute separate relevant product markets.
132. In line with *Invitrogen/Applied Biosystems*, the Notifying Party submits that RT enzymes constitute a separate market, which has been confirmed by the market investigation.
133. Finally, also in line with *Invitrogen/Applied Biosystems*, the Notifying Party submits that dye-based detection chemistries and probe-based detection chemistries are more properly viewed as distinct product markets⁹⁶. The market investigation has brought no elements pointing to different conclusions on this matter.

(ii) Reagents sold in ready-to-use kits

134. In *Invitrogen/Applied Biosystems*, the Commission considered justifiable a differentiation between reagents that are sold as part of kits and those that are sold on a standalone basis. The Notifying Party has also identified separate markets regarding differentiated reagents in ready-to-use kits. The market investigation has confirmed that reagents sold as part of kits and those sold on a standalone basis are part of separate product markets.
135. In the context of kits, in *Invitrogen/Applied Biosystems* the Commission considered appropriate to distinguish between each of the four main PCR processes (i.e. PCR, qPCR, RT-PCR and RT-qPCR). The Notifying Party has also identified the following markets regarding differentiated reagents in ready-to-use kits: (i) PCR kits; (ii) dye-based qPCR kits; (iii) probe-based qPCR kits; (iv) cDNA synthesis kits, (v) RT-PCR kits; (vi) dye-based RT-qPCR kits; and (vii) probe-based RT-qPCR kits. The market investigation has brought no elements pointing to different conclusions on these product markets.

⁹³ See replies to question 14 of the Commission's request for information pursuant to Article 11 of the Merger Regulation addressed to customers of 8 October 2013.

⁹⁴ See replies to question 223 of the Commission's request for information pursuant to Article 11 of the Merger Regulation addressed to competitors of 8 October 2013.

⁹⁵ See replies to questions 224 and 225 of the Commission's request for information pursuant to Article 11 of the Merger Regulation addressed to competitors of 8 October 2013.

⁹⁶ The differentiation between dye-based and probe-base detection chemistries is relevant in the context of ready-to-use kits.

Conclusion

136. In view of the above, the Commission concludes that:
- (i) there are separate markets for instruments, with distinctions between thermal cyclers and qPCR instruments;
 - (ii) there are separate markets for reagents, with distinctions between standard reagents and differentiated reagents;
 - (iii) the relevant markets in differentiated reagents are further segmented in differentiated reagents sold on a standalone basis, and differentiated reagents sold in ready-to-use kits;
 - (iv) the differentiated reagents on a standalone basis are further broken down in Taq polymerase reagents, high fidelity polymerases, hot start polymerases, other specialty polymerases and RT enzymes;
 - (v) the differentiated reagents in ready-to-use kits are further broken down in PCR kits; dye-based qPCR kits; probe-based qPCR kits; cDNA synthesis kits, RT-PCR kits; dye-based RT-qPCR kits; and probe-based RT-qPCR kits.

IV.D.3.b Geographic market definition

137. In *Invitrogen/Applied Biosystems*, the Commission concluded that the various markets within the area of NA amplification were at least EEA-wide.
138. The Notifying Party agreed with the above conclusion.
139. In the market investigation, all competitors indicated that customers share the same technical and commercial needs regardless of the customer's location⁹⁷. The majority of competitors submitted that transport costs are not significant⁹⁸ and that prices in the US are slightly lower on average than in the EEA⁹⁹.
140. In view of the above, the Commission concludes that the relevant markets within the area of NA amplification are at least EEA-wide.

IV.D.3.c Assessment

A) Instruments

141. In the light of the elements referred to in paragraph 12 above, the Transaction does not give rise to serious doubts as to its compatibility with the internal market in any of the markets for instruments for NA amplification.

⁹⁷ See replies to question 251 of the Commission's request for information pursuant to Article 11 of the Merger Regulation addressed to competitors of 8 October 2013.

⁹⁸ See replies to question 252 of the Commission's request for information pursuant to Article 11 of the Merger Regulation addressed to competitors of 8 October 2013.

⁹⁹ See replies to question 253 of the Commission's request for information pursuant to Article 11 of the Merger Regulation addressed to competitors of 8 October 2013.

B) Reagents

(i) Reagents sold on a standalone basis

I. Taq polymerase reagents

142. For Taq polymerase reagents, after considering the elements referred to in paragraph 12 above, the Commission considers that the Transaction does not give rise to serious doubts as to its compatibility with the internal market.

II. Non-Taq polymerase reagents

143. The Transaction would bring together two of the leading suppliers of non-Taq polymerase reagents, both active in high fidelity, hot start and other specialty polymerases.

144. The table below shows the market shares of the Parties and their competitors for stand-alone non-Taq polymerase reagents for PCR techniques. These figures are based on a market reconstruction carried out by the Commission.

Table 11 – Parties and competitors market shares in the supply of non-Taq polymerase reagents in the EEA in 2012

Non-Taq polymerase reagents	EEA market shares and market size								
	TF	LT	TF+ LT	Qiagen	Agilent	Promega	Roche	Others	MKT Size - € m
High fidelity polymerase	[20-30]%	[20-30]%	[40-50]%	[0-5]%	[5-10]%	[0-5]%	[10-20]%	[20-30]%	[...]
Hot start polymerase	[0-5]%	[40-50]%	[40-50]%	[20-30]%	[0-5]%	[0-5]%	[10-20]%	[10-20]%	[...]
Other specialty polymerase	[30-40]%	[10-20]%	[40-50]%	[0-5]%	[0-5]%	[0-5]%	[20-30]%	[20-30]%	[...]
Total Non-Taq polymerase	[10-20]%	[30-40]%	[40-50]%	[10-20]%	[0-5]%	[0-5]%	[10-20]%	[20-30]%	[...]

Source: Commission's market reconstruction

High fidelity polymerase

145. The Parties are the first and the second largest manufacturers of high fidelity polymerase in the EEA and the market share of the Merged Entity would be in the range of 40%, according to the Commission's market reconstruction. The remaining significant competitors post-Transaction producing high fidelity reagents would be Agilent, New England Biolabs ("NEB"), Qiagen, Roche, and Takara Clontech.

146. The market for high fidelity polymerase reagents is characterized by IP rights but almost every player active in the market has its own IP rights.

147. The Notifying Party submits that in the high fidelity polymerase area there are no significant barriers to switching between suppliers and that all suppliers active in the market have the expertise, capacity and ability to increase production¹⁰⁰.
148. The market investigation confirmed that the market for high fidelity enzymes is not characterized by capacity constraints and that barriers to expansion in this area are limited¹⁰¹.
149. In the market investigation, the majority of customers stated that the Transaction would result neither in a reduction of competition nor in an increase of prices in relation to high fidelity polymerase reagents¹⁰².
150. In addition, the parties' own internal documents confirm that they are not close competitors in the market for high fidelity enzymes. As can be seen from Thermo Fisher's internal documents¹⁰³, Thermo Fisher sees [...] as being the closest competitor to Thermo Fisher's Phusion enzyme. Thermo Fisher's high fidelity enzyme was benchmarked against [...] and other competitors' enzymes. It was not benchmarked against any of Life Technologies' high fidelity enzymes.
151. Life Technologies' internal documents confirm this lack of close competition with Thermo Fisher. Life Technologies observes in them that [...]¹⁰⁴.
152. In view of the above, the Commission concludes that the Transaction does not raise serious doubts as to its compatibility with the internal market with respect to the supply of high fidelity polymerase enzymes.

Hot start polymerase

153. The Transaction would bring together the leading supplier of hot start polymerase (Life Technologies) with the [...] manufacturer of hot start polymerase in the EEA. The market share of the Merged Entity would be in the range of [40-50]%. The remaining significant competitors post-Transaction producing high fidelity reagents would be Qiagen, Roche, Sigma Aldrich and Takara Clontech.
154. The increment brought by Thermo Fisher is *de minimis* (below 5% in the EEA); Thermo Fisher's sales are around EUR 1 million in the EEA compared to EUR 12 million of Life Technologies.

¹⁰⁰ The Notifying Party estimates that the cost of entering a different non-Taq polymerase reagent, for example the high fidelity one, would be about [less than EUR 200,000 over a period of less than half a year].

¹⁰¹ See minutes of the conference calls with Qiagen (competitor) on 25 October 2013 and with Illumina on 23 October 2013 and see replies to question 54 of the Commission's request for information pursuant to Article 11 of the Merger Regulation addressed to customers of 8 October 2013.

¹⁰² See replies to questions 66 and 67 of the Commission's request for information pursuant to Article 11 of the Merger Regulation addressed to customers of 8 October 2013.

¹⁰³ [...].

¹⁰⁴ [...].

155. The market for hot start polymerase reagents is characterized by IP rights but almost every player active in the market has its own IP rights.
156. The Commission's investigation confirmed the Notifying Party's claims that there are no significant barriers to switch between suppliers and that all suppliers active in the market have the expertise, capacity and ability to increase production¹⁰⁵. The market investigation equally confirmed that the market for hot start enzymes is not characterized by capacity constraints and that barriers to expansion in this area are limited¹⁰⁶.
157. In the market investigation, the majority of customers stated that the Transaction will not result in a reduction of competition and will not result in an increase of prices in relation to high fidelity polymerase reagents¹⁰⁷.
158. According to Life Technologies' internal documents, [...] ¹⁰⁸. [...] ¹⁰⁹.
159. In view of the above, the Commission concludes that the Transaction does not raise serious doubts as to its compatibility with the internal market with respect to the supply of hot start polymerase enzymes.

Other specialty polymerase

160. The Parties are the first (Life Technologies) and the [...] largest manufacturers of other specialty polymerase in the EEA and the market share of the Merged Entity would be in the range of [40-50]%, according to the Commission's market reconstruction. The remaining significant competitors post-Transaction producing other specialty polymerase reagents would be Agilent, GE Healthcare and Roche.
161. The Notifying Party submits that in the other specialty polymerase area there are no significant barriers to switch between suppliers and that all suppliers active in the market have the expertise, capacity and ability to increase production¹¹⁰.
162. The market investigation confirmed that the market for other specialty enzymes is not characterized by capacity constraints and that barriers to expansion in this area are limited¹¹¹.

¹⁰⁵ The Notifying Party estimates that the cost of entering a different non-Taq polymerase reagent, for example the high fidelity one, would be about [less than EUR 200,000 over a period of less than a year].

¹⁰⁶ See replies to question 54 of the Commission's request for information pursuant to Article 11 of the Merger Regulation addressed to customers of 8 October 2013.

¹⁰⁷ See replies to questions 66 and 67 of the Commission's request for information pursuant to Article 11 of the Merger Regulation addressed to customers of 8 October 2013.

¹⁰⁸ See Life Technologies' [...], October 2013.

¹⁰⁹ See Life Technologies' [...], March 2012.

¹¹⁰ The Notifying Party estimates that the cost of entering a different non-Taq polymerase reagent, for example the high fidelity one, would be about [...].

163. In the market investigation, the strong majority of customers stated that the Transaction will not result in a reduction of competition and will not result in an increase of prices in relation to other specialty polymerase reagents¹¹².
164. In addition, the Parties' portfolio of other specialty polymerases is predominantly complementary rather than overlapping. A large part of Thermo Fisher's portfolio is directed at the generation of long PCR products while Life Technologies mainly offers specialised enzymes which are not included in Thermo Fisher's portfolio, namely Tth and Tsp (which is optimised for genotyping applications) polymerases.
165. In view of the above, the Commission concludes that the Transaction does not raise serious doubts as to its compatibility with the internal market with respect to the supply of other specialty polymerase enzymes.

III. RT enzymes

166. The Transaction would bring together the leading supplier of RT enzymes (Life Technologies) with the [...] manufacturer of RT enzymes in the EEA. The market share of the Merged Entity would be in the range of [80-90]%, according to the Commission's market reconstruction. The remaining significant competitors post-Transaction producing RT enzymes on a standalone basis would be Agilent, NEB, Promega, Roche and Takara Clontech.
167. The table below shows the market shares of the Parties and their competitors in RT enzymes on a standalone basis, according to the market reconstruction carried out by the Commission.

Table 12 – Parties and competitors market shares in the supply of RT enzymes in the EEA in 2012

RT enzymes	EEA market shares and market size							
	TF	LT	TF+ LT	Agilent	Promega	Roche	Others	MKT Size - € m
RT enzymes	[0-5]%	[70-80]%	[80-90]%	[0-5]%	[5-10]%	[0-5]%	[5-10]%	[...]

Source: Commission's market reconstruction

168. The Commission's investigation confirmed that despite this relatively high combined market share, the Transaction does not raise serious doubts in the area of RT enzymes for the following reasons.
169. First, the increment brought by Thermo Fisher is *de minimis* (below 5% in the EEA); Thermo Fisher's sales in the EEA are less than EUR [...], compared to EUR [...] of Life Technologies.

¹¹¹ See replies to question 54 of the Commission's request for information pursuant to Article 11 of the Merger Regulation addressed to customers of 8 October 2013.

¹¹² See replies to questions 66 and 67 of the Commission's request for information pursuant to Article 11 of the Merger Regulation addressed to customers of 8 October 2013.

170. Second, Thermo Fisher's R&D and marketing costs in RT enzymes is and was limited (for R&D EUR [...] in 2011, EUR [...] in 2012 and EUR [...] to date in 2013; for marketing EUR [...] in 2012 and EUR [...] to date in 2013).
171. Third, the 2012 market shares do not fully reflect important developments that occurred in that year. Life Technologies owned a relevant patent for the US (Superscript II) which expired in May 2012. The expiry of this patent presented a major opportunity for new entrants to develop their offerings based on the Superscript II technology. [...]. Following the expiry of the Superscript II patent, some players developed H Minus RT enzymes (the H Minus attributes were originally the main subject of Superscript II), including NEB, Promega and Thermo Fisher.
172. It is true that Life Technologies still owns a patent (Superscript III) for the high-end segment of the RT enzymes market. The Commission's investigation however confirmed that almost every player active in the market has its own IP rights.
173. Fourth, the investigation in fact revealed that all suppliers active in the market have the expertise, capacity and ability to increase production and that there are no significant barriers to switch between suppliers.¹¹³ The market investigation furthermore confirmed that the market for RT enzymes is not characterized by capacity constraints and that barriers to expansion in this area are limited¹¹⁴. It is therefore likely that the remaining competitors left post-merger could expand their production so as to replace Thermo Fisher's supply, even in its entirety. The significant growth opportunities following the expiry of Life Technologies' Superscript II patent are corroborated by other facts. In the first half of 2013 Life Technologies' EEA sales in RT enzymes [...] compared to the first half of 2012 and Thermo Fisher's sales in the EEA in the same period [...]. Hence, following the expiry of this patent, Life Technologies [...]. The market investigation also confirmed that there have been new entries (NEB, Agilent, Bioline Reagents and Takara Clontech) in the standalone RT enzymes field.¹¹⁵
174. Finally, and in accordance with these findings, the majority of customers stated, in the market investigation, that the Transaction would result neither in a reduction of competition nor in an increase of prices in relation to RT enzymes¹¹⁶.
175. In view of the above, the Commission concludes that the Transaction does not raise serious doubts as to its compatibility with the internal market with respect to the supply of RT enzymes.

¹¹³ The Notifying Party estimates that the cost of entering the RT enzymes market would be about [less than EUR 300,000 over a period of less than a year].

¹¹⁴ See minutes of the conference calls with Roche (competitor) on 18 October 2013 and with Illumina on 23 October 2013 and see replies to question 54 of the Commission's request for information pursuant to Article 11 of the Merger Regulation addressed to customers of 8 October 2013.

¹¹⁵ See minutes of the conference call with Illumina on 23 October 2013.

¹¹⁶ See replies to questions 66 and 67 of the Commission's request for information pursuant to Article 11 of the Merger Regulation addressed to customers of 8 October 2013.

(ii) Reagents sold in ready-to-use kits

176. In the light of the elements referred to in paragraph 12 above, the Transaction does not give rise to serious doubts as to its compatibility with the internal market in any of the markets for reagents sold in ready-to-use kits.

IV.D.4 NA Purification

177. Purification techniques are used to isolate a target element, which may be a nucleic acid molecule (RNA, DNA), protein or cell.

IV.D.4.a Product market definition

Instruments

178. The Notifying Party submits that purification instruments take four forms, which are (i) liquid-based instruments; (ii) column-based instruments; (iii) magnetic bead-based instruments; and (iv) electrophoresis gel boxes (horizontal gel boxes in the case of NA purification).

179. The market investigation confirmed that there are separate markets for (i) liquid-based instruments; (ii) column-based instruments; (iii) magnetic bead-based instruments; and (iv) electrophoresis gel boxes (horizontal gel boxes in the case of NA purification).¹¹⁷ Affilogic stated in this respect that "*magnetic beads separation systems are very different from other systems making use of non-magnetic beads.*"¹¹⁸

180. In the NA purification instruments area, the Transaction leads to horizontally affected markets only in magnetic bead-based instruments and electrophoresis gel boxes (horizontal gel boxes in the case of NA purification).

Electrophoresis consumables - Molecular weight standards

181. The Commission has previously examined the market for molecular weight standards (i.e. DNA ladders) in *Invitrogen/Applied Biosystems*,¹¹⁹ although the Commission ultimately left the product market definition open.

182. The Notifying Party submits that molecular weight standards constitute a separate product market. The market investigation has brought no elements pointing to different conclusion on this product market¹²⁰.

183. The Transaction leads to horizontally affected markets in molecular weight standards.

¹¹⁷ See replies to questions 33, 34, 35, 36 of the Commission's request for information pursuant to Article 11 of the Merger Regulation addressed to customers of 8 October 2013.

¹¹⁸ See Affilogic's reply to question 4 of the Commission's request for information pursuant to Article 11 of the Merger Regulation addressed to competitors of 8 November 2013

¹¹⁹ See Case No COMP/M.5264, paragraph 65.

¹²⁰ See replies to question 39 of the Commission's request for information pursuant to Article 11 of the Merger Regulation addressed to customers of 8 October 2013.

IV.D.4.b Geographic market definition

184. In *Invitrogen/Applied Biosystems* the Commission concluded that all relevant markets in NA purification were at least EEA-wide.
185. The Notifying Party submits that the geographic market is least EEA-wide, due to the following characteristics: (i) customers are sophisticated and products are identical wherever customers are located; (ii) low transport costs; and (iii) there is a degree of global harmonisation of pricing.
186. The market investigation has brought no elements pointing to different conclusions on these geographic markets.

IV.D.4.c Assessment

A) Instruments

187. In the light of the elements referred to in paragraph 12 above, the Transaction does not give rise to serious doubts as to its compatibility with the internal market in any of the potential markets for electrophoresis gel boxes. The Commission will therefore assess below the impact of the Transaction in the market for magnetic bead-based instruments for nucleic acid purification ("MBB instruments").
188. The table below shows the market shares of the Parties and their competitors for MBB instruments, according to the market reconstruction carried out by the Commission.

Table 13 – 2012 market shares in the supply of magnetic bead-based instruments for nucleic acid purification

	TF	LT	TF+LT	Qiagen	Roche	Abbott	Promega	Others	Market Size - EURm
World	[10-20]%	[20-30]%	[40-50]%	[20-30]%	[10-20]%	[5-10]%	[5-10]%	[5-10]%	[...]
EEA	[10-20]%	[20-30]%	[30-40]%	[20-30]%	[10-20]%	[0-5]%	[5-10]%	[10-20]%	[...]

Source: Commission's market reconstruction

189. Despite the significant market shares outlined in the table above, the Commission considers that the Transaction does not raise serious doubts as regards the markets for MBB instruments.
190. First, the Merged Entity would still face a number of significant competitors, including Qiagen, Roche, Perkin Elmer, Abbott and Promega. The market investigation has not revealed any capacity constraint or other barrier to expansion on the part of these competitors.¹²¹

¹²¹ See replies to the Commission's request for information pursuant to Article 11 of the Merger Regulation addressed to competitors of 7 October 2013.

191. Second, whilst the Transaction would create a clear market leader in terms of sales, it appears that the competitive significance of the Merged Entity going forward may be overstated by these market shares. Indeed, Life Technologies has already announced the discontinuing of several of its product ranges accounting for approx. [...] % of its 2012 sales at global level and [...] % at EEA level.¹²²
192. Third, the market investigation has shown that a majority of customers see sufficient alternatives to the Parties for MBB instruments, including the competitors listed above, and that there are no barriers to switching for research customers.¹²³ In addition, competitors such as Eppendorf and Promega have entered the market or significantly expanded their position in the last three years. [Customer] stated in this respect "*there are other big companies who supply magnetic bead-based instruments, for example Promega, Qiagen, Eppendorf*"¹²⁴
193. Fourth, customers and competitors have confirmed the Parties' claim that their product offerings are not competing for the same applications, based on the different technical characteristics of their product offerings. Stratec stated in this respect that "*We do not see [the Parties] as Close competitors as they both are offering Systems for different markets or throughput Needs.*"¹²⁵
194. Moreover, according to the Parties, Life Technologies achieved [...] % of its 2012 global sales (and [...] % of its EEA sales) with a product line which is exclusively targeted at customers performing next-generation sequencing, and is furthermore closely linked to Life Technologies' own next generation sequencing product range. The remainder of Life Technologies' sales (apart from the discontinued products mentioned above) are achieved through instruments that are already toll-manufactured by Thermo Fisher pre-merger. The Commission therefore considers that Thermo Fisher and Life Technologies are distant competitors in this field with complementary offerings.
195. Finally, most customers and competitors stated that the Transaction was unlikely to have a negative impact on competition in this area,¹²⁶ and the Commission considers

¹²² See annex 7.1 to the submission of the Parties of 7 November 2013.

¹²³ The Commission notes in this respect that the Parties' product offering is not focused on applied segments. As stated by Qiagen, "*In the MDx market we do not consider Life Technologies or Thermo Fisher as close competitors based on their current magnetic bead based instruments product offering. Their current products do not provide sufficient process safety feat[ur]es and sample to result automation, which is requested by MDx customers. Both instruments do not have CE-IVD status.*" See Qiagen's reply to question 153 of the Commission's request for information pursuant to Article 11 of the Merger Regulation addressed to competitors of 7 October 2013.

¹²⁴ See replies to question 55 of the Commission's request for information pursuant to Article 11 of the Merger Regulation addressed to customers of 7 October 2013.

¹²⁵ See replies to question 153 of the Commission's request for information pursuant to Article 11 of the Merger Regulation addressed to competitors of 7 October 2013.

¹²⁶ See replies to question 80 of the Commission's request for information pursuant to Article 11 of the Merger Regulation addressed to customers of 8 October 2013.

that the few customer complaints in this area were either unsubstantiated¹²⁷ or linked to the potential increased market power of the Merged Entity in the upstream market for the supply of magnetic beads.¹²⁸ In this last respect, the proposed commitments would effectively remove the serious doubts raised, as analysed in section V.B.3 below.

196. In light of the above, the Transaction does not give rise to serious doubts as to its compatibility with the internal market in the area of MBB instruments.

B) Electrophoresis consumables - Molecular weight standards

197. The market share of the Merged Entity would be [30-40]% in the EEA, according to the Parties' estimates ([10-20]% increment brought by Life Technologies). The remaining significant competitors post-Transaction producing molecular weight standards would be Bio-Rad, GE Healthcare, NEB and Promega.
198. The Notifying Party submits that there are no significant barriers to entry in relation to molecular weight standards¹²⁹, there are no blocking IP rights, the relevant know-how is readily available and the production molecular weight standards requires only basic and laboratory facilities. According to the Notifying Party, examples of recent entrants include NEB, SERVA and SBS Genetech.
199. The market investigation confirmed that, first, IP rights are of relative importance in this market,¹³⁰ second, that it is possible for customers to easily switch between suppliers within a short time period¹³¹ and, finally, that many relevant players would remain post-Transaction (e.g. Bio-Rad, GE Healthcare, NEB, Promega, Sigma-Aldrich and Takara Clontech).
200. Furthermore, in the market investigation, almost all customers stated that the Transaction would result neither in a reduction of competition nor in an increase of prices in relation to molecular weight standards¹³².

¹²⁷ One customer claimed that the Merged Entity would have market power through leveraging both Parties' strong positions in reagent kits for these instruments, however the combined market share of the Parties for reagent kits for MBBs is below 15% under all possible market definitions. Another customer's comments that "*in our eyes mergers of this size always have a negative impact on competition.*" are representative of most remaining complaints.

¹²⁸ See replies to question 80 of the Commission's request for information pursuant to Article 11 of the Merger Regulation addressed to customers of 8 October 2013.

¹²⁹ The Notifying Party submits that it would take only a few weeks at minimal cost to develop molecular weight standards products.

¹³⁰ See replies to question 70 of the Commission's request for information pursuant to Article 11 of the Merger Regulation addressed to customers of 8 October 2013.

¹³¹ See replies to question 75 of the Commission's request for information pursuant to Article 11 of the Merger Regulation addressed to customers of 8 October 2013.

¹³² See replies to questions 82 and 85 of the Commission's request for information pursuant to Article 11 of the Merger Regulation addressed to customers of 8 October 2013.

201. In view of the above, the Commission concludes that the Transaction does not raise serious doubts as to its compatibility with the internal market with respect to the supply of molecular weight standards.

IV.D.5 Cloning

202. Cloning involves the replication of a single DNA molecule starting from a single living cell to generate a large population of cells containing identical DNA molecules. In the cloning area, the Parties' activities overlap in the supply of cloning enzymes (restriction and modifying enzymes) and in the supply of cloning kits.

IV.D.5.a Product market definition

203. For cloning enzymes, the Notifying Party submits that the relevant product market is the market for all cloning enzymes, whether restriction or modifying in nature. The market investigation has confirmed a relatively high degree of supply side substitutability between restriction and modifying enzymes but has also indicated a limited demand side substitutability.

204. The Commission considers that it can be left open whether restriction enzymes and modifying enzymes would constitute separate relevant product markets, as the Transaction would not give rise to serious doubts in these potential segments.

205. With respect to cloning kits, the Notifying Party submits that the relevant product market is a separate market for cloning kits. The market investigation has brought no elements pointing to a different conclusion on this product market.

IV.D.5.b Geographic market definition

206. The Notifying Party submits that the markets for the cloning category (both cloning enzymes and cloning kits) are at least EEA-wide in scope. The market investigation has brought no elements pointing to different conclusions on these geographic markets.

IV.D.5.c Assessment

207. In the light of the elements referred to in paragraph 12 above, the Transaction does not give rise to serious doubts as to its compatibility with the internal market in any of the potential markets comprised within this area.

IV.E. PARTICLES

208. Particles (also known as beads or microspheres) are spherical beads from 20 nanometres to 2,000 microns (2mm) in diameter, which are either hollow or solid, made from a range of materials, including polymer (such as polystyrene latex), glass, ceramics, silica, metal and wax, and can be produced on an off-the-shelf or custom made basis.

209. Different types of particles (magnetic, plain, fluorescent, dyed, standard, etc.) are used in a variety of different applications, in particular in the life sciences and medical diagnostics industries.

IV.E.1 Product market definition

IV.E.1.a Magnetic beads vs other particles

210. Magnetic beads are super-paramagnetic particles and therefore respond to a magnetic field while not retaining any magnetism outside a magnetic field. This feature enables easier – and possibly automated – handling with a magnetic rod or equivalent. According to the Parties, the key end-user applications for magnetic beads are nucleic acid, protein and cell sample preparation and immunoassays. The Parties supply magnetic beads (i) to Original Equipment Manufacturers ("OEMs") for inclusion in their own kits and instruments, and (ii) directly to end-customers, generally as part of the Parties' own kits.
211. The Notifying Party submits that different types of particles constitute separate product markets. This conclusion would be justified on the basis of very limited demand-side and supply-side substitutability between the different types of particles. The market investigation has confirmed that the production and supply of magnetic beads should be distinguished from other types of particles for the purposes of market definition.¹³³

IV.E.1.b Distinction between polymer-based magnetic beads and other types of magnetic beads

212. Magnetic beads can be classified according to the non-magnetic material covering and/or encapsulating the magnetic core(s) or layer(s) giving the particle its super-paramagnetic nature. The most common types of beads are polymer-based and silica-based, but other types of beads exist, such as cellulose-based beads.
213. The Notifying Party submits that all magnetic beads belong to the same product market, without distinction according to the type of bead, because of high substitutability between polymer-based and silica-based magnetic beads and of similarity in price levels.
214. The market investigation has however shed light on the absence of supply-side substitutability between polymer-based magnetic beads and other types of magnetic beads. This finding is based on the following factors: (i) polymer-based magnetic beads are supplied by different market players compared to other types of magnetic beads,¹³⁴ (ii) polymer-based magnetic beads cannot be produced on the same production line as other types of magnetic beads,¹³⁵ (iii) producers of other types of magnetic beads cannot

¹³³ See replies to questions 10 to 14 of the Commission's request for information pursuant to Article 11 of the Merger Regulation addressed to competitors of 7 October 2013, and replies to questions 9 to 12 of the Commission's request for information pursuant to Article 11 of the Merger Regulation addressed to customers of 7 October 2013.

¹³⁴ The Commission notes that the Parties only manufacture polymer-based magnetic beads, as opposed to other types of magnetic beads. Many competitors of the Parties such as Agilent, Ademtech and JSR also do not produce other types of magnetic beads. On the other hand, competitors such as Promega only manufacture other types of magnetic beads.

¹³⁵ See replies to question 15 of the Commission's request for information pursuant to Article 11 of the Merger Regulation addressed to competitors of 7 October 2013. Promega stated in this respect that "Different magnetic beads require different manufacturing processes."

start swiftly and without significant cost the production and sales of polymer-based magnetic beads,¹³⁶ (iv) specific patents are in place protecting both the composition of polymer-based magnetic beads and their manufacturing processes¹³⁷ and (v) specific know-how is required to operate polymer-based magnetic bead manufacturing processes.¹³⁸

215. The market investigation has also shown that demand-side substitutability between different types of magnetic beads is minimal across all applications. No willingness to switch from polymer-based magnetic beads to other types of magnetic beads in case of a small but significant increase in prices was indicated by any customers, whether active in sample preparation, immunodiagnosics or other applications.¹³⁹ Most customers of magnetic beads – whether OEM customers or end-user customers – also indicated that they consider polymer-based magnetic beads as a distinct product fulfilling different needs compared to silica-based magnetic beads.¹⁴⁰ [OEM customer] indicated for instance that "*the properties of silica-based are significant[ly] different to prevent straight substitution [from polymer-based beads]*".¹⁴¹
216. With regard to the use of magnetic beads for sample preparation, Qiagen stated that "[p]olymer-based magnetic beads are used for automated processes to extract nucleic acids from biological fluids. They come in small quantities and are highly priced. Other types of particles (mainly silica) are either used for manual processes to extract nucleic acids from biological fluids. They come in small quantities and are moderately priced. The other use is in industrial processes for purification of fluids (filtering, treatment of toxic waste)."¹⁴²
217. OEM customers using magnetic beads for other applications than sample preparation also indicated no sign of demand-side substitutability. [OEM customer] stated in this respect that "*[p]olymer-based magnetic beads are generally more suitable for certain downstream applications, such as diagnostics, since the magnetic content of the particles is more stable.*"¹⁴³ [OEM customer] also indicated that "*Due to their physical*

¹³⁶ See replies to question 16 of the Commission's request for information pursuant to Article 11 of the Merger Regulation addressed to competitors of 7 October 2013.

¹³⁷ Both Life Technologies and Thermo Fisher have patents protecting their polymer-based magnetic beads, see section IV.E.3.b below.

¹³⁸ See replies to questions 15 and 16 of the Commission's request for information pursuant to Article 11 of the Merger Regulation addressed to competitors of 7 October 2013. Bangs Polysciences stated in this respect that "*Polymer beads are made through a different process. The material can be sold through the same channels, but the production process would be more difficult to quickly acquire.*"

¹³⁹ See replies to question 14 of the Commission's request for information pursuant to Article 11 of the Merger Regulation addressed to customers of 7 October 2013.

¹⁴⁰ See replies to question 15 of the Commission's request for information pursuant to Article 11 of the Merger Regulation addressed to customers of 7 October 2013.

¹⁴¹ See [OEM customer]'s reply to question 15 of the Commission's request for information pursuant to Article 11 of the Merger Regulation addressed to customers of 7 October 2013.

¹⁴² See minutes of conference call with [OEM customer].

¹⁴³ See minutes of conference call with [OEM customer].

properties, silica based beads are easier to centrifuge (higher density) and show lower adhesion. Polymer based beads have a density closer to 1g/cm³, which prevents them from fast sedimentation, which is important for our application". The market investigation has in particular indicated that OEM customers using magnetic beads as a raw material for immunoassays would incur large barriers to switching, both at individual assay level and for their overall diagnostic platforms.¹⁴⁴

218. In the light of the above, the Commission concludes that the production and supply of polymer-based magnetic beads should be distinguished from other types of magnetic beads for the purposes of market definition.

IV.E.1.c Distinction between supply to OEM customers and to end-user customers

219. The Notifying Party submits that no distinction is warranted between the production and supply of magnetic beads to OEM customers and to end-user customers, on the grounds that (i) most suppliers supply to both OEM and end-user customers, (ii) there are very few differences between the technologies or manufacturing capabilities required to supply these two potential segments, (iii) magnetic bead manufacturers provide the same product to both customer groups.
220. The market investigation has however highlighted a number of limitations to the supply-side substitutability between the OEM and the end-user customer segments. First, contrary to the Parties' claims, the number of suppliers of magnetic beads for OEM customers is *de facto* significantly smaller than for end-user customers.¹⁴⁵ The market investigation has also identified as prerequisites for a presence in the OEM segment the ability to custom, investments in quality control and quality assurance, reliability of the manufacturing process, and the long-term scalability of production.¹⁴⁶ Competitor Miltenyi, for instance, manufactures its magnetic beads for research use and for clinical use in different facilities.¹⁴⁷
221. Contrary to the Notifying Party's view, the market investigation has also shed light on significant differences between products supplied to OEM customers and to end-user customers. The Commission's market investigation has shown that end-user customers

¹⁴⁴ According to [OEM customer], "[switching] implies significant investments with unforeseeable consequences for assay performance." See reply to question 14 of the Commission's request for information pursuant to Article 11 of the Merger Regulation addressed to customers of 7 October 2013. See also section IV.E.3.c below.

¹⁴⁵ See replies to question 28 of the Commission's request for information pursuant to Article 11 of the Merger Regulation addressed to competitors of 7 October 2013. Bangs Polysciences stated in this respect that "*The OEM market is generally supplied [by] very few companies. This is due to the qualification and resistance to change. The end-user market is supplied by many more companies.*" The Commission also notes that Thermo Fisher, while being a significant player in the supply of polymer-based magnetic beads to OEM customers, achieves a comparatively much smaller presence on the market for end-user customers.

¹⁴⁶ See replies to questions 28 and 35 of the Commission's request for information pursuant to Article 11 of the Merger Regulation addressed to competitors of 7 October 2013.

¹⁴⁷ See Miltenyi's reply to question 29 of the Commission's request for information pursuant to Article 11 of the Merger Regulation addressed to competitors of 7 October 2013.

rarely purchase surface-activated magnetic beads, while OEM customers purchase both surface-activated and ligand-coupled magnetic beads depending on their needs.¹⁴⁸ In this respect, the Commission notes that most OEM customers have the capacity to couple ligands to surface-activated beads in-house and often do so using proprietary molecules such as particular antibodies.¹⁴⁹ On the contrary, OEMs generally purchase beads already coupled when the ligand is generic, such as streptavidin. [OEM customer] stated in this respect "*OEMs generally prefer surface-activated beads when they do not want to be restricted to one specific ligand and/or one specific application.*"¹⁵⁰

222. OEM customers also exhibit preferences for specific criteria such as the automated use of magnetic beads, as well as sterility or biocompatibility, or, more generally, technical characteristics imposed by regulatory requirements on downstream products.¹⁵¹
223. Moreover, most suppliers indicated that there are differences in prices of the same products when sold to OEM customers and to end-users, and that the two segments typically have different margins.¹⁵² Similarly, most suppliers indicated that there are differences in the lengths of the contracts, in the importance of distribution channels, and in the sales and tender processes between the two customer segments.
224. The market investigation has also highlighted that OEM customers purchase high volumes, preferably via long-term contracts, with an emphasis on quality, scalability and reliability, while end-user customers are more sensitive to brand and innovation. The market investigation has shown that the requirements of OEM customers are also very different from the requirements of end-user customers as regards manufacturing processes, and that this requires higher investments from magnetic beads manufacturers.¹⁵³ [OEM customer] stated in this respect that "*the reliability of the supplier is an important factor. For instance, [...]*."¹⁵⁴
225. An internal document of Thermo Fisher also shows that OEM demand for particles is identified as a particular customer segment, and [...].¹⁵⁵

¹⁴⁸ According to the Commission's market reconstruction, sales of surface-activated polymer-based magnetic beads (as opposed to ligand-coupled polymer-based magnetic beads) account for less than half of sales to OEM customers, while they account for more than two thirds of corresponding sales to OEM customers.

¹⁴⁹ [OEM customer] stated in this respect that "*[OEM customer] couples the magnetic beads to specific ligands in-house, instead of buying ligand-coupled magnetic beads. [OEM customer] believes that it would be more expensive to purchase the magnetic beads already coupled. In addition, [OEM customer] might need specific ligands that are not available on the market.*" See minutes of conference call with [OEM customer].

¹⁵⁰ See minutes of conference call with [OEM customer].

¹⁵¹ See replies to question 28 of the Commission's request for information pursuant to Article 11 of the Merger Regulation addressed to competitors of 7 October 2013.

¹⁵² See replies to question 28 of the Commission's request for information pursuant to Article 11 of the Merger Regulation addressed to competitors of 7 October 2013. [...].

¹⁵³ Id.

¹⁵⁴ See minutes of conference call with [OEM customer].

¹⁵⁵ See [...]. The customer segments are [...].

226. In the light of the above, the Commission concludes that the production and supply of polymer-based magnetic beads to OEM customers constitutes a separate product market.¹⁵⁶

IV.E.1.d Conclusion

227. In the light of the above, the Commission will analyse the effects of the Transaction as regards the market for the production and supply of polymer-based magnetic beads to OEM customers.

228. As regards other types of particles, the precise product market definition can be left open, as the Transaction would not give rise to serious doubts under any plausible market definition.

IV.E.2 Geographic market definition

229. The Notifying Party submits that the geographic market definition for particles is global or at least EEA-wide because (i) manufacturers produce particles at centralised sites, and ship from those sites to regional distribution hubs around the world, and (ii) manufacturers are typically present worldwide either through subsidiaries making direct sales or through distributors.

230. As regards the supply of polymer-based magnetic beads to OEM customers, the market investigation has confirmed the Parties' claims insofar as manufacturers such as the Parties and their main competitors produce polymer-based magnetic beads for OEM customers at centralised sites,¹⁵⁷ and most suppliers pursue sales of polymer-based magnetic beads to OEMs on a global scale. No particular barrier to expansion between geographic regions at worldwide level was identified by competitors in the area of magnetic beads.¹⁵⁸

231. In addition, the market investigation has confirmed that there are no significant differences in demand worldwide.

232. First, all competitors and customers confirmed that the technical and commercial requirements of OEM customers are the same inside and outside the EEA.¹⁵⁹ Second, most customers indicated that there are no significant barriers to sourcing magnetic beads from outside the EEA,¹⁶⁰ and that there are no differences between the EEA and

¹⁵⁶ The Parties are not active in the production and supply of other types of magnetic beads.

¹⁵⁷ See replies to question 29 of the Commission's request for information pursuant to Article 11 of the Merger Regulation addressed to customers of 7 October 2013.

¹⁵⁸ See replies to question 31 of the Commission's request for information pursuant to Article 11 of the Merger Regulation addressed to competitors of 7 October 2013.

¹⁵⁹ See replies to question 30 of the Commission's request for information pursuant to Article 11 of the Merger Regulation addressed to competitors of 7 October 2013, and to question 23 of the Commission's request for information pursuant to Article 11 of the Merger Regulation addressed to customers of 7 October 2013.

¹⁶⁰ See replies to question 25 of the Commission's request for information pursuant to Article 11 of the Merger Regulation addressed to customers of 7 October 2013. [OEM customer] stated in this respect that

other geographic areas in terms of prices of magnetic beads. [OEM customer] stated in this respect that "[p]rices depend on bead performance and company pricing strategy more than on geographic origin".¹⁶¹

233. Finally, the market investigation has also confirmed that the majority of OEM customers negotiate their supply agreements for magnetic beads on a global level.¹⁶² Competitor Agilent stated in this respect that "[m]any OEM customers are global and have unified pricing."¹⁶³ [OEM customer] stated in this respect that "*The geographic scope of the distribution agreement with Thermo Fisher is global.*"¹⁶⁴
234. In the light of the above, the Commission concludes that the geographic market definition for the supply of polymer-based magnetic beads to OEM customers is global in scope.
235. As regards all other possible product markets in the area of particles, the market investigation has confirmed that the geographic scope of markets is, as claimed by the Parties, global or at least EEA-wide. The geographic scope of these possible product markets can however be left open as no geographic market definition would give rise to affected markets.

IV.E.3 Assessment

236. The Parties' activities only give rise to affected markets for the supply of polymer-based magnetic beads to OEM customers. The Commission will therefore only assess below the global market for the production of polymer-based magnetic beads to OEM customers.

IV.E.3.a Competitive landscape and market shares

237. The Commission's market reconstruction exercise has shown that the Parties' combined shares are [...].¹⁶⁵
238. The tables below shows the market shares of the Parties and their competitors in the markets for polymer-based magnetic beads to OEM customers, according to the Commission's market reconstruction.

"These [magnetic beads] are typically small packages and transport cost is minimal. There are no significant tariffs or regulatory barriers."

¹⁶¹ See replies to question 26 of the Commission's request for information pursuant to Article 11 of the Merger Regulation addressed to customers of 7 October 2013.

¹⁶² See replies to question 27 of the Commission's request for information pursuant to Article 11 of the Merger Regulation addressed to customers of 7 October 2013.

¹⁶³ See Agilent's reply to question 32 of the Commission's request for information pursuant to Article 11 of the Merger Regulation addressed to competitors of 7 October 2013.

¹⁶⁴ See minutes of conference call with [OEM customer].

¹⁶⁵ See Form CO, table E.6.8.

Table 14 –market shares in the supply of polymer-based magnetic beads to OEM customers in 2012

	Worldwide market shares and market size						
	TF	LT	TF+LT	Agilent	Merck Millipore	Others	MKT Size - € m
Polymer-based magnetic beads to OEM customers	[10-20]%	[50-60]%	[60-70]%	[10-20]%	[10-20]%	[5-10]%	[...]

Source: Commission's market reconstruction¹⁶⁶

239. The competitive landscape outlined in the table above is corroborated by an internal document of Thermo Fisher¹⁶⁷ presenting Life Technologies as a clear market leader for magnetic particles. [...].¹⁶⁸
240. Similarly, an internal document of Life Technologies¹⁶⁹ depicts Life Technologies as the clear market leader in terms of sales of magnetic beads to the immunodiagnostic OEM customers, with Merck Millipore, Thermo Fisher and Agilent as its only significant competitors, enjoying comparable market positions.
241. The competitive landscape outlined above has also been corroborated by the results of the market investigation. A majority of competitors and customers have indicated that Life Technologies is already currently the clear market leader for the supply of magnetic beads.¹⁷⁰ Competitor Promega stated that "*Life Technologies is the clear market leader for the supply of polymer-based magnetic beads, while Promega and Qiagen are stronger for RNA/DNA purification.*"¹⁷¹ [OEM customer] stated that "*Dynal (Life) has been a leader in this space for many years.*"¹⁷²
242. In addition, the market investigation has shown that most customers and competitors regard the competitive landscape as relatively stable in terms of the number of suppliers

¹⁶⁶ [...].

¹⁶⁷ [...].

¹⁶⁸ See Annex E.87 to the Form CO.

¹⁶⁹ See SR1 – Immunodiagnosics (IDx) deep dive, submitted as Annex F.27 to the Form CO, slide 9.

¹⁷⁰ See replies to question 31 of the Commission's request for information pursuant to Article 11 of the Merger Regulation addressed to customers of 7 October 2013, and to question 37 of the Commission's request for information pursuant to Article 11 of the Merger Regulation addressed to competitors of 7 October 2013.

¹⁷¹ See minutes of conference call with Promega. The Commission notes in this respect that neither Promega nor Qiagen are active in manufacturing polymer-based magnetic beads.

¹⁷² See [OEM customer]'s reply to question 37 of the Commission's request for information pursuant to Article 11 of the Merger Regulation addressed to competitors of 7 October 2013.

of magnetic beads and the products they offer.¹⁷³ [OEM customer] stated in this respect that *"There is a small number of suppliers decreasing by mergers and acquisitions. Smaller suppliers mostly provide only small scale amounts for R&D applications."*¹⁷⁴ The Commission thus considers that the relative stability of the supplier landscape renders the combined market shares outlined above particularly meaningful as a first indication of market power regarding the market for the supply of polymer-based magnetic beads to OEM customers.

IV.E.3.b Barriers to entry

243. The market investigation has also highlighted significant levels of barriers to entry in the relevant market.
244. Overall, the market investigation has shown that most competitors and customers consider that new entry in the relevant market would require significant investment and time, and that any new entrant would face significant obstacles.¹⁷⁵ [OEM customer] thus stated that a potential new entrant would face a *"large barrier [to] market entry due to R&D costs, IP (patents, know-how) and established supplier relationships."* All competitors and most customers have indicated that the time required to enter the relevant market would be more than 3 years.¹⁷⁶ The Commission considers that barriers to entry in the relevant market are based on a number of factors, which are outlined below.
245. First, both Life Technologies and Thermo Fisher, as well as several competitors, have currently enforceable patents protecting their magnetic particles and manufacturing processes for magnetic beads. Life Technologies has a number of patents expiring in 2020 or after, relating to both the composition of magnetic particles and to processes for their manufacturing, and in particular on processes for the production of monodisperse polymer-based magnetic beads. Thermo Fisher also has currently valid patents on the Sera-Mag process, and additional patents on the composition of its Speedbeads magnetic particles expire in 2026/2027.
246. Second, [...]. The Commission considers that pending patent litigations is an additional element pointing to the importance of intellectual property rights as a barrier to entry, as well as corroborating Life Technologies' role as market leader.
247. Third, the market investigation has confirmed that most customers and competitors regard intellectual property rights as playing a significant role in the markets for the

¹⁷³ See replies to question 40 of the Commission's request for information pursuant to Article 11 of the Merger Regulation addressed to competitors of 7 October 2013

¹⁷⁴ See replies to question 34 of the Commission's request for information pursuant to Article 11 of the Merger Regulation addressed to customers of 7 October 2013.

¹⁷⁵ See replies to questions 41 and 42 of the Commission's request for information pursuant to Article 11 of the Merger Regulation addressed to customers of 7 October 2013.

¹⁷⁶ See replies to question 51 of the Commission's request for information pursuant to Article 11 of the Merger Regulation addressed to competitors of 7 October 2013 and replies to question 41 of the Commission's request for information pursuant to Article 11 of the Merger Regulation addressed to customers of 7 October 2013.

supply of magnetic beads.¹⁷⁷ Potential competitor Promega, which is not active in the supply of polymer-based magnetic beads but of silica and cellulose-based magnetic beads, stated in this respect that *"New competitors have high barriers to innovate and smaller companies do not have the ability to innovate due to lack of access to the IP."* [OEM customer] stated that *"IP rights are an important factor in this field. According to [OEM customer], a new company starting to manufacture magnetic beads would not be free to operate since known processes are already covered by existing companies' patent portfolios."*¹⁷⁸

248. Fourth, the market investigation has indicated that the know-how required for producing polymer-based magnetic beads constitutes a significant barrier to entry, even for large companies with significant resources such as the Parties' OEM customers. [OEM customer] thus stated that *"even more important than the patent rights is the production know-how of the bead producing companies. This includes know-how on production equipment, raw materials and production processes."*¹⁷⁹ Potential competitor Promega also stated that *"Starting production would take significant efforts, would be expensive, often would require IP, requires specific technical know-how and expertise - all of which would be difficult for most companies."*¹⁸⁰
249. Fifth, the market investigation has shown that the relevant market is characterized by established commercial relationships between the few existing suppliers and downstream OEM customers. [OEM customer] stated for example that *"[OEM customer] has a long-term supply agreement (...) for magnetic beads with a subsidiary of Thermo Fisher, [...]."*¹⁸¹ [OEM customer] stated that *"[OEM customer] has an [...]."*¹⁸²
250. The Commission considers that such practices create additional disincentives for new entrants, in particular in the growing immunoassay segment where downstream products remain on the market longest. Indeed, new entrants may find it harder to recoup investments if only competing for new downstream business, while established competitors enjoy existing revenue streams and economies of scale. In addition, the presence of long-term contracts and the importance of established customer relationships signal that customer preferences do not favour switching. Competitor Agilent stated in this respect that *"established commercial relationship is important for OEM customers. Contracts with the magnetic beads suppliers (in terms of price and volume) are negotiated on a regular basis. In general, OEM customers can get discounts based on larger volumes."*

¹⁷⁷ See replies to question 41 of the Commission's request for information pursuant to Article 11 of the Merger Regulation addressed to competitors of 7 October 2013.

¹⁷⁸ See minutes of conference call with [OEM customer].

¹⁷⁹ See [OEM customer]'s reply to question 35 of the Commission's request for information pursuant to Article 11 of the Merger Regulation addressed to customers of 7 October 2013.

¹⁸⁰ See Promega's reply to question 51 of the Commission's request for information pursuant to Article 11 of the Merger Regulation addressed to competitors of 7 October 2013.

¹⁸¹ See minutes of call with [OEM customer].

¹⁸² See minutes of call with [OEM customer].

251. Against this backdrop, most competitors and all customers responding to the market investigation have indicated that they consider that there has not been significant new entry in the market in the last three years.¹⁸³ In addition, most competitors and customers have indicated that they do not expect any new entry in the close future in the markets for the production and supply of magnetic beads.¹⁸⁴
252. In the light of the significant barriers mentioned above, the Commission concludes that future entry by new players is unlikely.

IV.E.3.c Barriers to switching

253. The Commission considers that OEM customers of polymer-based magnetic beads have substantial barriers to switching between suppliers for polymer-based magnetic beads.
254. First, the market investigation has shown that all competitors and OEM customers consider that it is not possible for OEM customers to switch easily to other magnetic beads suppliers within a short time period.¹⁸⁵ Indeed, OEM customers generally have their downstream products on the market for very long periods (10 or more years). [OEM customer] stated that "*[OEM customer] considers it most likely that, when taking into account all the validation costs and delays, a price increase of less than 30% would not lead to switching.*" Overall, the market investigation has shown that quality and process reliability are two of the most important drivers of competition for suppliers of polymer-based magnetic beads to OEM customers, and all OEM customers have ranked product quality and process reliability as more important factors than price in this respect.¹⁸⁶
255. Second, the market investigation has shown that there are few reliable suppliers for OEM customers and the Transaction would eliminate one of the remaining alternatives with sufficient quality and reliability for OEM customers. [OEM customer] thus stated that "*The number of competing bead suppliers is decreasing. Larger entities supplying different products could fend off new market entries with their established supply connections. Price negotiations will likely become more difficult.*"¹⁸⁷ [OEM customer]

¹⁸³ See replies to question 43 of the Commission's request for information pursuant to Article 11 of the Merger Regulation addressed to customers of 7 October 2013, and replies to question 52 of the Commission's request for information pursuant to Article 11 of the Merger Regulation addressed to competitors of 7 October 2013.

¹⁸⁴ See replies to question 44 of the Commission's request for information pursuant to Article 11 of the Merger Regulation addressed to customers of 7 October 2013, and replies to question 53 of the Commission's request for information pursuant to Article 11 of the Merger Regulation addressed to competitors of 7 October 2013.

¹⁸⁵ See replies to question 54 of the Commission's request for information pursuant to Article 11 of the Merger Regulation addressed to customers of 7 October 2013 and to question 57 of the Commission's request for information pursuant to Article 11 of the Merger Regulation addressed to competitors of 7 October 2013.

¹⁸⁶ See replies to question 29 of the Commission's request for information pursuant to Article 11 of the Merger Regulation addressed to customers of 7 October 2013.

¹⁸⁷ See [OEM customer]'s reply to question 67.1 of the Commission's request for information pursuant to Article 11 of the Merger Regulation addressed to customers of 7 October 2013.

also expressed similar concerns: "*A price increase of 5-10 % in magnetic beads would be a concern for [OEM customer], since they would have to significantly investigate in order to find an alternative supplier.*"¹⁸⁸

256. Third, as outlined in section IV.E.3.b above, established commercial relationships and long-term contracts are an important feature of the relevant market. The Commission considers that such practices constitute an additional barrier to switching away from the Merged Entity for OEM customers. Against this backdrop, the Commission considers that the addition of Thermo Fisher's volumes to Life's existing position would also strengthen the Merged Entity's market power after the merger through reducing the ability of OEM customers to switch away from the Merged Entity.

IV.E.3.d Closeness of competition

257. As noted in section IV.E.3.a above, the Commission considers that the Transaction would essentially amount to a 4 to 3 concentration in the market for the supply of polymer-based magnetic beads to OEM customers, with the only significant competitors of the Parties in this market being Merck Millipore and Agilent.
258. A majority of customers and competitors also see Life Technologies and Thermo Fisher as each other's closest competitors,¹⁸⁹ in particular due to the size of the beads, their consistent size (also referred to as "monodispersity", i.e. narrow size distribution of particles in a batch), their roundness (sphericity) and their downstream applications, as well as to the reliability of their products and global reach. [OEM customer] stated in this respect that "*Life Technologies would be their [OEM customer's] first alternative supplier for Thermo Fisher (and vice versa). Unlike these two companies, other producers are small and focus on niche products. In addition, established suppliers such as Thermo or Life are necessary to ensure reliability of [OEM customer's] supply chain.*"¹⁹⁰
259. As regards the monodispersity of magnetic beads, the Commission first notes that monodispersity appears to be an increasingly important factor for OEM customer choice, in particular for immunodiagnostic applications. [OEM Customer] thus stated that "*A key factor for some uses of magnetic particles, such as diagnostics, is that all magnetic beads should be of the same size (monodispersity).*"¹⁹¹
260. Second, the market investigation has highlighted that market participants view the Parties' beads as good performers as regards this criterion. Competitor Agilent stated for instance that "*Thermo Fisher and Life Technologies' magnetic beads are of a consistent*

¹⁸⁸ See minutes of call with [OEM customer].

¹⁸⁹ See replies to questions 39 and 40 of the Commission's request for information pursuant to Article 11 of the Merger Regulation addressed to customers of 7 October 2013, and replies to questions 46 to 48 of the Commission's request for information pursuant to Article 11 of the Merger Regulation addressed to competitors of 7 October 2013.

¹⁹⁰ See minutes of conference call with [OEM customer].

¹⁹¹ See minutes of conference call with [OEM customer].

size within lots, and these two companies sell one-micron sized magnetic beads."¹⁹² On the contrary, competitor Merck Millipore uses a different production process compared to both Thermo Fisher and Life Technologies, which results in lower monodispersity.¹⁹³ [OEM customer] stated in this respect that "*Both Parties have a unique manufacturing know how regarding polymer-based magnetic beads. Only they can provide a highly uniform product with regards to size distribution and purity and also ensure constant supply. Competitors do either lack the global reach and size to ensure reliable supply or don't have the quality (mainly size distribution and/or uniformity).*"¹⁹⁴

261. As regards the size of magnetic beads, [OEM customer] stated that "*The ideal size for automated instruments is between 1 and 3 microns, as smaller particles tend to leak through the instrument's valves, while bigger particles have a lower specific surface.*"¹⁹⁵ The Commission notes in this respect that Life Technologies achieves most of its magnetic beads sales to OEM customers in that size range, while Thermo Fisher achieves its entire sales within that size range.
262. The Commission also notes that beads of a 1 micron size constitute a growing segment of OEM demand,¹⁹⁶ where Thermo Fisher achieves its entire sales, and on account of which Life Technologies has developed its new MyOne product range, which achieves significant growth.¹⁹⁷ The Commission also notes that competitor Agilent does not currently provide 1 micron size magnetic beads, and has estimated that "*it would take up to 6 years to develop and bring to market the new type of one-micron sized magnetic bead. Agilent estimates that it is probably in the second year of this six-year process.*"¹⁹⁸
263. Overall, the market investigation has shown that, apart from Merck Millipore and Agilent, OEM customers do not view other competitors as having the product quality,

¹⁹² See minutes of conference call with Agilent. Competitor Ademtech also declared that "*While Dynal and Seradyn's magnetic beads exhibit good monodispersity, the key difference between Ademtech's magnetic beads on the one hand and Dynal's and Seradyn's on the other hand is the size of the beads, as the latter's diameters are between 1 and 3 microns, while Ademtech's products are sub-micronic.*"

¹⁹³ See minutes of conference call with Ademtech: "*Other competitors are Merck Millipore, Spherotech and Microsphere. However, the key difference with Ademtech's products is that these companies do not produce monodisperse magnetic beads.*"

¹⁹⁴ See [OEM customer]'s reply to question 67.1 of the Commission's request for information pursuant to Article 11 of the Merger Regulation addressed to customers of 7 October 2013.

¹⁹⁵ See minutes of conference call with [OEM customer].

¹⁹⁶ OEM customer [OEM customer] stated that "*Generally, Original Equipment Manufacturers (OEMs) consider the size of magnetic beads as an important factor (ideally up to 1 micron range). Most suppliers provide either very small particles or particles above the 1 micron range.*" See minutes of conference call with [OEM customer].

¹⁹⁷ The Commission notes that Life Technologies' sales of MyOne beads to OEM customers have increased by [...] % in 2012, compared to an overall growth of sales of polymer-based magnetic beads to OEM customers of [...] %.

¹⁹⁸ Agilent also confirmed the growing importance of this particular bead size during a conference call: "*customer preferences are trending towards 1 micron magnetic beads due to the better precision offered by the smaller beads.*" See minutes of conference call with Agilent.

reliability and scalability of the Parties. Moreover, Thermo Fisher and Life Technologies appear to be closer competitors than the other two significant players in the relevant market. This relative competitive positioning is consistent with the above-mentioned internal document of Thermo Fisher, [...].¹⁹⁹ This competitive interaction is also corroborated by an internal document of Life Technologies, [...].²⁰⁰

264. The Commission concludes that the Parties are likely each other's closest competitors as regards the supply of polymer-based magnetic beads to OEM customers.

IV.E.3.e Thermo Fisher appears to be a significant competitive constraint on Life Technologies' existing strong position

265. The Parties have claimed that Thermo Fisher is a small player in the market and will not compete aggressively going forward.

266. The Commission notes in this respect that [...].²⁰¹ [...].

267. Moreover, the historical sales figures of Thermo Fisher show that sales to OEM customers have increased by approx. [...] from 2010 to 2012, at [...] pace than Life Technologies'.²⁰² Going forward, [...]. The Commission notes that these forecasts are consistent with Thermo Fisher being a significant competitive constraint both today and in years to come in the relevant market. [...].

268. The Commission also notes that Thermo Fisher is present in the same segments of demand as Life Technologies (sample preparation and immunodiagnosics). Competitor Agilent stated in this respect that "*Life Technologies, through the acquisition of Dynal, has approximately 50 % of sales as regards magnetic beads for immunodiagnosics. Life Technologies is present also in the other market segments of OEM demand. Thermo Fisher, through the acquisition of Seradyn, has a sizable presence in the supply to OEM customers across segments.*"²⁰³

269. Against this backdrop, a number of OEM customers have expressed concerns as regards the market power of the Merged Entity. For instance, [OEM customer] stated that "*[t]aking into account the market as a whole, Thermo Fisher and Life Technologies would dominate the market for magnetic beads and this could have an impact on prices.*"²⁰⁴ Most competitors of the Parties have expressed similar concerns, Chemicell

¹⁹⁹ See [...].

²⁰⁰ See [...].

²⁰¹ See [...].

²⁰² The Commission notes that Thermo Fisher's sales growth for polymer-based magnetic beads to OEM customers [...].

²⁰³ See minutes of call with Agilent.

²⁰⁴ See minutes of call with [OEM customer]. See also minutes of call with customer [OEM customer]: "*Such a transaction between market leaders will probably mean less pressure to innovate and lead to harder-to-negotiate supply agreements.*" See also paragraph 54255 above.

stating for instance that "*after the transaction the new entity would have a near monopoly on this market.*"²⁰⁵

270. In the light of the above, the Commission concludes that Thermo Fisher appears to be a significant competitive constraint on Life Technologies' existing strong position.

IV.E.3.f Other countervailing arguments of the Parties

271. The Parties have submitted that large OEM customers are able to self-supply and could therefore defeat any price increase of the Parties in the relevant market. The Parties have also submitted that large OEM customers have sufficient buyer power to defeat any price increase by magnetic bead suppliers.
272. Contrary to the Parties' claim, the in-house capacity of OEM customers does not appear to constitute a significant competitive constraint on polymer-based magnetic beads suppliers.
273. First, the market investigation has shown that, as outlined in paragraph 248 above, even large OEM customers of the Parties are unable to manufacture polymer-based magnetic beads of the same quality and reliability as the Parties. [OEM customer] stated in this respect that "*We do everything in-house with silica-based magnetic beads but not polymer-based magnetic beads because we neither have knowhow nor the production facilities to do polymerization reactions.*"
274. Second, neither competitors nor customers of polymer-based magnetic beads view in-house capacity as a credible alternative to third-party suppliers. Third, the market investigation has not revealed any example of switching by OEM customers of polymer-based magnetic beads from a third-party supplier to magnetic beads manufactured in-house.²⁰⁶
275. As regards the Parties' claims of buyer power, the Commission first notes that the Parties have also claimed that Life Technologies already today commands a [...] price premium over its competitors' products.²⁰⁷ It would therefore appear that OEM customers, in spite of high volume orders, are not able to defeat potential price increases, possibly due to Life Technologies' established position as market leader.

²⁰⁵ See minutes of call with Chemicell.

²⁰⁶ See replies to questions 55 to 57 of the Commission's request for information pursuant to Article 11 of the Merger Regulation addressed to customers of 7 October 2013 and questions 58 and 59 of the Commission's request for information pursuant to Article 11 of the Merger Regulation addressed to competitors of 7 October 2013.

²⁰⁷ See for instance submission of the Parties of 31 October 2013. The Parties presented a comparison of end-use prices for streptavidin-coated magnetic beads in order to assess the closeness of competition of various suppliers in terms of prices. However, the Commission considers that comparing end-use prices is not informative on the price positioning with relation to OEM customers, who typically order customized products in bulk from a much smaller set of potential suppliers (see section IV.E.1.c above).

276. Second, the Commission notes that the inelastic demand conditions outlined in section IV.E.3.c above and in particular the inability of OEM customers to switch to alternative suppliers in a short time frame are not supportive of buyer power constituting a significant factor in the relevant market.
277. Third, the Commission notes that in order to effectively prevent price increases, buyer power (if any) must also persist and remain effective following the merger, as a merger between two suppliers may reduce buyer power if it thereby removes a credible alternative.²⁰⁸ In the Commission's view, a significant supply alternative will be removed after the merger, and it is therefore unlikely that buyer power would be sufficient to defeat anticompetitive outcomes.

IV.E.3.g Conclusion

278. In the light of the above, the Commission considers that the Transaction would eliminate a substantial competitive constraint to Life Technologies' strong existing position. The Transaction therefore raises serious doubts regarding the production and supply of polymer-based magnetic beads to OEM customers. However, the proposed commitments would effectively remove the serious doubts raised, as analysed in paragraph 429 below.

IV.F. HLA TYPING

279. Human Leukocyte Antigen ("HLA")²⁰⁹ typing is the first stage in transplant diagnostics, which is used to determine the compatibility of the donor's organ with recipient in order to reduce the risk of transplant rejection.
280. HLA typing is used for both solid organ transplant ("SOT") and bone marrow transplants ("BMT") and can be conducted by using four types of tests: (i) serology; (ii) Sequence Specific Primers ("SSP"); (iii) Sequence Specific Oligonucleotides ("SSO"); and (iv) Sequence Based Typing ("SBT").
281. The Parties' activities only overlap in the supply of SSP typing kits.

IV.F.1 Product market definition

282. The Notifying Party submits that each type of HLA typing tests (serology, SSP, SSO and SBT) constitutes a distinct product market and that a further segmentation in terms of resolution (low vs high)²¹⁰ should not be considered.
283. There are no Commission precedents dealing specifically with HLA typing.

²⁰⁸ See Commission Guidelines on the assessment of horizontal mergers under the Council Regulation on the control of concentrations between undertakings, OJ C 31, 5.2.2004, p. 5, paragraph 67.

²⁰⁹ Human Leukocyte Antigen is a key component of the immune system.

²¹⁰ High resolution SSP kits allow identifying HLA alleles to at least four-digit level while low resolution SSP kits identify alleles at two-digit level.

284. In line with the Notifying Party's claims, respondents to the Commission's requests for information confirmed that there are significant differences between the various types of HLA typing tests (serology, SSP, SSO and SBT) in terms of characteristics, performance, price and technologies used.²¹¹
285. From a supply-side perspective, the market investigation confirmed that each of HLA typing tests requires different technologies and expertise. Thus a supplier of SSP typing kits would not be able to start production and sales of other types of HLA typing kits swiftly and without significant costs.²¹² By contrast, the market investigation showed that although there are differences between high and low resolution SSP typing kits, a supplier of low resolution SSP typing kits could easily and without significant costs enter the supply of high resolution SSP typing kits.²¹³
286. From a demand-side perspective, most of the replies to the Commission's requests for information confirmed that SSP typing kits and other types of HLA typing kits are distinct products fulfilling different needs. Moreover, a number of customers indicated that SSP typing kits can also be used to resolve ambiguities found when using other testing (e.g. SBT or SSO) in some specific cases. For example, SSP high resolution is generally used to resolve SBT ambiguities.²¹⁴
287. In the light of the above, the Commission considers that SSP typing kits constitute a separate product market from other types of HLA typing kits (serology, SSO and SBT). For the purpose of this decision, the Commission considers that a further segmentation between high and low resolution may be left open as this would not change the outcome of the competitive assessment in this case.

IV.F.2 Geographic market definition

288. The Notifying Party considers that the relevant geographic market for HLA typing, including SSP typing kits, is EEA-wide due to the following reasons: (i) the suppliers of SSP typing kits are active globally; (ii) the transportation and storage costs are minimal; (iii) there is a common regulatory framework across the EEA and the products are technically the same; and (iv) the prices between Member States are similar.
289. The responses to the Commission's requests for information indicated that suppliers have one or few production facilities that supply HLA typing kits all across the EEA and the rest of the world. Moreover, EEA customers have the same technical and commercial needs and there are not significant barriers in terms of costs or regulatory

²¹¹ See replies to question 13 of the Commission's request for information pursuant to Article 11 of the Merger Regulation addressed to competitors of 9 October 2013. See replies to question 12 of the Commission's request for information pursuant to Article 11 of the Merger Regulation addressed to customers of 9 October 2013

²¹² See replies to question 17 of the Commission's request for information pursuant to Article 11 of the Merger Regulation addressed to competitors of 9 October 2013

²¹³ See replies to questions 23 and 24 of the Commission's request for information pursuant to Article 11 of the Merger Regulation addressed to competitors of 9 October 2013

²¹⁴ See replies to questions 14 and 16 of the Commission's request for information pursuant to Article 11 of the Merger Regulation addressed to customers of 9 October 2013

barriers to source HLA typing kits from one geographic area to another within EEA. Nevertheless, some respondents claimed that prices differs from one country to other and some customers prefer purchasing HLA typing kits from suppliers located near them.²¹⁵

290. For the purpose of this decision, the Commission considers that the precise geographic market definition can be left open as this would not change the outcome of the competitive assessment in this case.

IV.F.3 Assessment

291. The Parties' activities overlap only in the supply of SSP typing kits. At EEA level, the Parties' combined market share in the supply of SSP typing kits is [10-20]%. At national level, the Parties' highest market shares would be [50-60]% in Austria and [30-40]% in the United Kingdom.²¹⁶
292. On a narrower market distinguishing between SSP *high* and SSP *low* resolution, the Parties' combined market shares at EEA level would be [10-20]% and [5-10]%, respectively. At national level, the Parties' highest market shares for SSP high resolution would be [30-40]% in Cyprus and [30-40]% in the United Kingdom.²¹⁷ On a possible market for SSP low resolution at national level, the Parties' highest market shares will be [90-100]% in Austria, [50-60]% in Cyprus and [40-50]% in the United Kingdom.²¹⁸
293. Post-Transaction, the remaining strong competitors will be Allenex/Olerup, Immucor/Genprobe, BioRad, BAG Healthcare and Abbot.
294. The Notifying Party submits that the Transaction would not give rise to a significant impediment to effective competition since the Parties' products for HLA typing are complementary, the Parties will achieve a modest combined share in the only overlap segment for HLA typing, i.e. SSP typing kits, and the Parties will face several strong competitors post-Transaction.
295. The vast majority of the respondents to the Commission's requests for information indicated that they do not expect that the Transaction will have a negative impact on competition and/or prices.²¹⁹

²¹⁵ See replies to questions 27- 30 of the Commission's request for information pursuant to Article 11 of the Merger Regulation addressed to competitors of 9 October 2013. See replies to questions 27- 32 of the Commission's request for information pursuant to Article 11 of the Merger Regulation addressed to customers of 9 October 2013.

²¹⁶ In the remaining national markets, the Parties' combined position is limited or the increment brought about by the Transaction is insignificant.

²¹⁷ In the remaining national markets, the Transaction would lead only to affected markets in Italy and Greece with a combined market share of [20-30]% with and an insignificant increment, respectively.

²¹⁸ In the remaining national markets, the Transaction would lead only to an affected markets in Sweden with a combined market share of [20-30]%.

²¹⁹ See replies to questions 53 and 54 of the Commission's request for information pursuant to Article 11 of the Merger Regulation addressed to competitors of 9 October 2013. See replies to questions 54 and 55 of

296. The market investigation showed that competitors are active across all Member States and a supplier would be able to start supplying easily and without significant costs to other Members States.²²⁰ Moreover, most of the customers indicated that there are sufficient alternative and credible competitors.²²¹
297. In addition, the market investigation confirmed that there have been new entries during the last three years, the market is not characterised by capacity constraints and the Parties are not viewed as the closest competitors.²²²
298. Finally, it should be noted that even under the narrowest hypothetical geographic scope for HLA typing and sub-segments (low and high resolution),²²³ the Transaction would not have a negative impact on competition. In the United Kingdom, the increment brought about the Transaction is *de minimis* (less than 5%). In Austria and Cyprus, the Parties would have small combined sales, namely [...] for total Thermo Fisher's sales in Austria and [...] for total Life Technologies' sales in Cyprus. In addition, as mentioned above, the Parties would face competition constraints from strong competitors who are active across the EEA and able to increase the production of SSP typing kits easily and without significant costs.
299. In the light of the above, the Commission concludes that the Transaction does not raise serious doubts as to its compatibility with the internal market with respect to the supply of HLA typing kits.

IV.G. PROTEIN BIOLOGY

300. Protein biology is the study of the structure and function of proteins, an essential constituent of cells. The study of proteins is central to understanding cellular functioning and, in particular, to better understanding the link between proteins, genes and diseases. Researchers and biopharmaceutical companies study defective proteins that are implicated in particular diseases in order to develop new drugs that either alter the shape of a defective protein or mimic a missing one.
301. The Transaction would lead to affected markets in the supply of products for the following techniques used in the study of proteins.

the Commission's request for information pursuant to Article 11 of the Merger Regulation addressed to customers of 9 October 2013.

²²⁰ See replies to questions 27, 34 and 35 of the Commission's request for information pursuant to Article 11 of the Merger Regulation addressed to customers of 9 October 2013

²²¹ See replies to question 38 of the Commission's request for information pursuant to Article 11 of the Merger Regulation addressed to customers of 9 October 2013

²²² See replies to questions 48-50 of the Commission's request for information pursuant to Article 11 of the Merger Regulation addressed to competitors of 9 October 2013

²²³ This would be at national level, where the Parties would have a strong position in Austria, Cyprus and the United Kingdom.

IV.G.1 SDS-PAGE

302. SDS-PAGE (sodium dodecyl sulphate polyacrylamide gel electrophoresis) is a technique used to separate single or multiple proteins from a complex mixture by exploiting differences in the electrophoretic mobility of different protein molecules.
303. The Parties' activities overlap in the supply of vertical gel boxes, power suppliers, pre-cast gels, standards and gel stains ("the SDS-PAGE products").

IV.G.1.a Product market definition

304. The Notifying Party submits that each of the SDS-PAGE products constitutes a distinct product market and that no further segmentation should be considered. The market investigation has brought no elements pointing to a different conclusion on these product markets.

IV.G.1.b Geographic market definition

305. The Notifying Party submits that the markets for SDS-PAGE products are at least EEA-wide in scope. The market investigation has brought no elements pointing to different conclusions on these geographic markets.

IV.G.1.c Assessment

306. In the light of the elements referred to in paragraph 12 above, the Transaction does not give rise to serious doubts as to its compatibility with the internal market in any of the potential markets comprised within this area.

IV.G.2 Western Blotting

307. Western blotting is a technique used to identify specific proteins after they have been isolated by electrophoresis. With respect to products used in Western blotting, the Parties' activities overlap in the supply of transfer boxes, membranes and chemiluminescent substrates.

IV.G.2.a Product market definition

308. The Notifying Party submits that each of the abovementioned three Western blotting products constitutes a separate product market. Within membranes, the Notifying Party submits that the two types of Western blotting membranes (nitrocellulose or polyvinylidene difluoride (PVDF)) are interchangeable.
309. The market investigation confirmed that transfer boxes, membranes and chemiluminescent substrates are separate products, because each of them fulfils entirely different needs. However, respondents to the Commission's requests for information considered that the two types of Western blotting membranes are different in terms of performance, characteristics and prices.
310. The Commission considers that it can be left open whether nitrocellulose membranes and PVDF membranes would constitute separate product markets, as this would not change the outcome of the competitive assessment in this case.

IV.G.2.b Geographic market definition

311. The Notifying Party submits that the markets for Western Blotting products are at least EEA-wide in scope. The market investigation has brought no elements pointing to different conclusions on these geographic markets.

IV.G.2.c Assessment

312. In the light of the elements referred to in paragraph 12 above, the Transaction does not give rise to serious doubts as to its compatibility with the internal market in any of the potential markets comprised within this area.

IV.G.3 Protein Modification

313. Protein modification refers to the artificial modification of the properties of the original protein in order to study their shape and how they interact with other molecules.

314. There are three main methods which use different reagents to modify proteins: (i) chemical modification; (ii) cross-linking and (iii) adding proteases. The Parties' activities overlap in the supply of these three types of protein modification reagents.

IV.G.3.a Product market definition

315. The Notifying Party submits that the three types of protein modification reagents perform different functions. The market investigation seems to confirm that the three reagents constitute different markets since they do not appear substitutable due to the differences in terms of characteristics, performance and prices.

IV.G.3.b Geographic market definition

316. The Notifying Party submits that the markets for protein modification reagents are at least EEA-wide in scope. The market investigation has brought no elements pointing to different conclusions on these geographic markets.

IV.G.3.c Assessment

317. In the light of the elements referred to in paragraph 12 above, the Transaction does not give rise to serious doubts as to its compatibility with the internal market in any of the potential markets comprised within this area.

IV.G.4 Dyes

318. Dyes are products used across a range of techniques mentioned above to create colour, chemiluminescence or fluorescence for detecting, identifying and quantifying a target molecule. The Parties' activities overlap in the supply of reactive dyes.

IV.G.4.a Product market definition

319. The Notifying Party submits that reactive dyes are used in applications that require a significantly higher level of specificity and sensitivity of analysis than other types of dyes can provide, and thus there is limited substitutability from a demand-side perspective. The market investigation has brought no elements pointing to a different conclusion on this product market.

IV.G.4.b Geographic market definition

320. The Notifying Party submits that the markets for protein modification reagents are at least EEA-wide in scope. The market investigation has brought no elements pointing to different conclusions on these geographic markets.

IV.G.4.c Assessment

321. In the light of the elements referred to in paragraph 12 above, the Transaction does not give rise to serious doubts as to its compatibility with the internal market in any of the potential markets comprised within this area.

IV.H. FLUOROMETERS

322. Fluorometers are devices used in fluorescent spectroscopy which involves the examination of the intensity and wavelength of emissions of light from electrons in molecules.

323. There are four types of fluorometers: (i) filter fluorometers, (ii) spectrofluorometers, (iii) luminometers and (iv) lifetime fluorometers. The Parties' activities only overlap in the supply of filter fluorometers.

IV.H.1 Product market definition

324. The Notifying Party submits that it is appropriate to adopt a product market encompassing all four types of fluorometers since there is a degree of demand-side substitutability, because all fluorometers utilise a similar process and are capable of quantifying nucleic acid or protein samples. In addition, the Notifying Party submits that the manufacturers tend to supply different types of fluorometers rather than focusing on one particular type.

325. The responses to the Commission's requests for information showed that there are significant differences between the different types of fluorometers for example in terms of price, performance, suitability to particular processes and the number of suppliers.²²⁴

326. From a supply-side perspective, the market investigation showed that the suppliers of fluorometers are not able to start production and sales of other types of fluorometers (where they are not already active) swiftly and without significant costs, mainly due to time and investment associated with the development of a new instrument.²²⁵

327. From a demand-side perspective, most of the replies to the Commission's requests for information confirmed that the different types of fluorometers are distinct products

²²⁴ See replies to question 29 of the Commission's request for information pursuant to Article 11 of the Merger Regulation addressed to competitors of 9 October 2013. See replies to question 28 of the Commission's request for information pursuant to Article 11 of the Merger Regulation addressed to customers of 10 October 2013.

²²⁵ See replies to question 28 of the Commission's request for information pursuant to Article 11 of the Merger Regulation addressed to competitors of 9 October 2013.

fulfilling distinct needs. Many customers indicated that the type of the fluorometer is application-specific.²²⁶

328. However, for the purpose of this decision, the Commission considers that the precise product market definition can be left open as this would not change the outcome of the competitive assessment in this case.

IV.H.2 Geographic market definition

329. The Notifying Party submits that the market for fluorometers is at least EEA-wide in scope.

330. The responses to the Commission's requests for information indicated that there are no barriers as such to sourcing fluorometers from outside the EEA, although transport costs and delivery time are mentioned in many replies as possible barriers.²²⁷

331. For the purpose of this decision, the Commission considers that the precise geographic market definition can be left open as this would not change the outcome of the competitive assessment in this case.

IV.H.3 Assessment

332. In a potential market encompassing all four types of fluorometers, the Parties' combined market share would be [5-10]% at EEA level. At worldwide level, the Parties' combined market share would be [5-10]%.

333. On a narrower potential market encompassing only filter fluorometers, the Parties' combined market share in the EEA would be [40-50]% with an increment of [5-10]% by Thermo Fisher. At worldwide level, the Parties' combined market share for filter fluorometers would be [50-60]% with an increment of [10-20]% by Thermo Fisher.

334. Post-Transaction, there will be enough competitors in the market such as Promega, Jasco Jenway, Agilent Technologies, Bio-Rad and Expedeon.

335. The Notifying Party submits that the Transaction would not give rise to anti-competitive effects in the fluorescent spectroscopy space. The Notifying Party submits that the Parties' presence [...].

336. Most of the respondents to the Commission's requests for information indicated that they do not expect that the Transaction will have a negative impact on the market for fluorometers. The majority of customers indicated that there will still be many alternative suppliers in the market.²²⁸

²²⁶ See replies to question 29 of the Commission's request for information pursuant to Article 11 of the Merger Regulation addressed to customers of 10 October 2013.

²²⁷ See replies to question 34 of the Commission's request for information pursuant to Article 11 of the Merger Regulation addressed to customers of 10 October 2013.

²²⁸ See replies to question 49 of the Commission's request for information pursuant to Article 11 of the Merger Regulation addressed to customers of 10 October 2013.

337. Furthermore, the market investigation showed that customers tend to source fluorometers from more than one supplier²²⁹ and the majority of respondents did not identify a clear market leader for fluorometers.²³⁰ In addition, the majority of respondents indicated that they can easily switch between various suppliers.²³¹
338. In the light of the above, the Transaction does not give rise to serious doubts as to its compatibility with the internal market in any of the potential markets comprised within this area.

IV.I. DISTRIBUTION

339. Thermo Fisher is active as a distributor of both its own and third party products on a worldwide basis, and in particular in the EEA, through its distribution business Fisher Scientific (referred to hereafter as the "Customer Channels Group" or "CCG"). CCG distributes a broad range of laboratory and life science products, including laboratory equipment (such as microscopes, weighing balances, freezers and centrifuges) and consumables (such as plastic ware, glassware, chemicals, reagents and laboratory supplies). Life Technologies is only active as a manufacturer²³² and uses [...] direct sales as a route to market in the EEA. However, Life Technologies also sells a proportion of its products through third-party distributors, including CCG.
340. The Transaction therefore gives rise to vertically affected markets in the distribution of laboratory and life science products.

IV.I.1 Product market definition

341. The Notifying Party submits, in line with Commission precedents,²³³ that distributors are able to offer life science customers a wide range of products from different manufacturers, allowing customers to purchase many products from a single catalogue, and simplifying customers' procurement processes, and that the components of this service do not differ according to the nature of the product being distributed. The Notifying Party therefore submits that the relevant product market for distribution comprises the distribution of all laboratory and life science products.

²²⁹ See replies to question 27 of the Commission's request for information pursuant to Article 11 of the Merger Regulation addressed to customers of 10 October 2013.

²³⁰ See replies to question 41 of the Commission's request for information pursuant to Article 11 of the Merger Regulation addressed to competitors of 9 October 2013. See replies to question 36 of the Commission's request for information pursuant to Article 11 of the Merger Regulation addressed to customers of 10 October 2013.

²³¹ See replies to question 38 of the Commission's request for information pursuant to Article 11 of the Merger Regulation addressed to customers of 10 October 2013.

²³² Life Technologies also has a *de minimis* activity in the reselling of third party products, of less than [...] in 2012.

²³³ See case COMP M. 4242 *Thermo Electron/Fisher Scientific*.

342. The market investigation has confirmed that most distributors offer a range of products encompassing both life science products and other laboratory equipment and consumables. Moreover, customers source through distributors for reasons including convenience, one-stop-shopping and ease of access to a wide range of products.²³⁴
343. The market investigation has also confirmed that the distribution of clinical diagnostics, including for instance HLA typing tests (see section IV.F above), constitutes a separate product market due to specific regulatory and technical requirements, the importance of long term contracts and exclusivity agreements, as well as different levels of sales support, after-sales service and technical input from salespersons.²³⁵
344. The Commission therefore concludes that the relevant product market is likely to be the distribution of laboratory and life science products.

IV.I.2 Geographic market definition

345. In *Thermo Electron/Fisher Scientific*, the Commission has taken the view that the appropriate geographic market definition for distribution of laboratory products is national in scope.
346. The market investigation has confirmed that most distributors operate in a single Member State,²³⁶ and that most of the cross-border distributors such as CCG, VWR, Sigma-Aldrich, Dominique Dutscher and 2B Scientific organize their sales forces at national level and offer different catalogues in different Member States.²³⁷
347. Moreover, most distributors consider that customer prices for life science products and conditions for sales (such as the importance of tenders, the scope of such tenders, the presence of centralized purchasing, etc.) differ significantly between different EEA countries.²³⁸
348. Finally, most distributors have indicated that commercial negotiations with their customers for their procurement of life science products take place at national level.²³⁹

²³⁴ See replies to question 7 of the Commission's request for information pursuant to Article 11 of the Merger Regulation addressed to distributors of 10 October 2013.

²³⁵ See replies to questions 9 and 10 of the Commission's request for information pursuant to Article 11 of the Merger Regulation addressed to distributors of 10 October 2013. The Commission notes that CCG is not active in the distribution of clinical diagnostics.

²³⁶ See replies to question 6 of the Commission's request for information pursuant to Article 11 of the Merger Regulation addressed to distributors of 10 October 2013.

²³⁷ See replies to questions 11 and 12 of the Commission's request for information pursuant to Article 11 of the Merger Regulation addressed to distributors of 10 October 2013.

²³⁸ See replies to questions 13 and 14 of the Commission's request for information pursuant to Article 11 of the Merger Regulation addressed to distributors of 10 October 2013.

²³⁹ See replies to question 15 of the Commission's request for information pursuant to Article 11 of the Merger Regulation addressed to distributors of 10 October 2013.

349. In light of the above, the Commission concludes that the relevant geographic market for the distribution of laboratory and life science products is national in scope.

IV.I.3 Assessment

350. The market investigation has confirmed the basic characteristics of the markets for the distribution of laboratory and life science products, as outlined by the Commission in *Thermo Electron/Fisher Scientific*.

IV.I.3.a Competitive dynamics in distribution markets

351. National markets for the distribution of laboratory and life science products are characterised by a high number of players. Whereas the vast majority of distributors are only active in one Member State, some operate in more than one, such as Dominique Dutscher (UK and France), Euroclone (Italy, Spain, Greece, Germany), Omnilab (Germany and Netherlands) or Analis (France and Belgium). Only VWR and CCG and, to a limited extent, Sigma-Aldrich, have a truly pan-European presence across the EEA. In certain Member States, direct sales by manufacturer might play an important role, in particular for the more technically sophisticated products.

352. As mentioned in section IV.I.1 above, distributors of laboratory and life science products usually offer a range of products which they source from different manufacturers. The basket of goods provided by distributors comprises the offering of a very wide range of products (in the order of hundreds or thousands) to customers as well as some ancillary services, such as logistics, inventory management, marketing, product advisory and if necessary, after-sales services. The market investigation has also confirmed that the majority of distributors offer competing brands in their product portfolio.²⁴⁰

IV.I.3.b Impact of the Transaction

353. During the market investigation some respondents indicated that the Merged Entity might be in a position to foreclose its competitors from the market. The Commission has carefully analysed the vertical effects of the merger and concluded that the Merged Entity would lack the ability and incentive to restrict access to input for distributors or to foreclose access of competing manufacturers to customers for the reasons outlined below.

IV.I.3.b.a Input foreclosure

354. According to the concerns voiced by some market players, the Merged Entity may decide to streamline its route to market by ending Thermo Fisher's and Life Technologies' supply relationships with independent distributors and focusing their route to market on CCG, thereby foreclosing other distributors from access to the Merged Entity's portfolio. Overall, a number of the market players indicating the risk of input foreclosure were some of the Parties' independent distributors whose main concerns were related to the possible termination of their supply contracts

²⁴⁰ See replies to question 21 of the Commission's request for information pursuant to Article 11 of the Merger Regulation addressed to distributors of 10 October 2013.

post Transaction.²⁴¹ Final customers did not voice concerns with regard to the vertical effects of the Transaction.

355. The market investigation has confirmed that there are no "must-have" brands for distributors of laboratory and life sciences products.²⁴² Streamlining the sale of Thermo Fisher and/or Life Technologies products via the new Merged Entity would therefore not change the current competitive environment from the point of view of distributors, except in the specific product areas where the Merged Entity may acquire market power through the Transaction. These product areas are analysed in sections IV.C to IV.H above, and the proposed commitments would effectively remove the serious doubts raised, as analysed in section V.B below.
356. The Commission further notes that as regards other product areas where Life Technologies enjoyed a strong position before the merger, the Transaction will not change the competitive environment from the point of view of other distributors, given that more than [...] % of Life Technologies' 2012 EEA sales were realised through direct sales and that CCG was already [...] EEA distributor before the merger as regards Life Technologies' remaining sales.²⁴³
357. Moreover, as indicated by the Parties and confirmed by the market investigation, final costumers' primary aspect of choice relates to products they wish to acquire and not to a certain distributor(s).²⁴⁴ Final customers typically apply either a multi-sourcing strategy or conclude agreements based on tender procedures with a certain distributor for a certain period of time. According to the market investigation, switching to another distributor does not appear to be problematic for customers. Given the purchasing patterns in the industry, even if the Merged Entity would decide to sell only via its own distribution system, final customers would have the possibility to switch and to be supplied by other distributors with alternative products.
358. Finally, as less than [...] % of Life Technologies' sales in the EEA are realised through CCG, that CCG achieves market shares below 15% in all national downstream distribution markets,²⁴⁵ [...],²⁴⁶ the Merged Entity would be unlikely to recoup at distribution level or through margins on direct sales the losses incurred at manufacturing level by the exclusion of efficient distributors commanding access to a particular customer base. It does not therefore seem to be profitable for the Merged Entity to exclude other efficient distributors from its sales.

²⁴¹ See replies to question 48 of the Commission's request for information pursuant to Article 11 of the Merger Regulation addressed to distributors of 10 October 2013.

²⁴² See replies to question 38 of the Commission's request for information pursuant to Article 11 of the Merger Regulation addressed to distributors of 10 October 2013

²⁴³ See Form CO, paragraph 6.34.

²⁴⁴ As regards the areas where the Merged Entity would likely acquire market power through the Transaction, the proposed commitments would effectively remove the serious doubts raised, as analysed in section V.B below.

²⁴⁵ See Parties' estimates in General Annex 18 of the Form CO.

²⁴⁶ See transaction data submitted by the Parties.

359. The Commission therefore concludes that the Transaction does not raise serious doubts as to its compatibility with the internal market with respect to possible input foreclosure towards other distributors of laboratory and life science products in the EEA.

IV.I.3.b.b Customer foreclosure

360. During the market investigation, a number of manufacturers of life science products expressed concerns that the Merged Entity might decide not to distribute any more competing manufacturers' products or to substantially worsen the terms of such distribution, thereby excluding competitors' access to CCG's distribution network and ultimately to final customers. Competitor Promega stated in this respect that "[f]requently, many institutions have contracts with VWR or Fisher slating them as the preferred vendor, making it difficult for the end user to purchase directly from any other company."²⁴⁷

361. The Notifying Party submits that CCG will continue to operate on a competitively neutral, arm's length basis from Thermo Fisher's other businesses and will continue to distribute products supplied by a wide range of third party manufacturers.

362. In assessing the likelihood of a customer foreclosure scenario, the Commission has first examined whether the Merged Entity would have the ability to foreclose access to downstream markets by reducing its purchases from its upstream rivals.²⁴⁸ In this respect, for customer foreclosure to be a concern, it must be the case that the vertical merger involves a company which is an important customer with a significant degree of market power in the downstream market.²⁴⁹

363. First, the Commission notes that across the EEA as a whole, VWR is the clear market leader in terms of sales and achieves significantly higher market shares than CCG in the markets for the distribution of laboratory and life science products.²⁵⁰ This finding also holds true in Member States where CCG achieves significant presence. With its size and product coverage, VWR will remain the strongest distributor in the market, especially for customers that tend to consolidate purchases. In this respect, the market investigation has confirmed that other manufacturers see VWR as a stronger distributor than CCG in Europe. Lonza stated for instance that "*VWR is the main global distributor besides Fisher and has very few own brands (private label only). Lonza also distributes the same products through VWR because many pharma companies have VWR as a*

²⁴⁷ See Promega's reply to question 158 of the Commission's request for information pursuant to Article 11 of the Merger Regulation addressed to competitors of 7 October 2013.

²⁴⁸ Paragraph 59, Non-horizontal Mergers Guidelines

²⁴⁹ Paragraph 61, Non-horizontal Mergers Guidelines

²⁵⁰ The Notifying Party estimates that VWR achieved sales of third party products of EUR 1.2 billion across the EEA in 2012, compared with CCG's sales of third party products of EUR [...]. See also General Annex 18 to the Form CO for market shares at national level.

preferred supplier. While VWR is stronger in Europe, globally Fisher is the number one and is performing better."²⁵¹

364. Second, the Commission considers that direct sales by competing manufacturers represent a real alternative for life science manufacturers to reach final customers. The Commission notes in this respect that direct sales represent the main route to market for the Parties overall. In the case of Life Technologies, direct sales represent more than [...] % of its revenues from life science products in the EEA overall.²⁵² For Thermo Fisher, the proportion of direct sales is also high (with the exception of fluorescent spectroscopy where sales are mainly done through third party-distributors), reaching [...] % in the segment of cell culture for bioproduction. In addition, Thermo Fisher transaction data shows that a proportion of customers purchase similar products through direct sales and through CCG. According to the market investigation, other important suppliers such as Roche, Merck Millipore, Sigma-Aldrich, Bio-Rad, New England Biolabs and Promega have direct distribution capabilities and hence would not be vulnerable to a hypothetical customer foreclosure strategy.
365. Third, the Commission notes that the only suppliers that could be potentially foreclosed as a result of the Transaction would be those that, at present, choose third party distributors to sell part of or their entire product ranges. In this respect, the Parties have provided market shares in the market for distribution of third party products (i.e. excluding sales of own products). Overall in the EEA, the Parties' combined market share²⁵³ is in the range of [5-10]%.²⁵⁴ At national level, this percentage is higher only in the Czech Republic ([10-20]%), France ([5-10]%), Ireland ([10-20]%), the Netherlands ([10-20]%), Spain ([5-10]%) and the UK ([10-20]%). The Commission therefore concludes that CCG's shares in the distribution of third party products are below [10-20] % in all Member States, and do not support claims of market power at distribution level.²⁵⁵
366. Fourth, the market investigation has also shown that most market participants do not see any significant obstacles for a manufacturer of life science products to find distribution partners in the EEA.²⁵⁶ In addition, most respondents to the market investigation indicated that final customers multi-source among distributors of laboratory and life

²⁵¹ See minutes of conference call with Lonza. Eppendorf also declared that "*Fisher Scientific is an important contractual partner everywhere in Europe (...), second to VWR. There are also local distributors and manufacturers' direct sales force.*"

²⁵² See transaction data submitted by the Parties.

²⁵³ See footnote 232 above.

²⁵⁴ Parties' estimates.

²⁵⁵ The Commission further notes that significant competitors to CCG exist in all above-mentioned Member States, including VWR and Sigma-Aldrich. In addition, according to Parties' estimates, Dominique Dutscher enjoys a market position of [5-10] % in France, while SLS enjoys a [5-10] % market share in the UK. The Commission notes that Westburg is also a significant competitor in the Netherlands, while Cultek and Teknovas have a substantial presence in Spain.

²⁵⁶ See replies to question 41 of the Commission's request for information pursuant to Article 11 of the Merger Regulation addressed to distributors of 10 October 2013.

science products.²⁵⁷ Furthermore, most distributors have indicated that they are able and willing to distribute another brand in a variety of areas.²⁵⁸ The Commission therefore considers that there is no barrier for competing manufacturers to distribute their products through third-party distributors.

367. Fifth, the Commission notes that some of CCG's contracts with third party suppliers include [...],²⁵⁹ [...].²⁶⁰
368. As regards concerns raised by a few market participants concerning foreclosure strategies limited to large pharma and biotech companies that tend to consolidate their supplies, [...].²⁶¹ This indicates that this customer segment may possess a degree of buyer power vis-à-vis suppliers and distributors for their overall purchases of laboratory and life science products.²⁶² Moreover, even for this customer segment, CCG would continue to face competition from VWR, Sigma-Aldrich and other large competitors present across the board in the supply of life science products.²⁶³
369. The Commission concludes that even if the Merged Entity were to decide to entirely cease current distribution agreements with competing manufacturers, these competitors will not be foreclosed from distributing their products in the EEA, either through direct sales or through other distributors. Alternative available distributors include the leading independent distributor VWR which has a larger market share than CCG in all European markets and a large number of cross-border and national distributors.
370. The Commission concludes that the Merged Entity will be likely unable to foreclose customers from other life science manufacturers through the CCG distribution platform after the merger.
371. Finally, the Transaction does not appear, in any event, to significantly increase the economic incentives for Thermo Fisher to exclude other manufacturers as CCG suppliers. In 2012, CCG derived [...] of its EEA revenues from distributing Thermo

²⁵⁷ See replies to question 37 of the Commission's request for information pursuant to Article 11 of the Merger Regulation addressed to distributors of 10 October 2013.

²⁵⁸ See replies to question 40 of the Commission's request for information pursuant to Article 11 of the Merger Regulation addressed to distributors of 10 October 2013.

²⁵⁹ CCG's contract with [...] foresees for instance that CCG will not "[...]", see submission of the Parties of 13 September 2013.

²⁶⁰ See minutes of conference call with [distribution supplier].

²⁶¹ See transaction data submitted by the Parties.

²⁶² As regards the specific areas where the Merged Entity would likely acquire market power through the Transaction, the proposed commitments would effectively remove the serious doubts raised, as analysed in section V.B below.

²⁶³ While concerned about the impact of the Transaction, Lonza stated in this respect that "*Many larger customers do not even buy from smaller suppliers as they prefer to buy through larger resellers out of convenience. Such preferred suppliers are often Fisher, VWR, Life Technologies, Sigma-Aldrich or GE.*" See minutes of conference call with Lonza.

Fisher products and [...] through the sale of Life Technologies products.²⁶⁴ Foreclosure would imply the loss of a proportion of CCG sales, which is likely to be all the more important since a majority of distributors highlighted that customers can switch easily between distributors, see demand as pulled rather than pushed,²⁶⁵ and do not regard any product or brand as a "must-have" at distribution level.²⁶⁶ [...],²⁶⁷ [...].

IV.1.3.c Conclusion

372. In the light of the above considerations, the Transaction does not give rise to serious doubts as to its compatibility with the internal market as regards any of the vertically affected markets in the distribution of laboratory and life science products in the EEA.

V. REMEDIES

373. In order to render the concentration compatible with the internal market, the Parties have modified the notified concentration by entering into commitments on 5 November in relation to: (i) cell culture; (ii) gene silencing; and (iii) magnetic beads. Following the market test of these proposed commitments, the final and improved version of the commitments (the "Proposed Commitments") described below was submitted on 20 November 2013. The commitments are annexed to this Decision and form an integral part thereof.

V.A. PROPOSED COMMITMENTS

V.A.1 Cell culture

374. In order to address the serious doubts identified by the Commission in relation to cell culture, the Parties entered into the commitments annexed to this Decision as Annex I.

375. Specifically, Thermo Fisher commits to divest its entire HyClone cell culture business ("the Cell Culture Business") excluding single use technologies ("SUT"),²⁶⁸ where the Parties' activities do not overlap.

376. The Cell Culture Business, described in more detail in Annex I, includes:

- a) Thermo Fisher's sera and media processing facilities in the US, Australia, New Zealand, Singapore, and its distribution facilities in the US and Europe.

²⁶⁴ See Form CO, figure 6.1.

²⁶⁵ See for instance minutes of call with Illumina, which stated that "*A customer may tie his account to one distributor to get easier access to general-purpose reagents, but this does not necessarily make it easier for that distributor to also take over the sales of more specialized reagents.*"

²⁶⁶ See replies to questions 30 and 38 of the Commission's request for information pursuant to Article 11 of the Merger Regulation addressed to distributors of 10 October 2013.

²⁶⁷ See submission of the Parties of 13 September 2013.

²⁶⁸ SUT products consist of disposable plastic containers, bags, ports, tubing and fittings that may incorporate ancillary components like filters and valves. SUT products are relatively cheap and widely available from several suppliers. SUT products do not solely serve sera and media products but a wider range of life science applications. See Form CO, paragraph C.6.41.

- b) The rights to all intellectual property, technology and know-how associated with Thermo Fisher's sera and media operations, including its proprietary and media formulations.
- c) The respective licences, permits and authorisations.
- d) The respective contracts, agreements, leases, commitments and understandings.
- e) The respective customer, credit and other records.
- f) All dedicated sera and media manufacturing employees covering all areas of operation and key personnel.

V.A.2 Gene silencing

377. In order to address the serious doubts identified by the Commission in relation to gene silencing, the Parties entered into the commitments annexed to this Decision in Annex I.

378. Thermo Fisher commits to divest its gene modulation business in Lafayette, Colorado, USA (the "Gene Modulation Business").

379. The Gene Modulation Business, described in more detail in Annex I, includes:

- a) The Lafayette facility where Thermo Fisher develops and manufactures gene modulation products, including all siRNA reagents and libraries (including siGENOME, on-TARGET plus, Accell, and IncRNA); all shRNA reagents, viral particles, and libraries (including GIPZ, TRIPZ, Decode, TRC); and all miRNA reagents and libraries (including miRIDIAN; shMIMIC; RNAi controls; DharmaFECT transfection reagents; cDNA and ORF clones and gene collections; and custom RNA, DNA and other molecules).
- b) The following main intangible assets: one of a total of four licenses to the Tuschl patents granted by MIT; other intellectual property rights, technology and know-how related to the development, design and manufacture of Thermo Fisher's siRNA, shRNA and miRNA product lines (including siGENOME design, on-TARGET plus design, Accell molecule design, SMART vector design, miRIDIAN designs, shMIMIC design, SMARTchoice design, gene sequences²⁶⁹, and ACE chemistry processes²⁷⁰); the code relating to the legacy Dharmacon and Open Biosystems websites and the underlying content which support the aforementioned product lines; the rights to the Dharmacon and Open Biosystems brands, as well as the names to various product lines, such as siRNA, shRNA and miRNA product names and DharmaFECT.
- c) The relevant contracts, agreements, leases, commitments and understandings, including relevant customer records.
- d) All relevant employees and key personnel in the Lafayette facility.

²⁶⁹ Through an exclusive license.

²⁷⁰ The transfer of ACE chemistry processes is subject to a licence back for applications outwith gene silencing.

V.A.3 Magnetic beads

380. In order to address the serious doubts identified by the Commission in relation to magnetic beads (see section IV.E above), the Parties entered into the commitments annexed to this Decision in Annex I.
381. Pursuant to the Proposed Commitments, Thermo Fisher would commit to divest its magnetic beads business, excluding its facilities used for the production and supply of magnetic beads in Fremont, California.
382. The Magnetic Bead Business, described in more detail in Annex I, includes:
- a) Thermo Fisher's equipment used in the manufacture of magnetic beads, or, at the option of the purchaser, equivalent new equipment (to be acquired by Thermo Fisher).
 - b) The following main intangible assets: the Sera-Mag and Sera-Mag SpeedBeads brand names and associated trademarks; patents relating to the manufacture of magnetic beads with negligible residual magnetism and the reduction of response time of the beads to a magnet; and access to Thermo Fisher's transfer plan relating to the execution of its recent move of Thermo Fisher's magnetic bead production facilities from Indianapolis, Indiana, to Fremont, California.
 - c) The respective main licences, permits and authorisations.
 - d) The respective main contracts, agreements, leases, commitments and understandings.
 - e) The respective customer, credit and other records.
 - f) All employees whose function predominantly relates to the manufacture and supply of magnetic beads and key personnel.

V.B. ASSESSMENT OF THE PROPOSED COMMITMENTS

383. Where a concentration raises serious doubts as to its compatibility with the internal market, the Parties may undertake to modify the operation so as to remove the grounds for the serious doubts identified by the Commission with a view to having the transaction approved in phase I of the merger review procedure.
384. As set out in the Commission Notice on remedies²⁷¹ the commitments have to eliminate the competition concerns entirely and have to be comprehensive and effective from all points of view and must be capable of being implemented effectively within a short period of time as the conditions of competition on the market will not be maintained until the commitments have been fulfilled.²⁷²
385. In assessing whether or not the remedies will restore effective competition, the Commission considers the type, scale and scope of the remedies by reference to the

²⁷¹ Commission Notice on remedies.

²⁷² Commission Notice on remedies, paragraph 9.

structure and the particular characteristics of the market in which the competition concerns arise.²⁷³

386. Divestiture commitments are the best way to eliminate competition concerns resulting from horizontal overlaps.²⁷⁴ Other commitments (such as licensing) may be suitable to resolve competitive concerns if those remedies are equivalent to divestitures in their effects. The divested activities must consist of a viable business that, if operated by a suitable purchaser, can compete effectively with the Merged Entity on a lasting basis and that is divested as a going concern.²⁷⁵
387. The business must include all the assets which contribute to its current operation or which are necessary to ensure its viability and competitiveness and all personnel which are currently employed or which are necessary to ensure the business' viability and competitiveness. Personnel and assets which are currently shared between the business to be divested and other businesses of the parties, but which contribute to the operation of the business or which are necessary to ensure its viability and competitiveness, must also be included. Otherwise, the viability and competitiveness of the business to be divested would be endangered. Therefore, the divested business must contain the personnel providing essential functions for the business such as, for instance, group R&D staff — at least in a sufficient proportion to meet the on-going needs of the divested business.²⁷⁶
388. Furthermore, the intended effect of the divestiture will only be achieved if and once the business is transferred to a suitable purchaser with proven relevant expertise and ability to maintain and develop the divested business as a viable and active competitive undertaking.

V.B.1 Cell culture

389. In response to the Commission's concerns regarding sera and media for cell culture, Thermo Fisher has committed to divest its HyClone cell culture business including both the sera and the media businesses.
390. In the present case, the Commission launched a market test regarding the proposed commitments in order to check whether they were sufficient to clearly rule out the serious doubts identified by the Commission. In general, the market test of the proposed commitments has confirmed that the commitments are comprehensive, effective and capable of being implemented effectively and therefore suitable to eliminate the serious doubts identified in media and sera for cell culture.

²⁷³ Commission Notice on remedies, paragraph 12.

²⁷⁴ Commission Notice on remedies, paragraph 17.

²⁷⁵ Commission Notice on remedies, paragraph 23.

²⁷⁶ Commission Notice on remedies, paragraphs 25 and 26.

391. The vast majority of competitors and customers expressed the view that the divestment of HyClone would remove the serious doubts raised by the Transaction.²⁷⁷ HyClone is a viable business that can compete effectively in cell culture. Moreover, the intellectual property rights and know-how included in the divestment business are sufficient for its viability and competitiveness. The arrangements for the transfer of intellectual property rights as well as customer and distribution contracts were also deemed feasible and sufficient,²⁷⁸
392. During the market test, the majority of competitors and customers stressed that a six-month licence to the purchaser in order to use during this transitional period the Thermo Fisher Scientific brand for selling the existing media and sera inventory would be too short. The purchaser would need much longer to sell this inventory. Rebranding of these sensitive products would be prohibitively expensive.²⁷⁹ However, Thermo Fisher addressed this concern in the final commitments by committing to provide a two-year licence for the purchaser to use during this transitional period the Thermo Fisher Scientific brand for selling the existing media and sera inventory.
393. Furthermore, as regards purchaser requirements, several competitors and customers had stated that the purchaser should be already active in the life science industry.²⁸⁰ However, Thermo Fisher addressed this concern in the final commitments by explicitly committing to divest the Cell Culture Business to a purchaser with a proven manufacturing expertise in the life sciences sector. This should ensure that the Cell Culture Business is divested to a purchaser that can develop it as a viable and effective force in the supply of sera and media for cell culture.

²⁷⁷ See replies to questions 1 and 2 of the Commission's request for information pursuant to Article 11 of the Merger Regulation addressed to competitors of 8 November 2013; See replies to questions 1 and 2 of the Commission's request for information pursuant to Article 11 of the Merger Regulation addressed to bioproduction customers of 8 November 2013; See replies to questions 1 and 2 of the Commission's request for information pursuant to Article 11 of the Merger Regulation addressed to research customers of 8 November 2013.

²⁷⁸ See replies to questions 3-6 and 8-13 of the Commission's request for information pursuant to Article 11 of the Merger Regulation addressed to competitors of 8 November 2013; See replies to questions 3-6 and 8-13 of the Commission's request for information pursuant to Article 11 of the Merger Regulation addressed to bioproduction customers of 8 November 2013; See replies to questions 3-6 and 8-13 of the Commission's request for information pursuant to Article 11 of the Merger Regulation addressed to research customers of 8 November 2013.

²⁷⁹ See replies to question 7 of the Commission's request for information pursuant to Article 11 of the Merger Regulation addressed to competitors of 8 November 2013; See replies to question 7 of the Commission's request for information pursuant to Article 11 of the Merger Regulation addressed to bioproduction customers of 8 November 2013; See replies to question 7 of the Commission's request for information pursuant to Article 11 of the Merger Regulation addressed to research customers of 8 November 2013.

²⁸⁰ See replies to question 16 of the Commission's request for information pursuant to Article 11 of the Merger Regulation addressed to competitors of 8 November 2013; See replies to question 16 of the Commission's request for information pursuant to Article 11 of the Merger Regulation addressed to bioproduction customers of 8 November 2013; See replies to question 16 of the Commission's request for information pursuant to Article 11 of the Merger Regulation addressed to research customers of 8 November 2013.

394. Finally, almost all competitors and customers consider that the Cell Culture Business is sufficiently interesting to attract suitable purchasers. A considerable number of credible market players have already expressed an interest in acquiring it.²⁸¹
395. In view of the above, the Commission concludes that the Proposed Commitments are suitable and sufficient to eliminate the serious doubts raised by the Transaction in the areas of sera and media for cell culture.

V.B.2 Gene silencing

396. The majority of competitors and customers confirmed that, subject to certain caveats, the divestment of the Gene Modulation Business would remove the serious doubts raised by the Commission, both for siRNA reagents and miRNA reagents.²⁸² The same majority indicated that, subject to certain caveats, the Gene Modulation Business is a viable business that can compete effectively and on a lasting basis in the gene silencing area.²⁸³
397. The vast majority of respondents confirmed that, as such, the production assets and other tangible assets are sufficient to ensure that the purchaser of the Gene Modulation Business can compete effectively and on a lasting basis in the gene silencing area. The majority of respondents reached the same conclusion for the brands, patents, know-how and other intangible assets that are to be part of the Gene Modulation Business. Respondents highlighted in particular that Dharmacon is a strong brand, and that the purchaser of the Gene Modulation Business would have an important IPR advantage by obtaining a Tuschl patent licence under competitive conditions.²⁸⁴
398. The majority of respondents confirmed that the personnel to be included in the Gene Modulation Business was sufficient, but highlighted that the purchaser would have to

²⁸¹ See replies to questions 17-18 of the Commission's request for information pursuant to Article 11 of the Merger Regulation addressed to competitors of 8 November 2013; See replies to question 17 of the Commission's request for information pursuant to Article 11 of the Merger Regulation addressed to bioproduction customers of 8 November 2013; See replies to question 17 of the Commission's request for information pursuant to Article 11 of the Merger Regulation addressed to research customers of 8 November 2013.

²⁸² See replies to questions 1 of the Commission's request for information pursuant to Article 11 of the Merger Regulation addressed to competitors of 8 November 2013, and of the Commission's request for information pursuant to Article 11 of the Merger Regulation addressed to customers of 8 November 2013

²⁸³ See replies to questions 2 of the Commission's request for information pursuant to Article 11 of the Merger Regulation addressed to competitors of 8 November 2013, and of the Commission's request for information pursuant to Article 11 of the Merger Regulation addressed to customers of 8 November 2013

²⁸⁴ See, for instance, replies of Agilent and Qiagen to question 12 of the Commission's request for information pursuant to Article 11 of the Merger Regulation addressed to competitors of 8 November 2013.

compensate for the relatively small number of sales personnel included in the business, and its lack of global distribution capabilities.²⁸⁵

399. The arrangements for the transfer of the various assets, including the intellectual property rights and the customer contracts were deemed feasible and sufficient,²⁸⁶
400. The important caveat that competitors and customers expressed was that the Gene Modulation Business can only be viable and competitive in the hands of certain purchasers. The overwhelming majority of competitors and customers confirm that the purchaser would have to have experience in life sciences.²⁸⁷ These respondents indicated that only a purchaser with such experience and track record can overcome possible obstacles in gaining acceptance by customers, and can offer the manufacturing expertise, quality control and assurance, and the global sales and distribution assets that are required to be an effective competitive force.²⁸⁸ Respondents explain that only such players can integrate the business within their existing business efficiently, and can ensure that it remains innovative and successful in introducing new products in this quickly emerging field of molecular biology.²⁸⁹
401. In addition, a significant number of respondents stated that the duration of the sub-licence of the Thermo Fisher brand to sell existing inventory (6 months) is too short.²⁹⁰ These concerns mirror the ones that were voiced for the Cell Culture Business. Importantly, the respondents who express this concern include Parties that are potentially interested in purchasing the Gene Modulation Business.
402. Subject to these two caveats, the vast majority of respondents confirmed that the Gene Modulation Business is attractive enough to attract a significant number of suitable

²⁸⁵ See, for instance, replies of Agilent, Integrated DNA Technologies, Merck Millipore, Qiagen and Sigma-Aldrich to question 8 of the Commission's request for information pursuant to Article 11 of the Merger Regulation addressed to competitors of 8 November 2013.

²⁸⁶ See replies to questions 3-6 and 8-13 of the Commission's request for information pursuant to Article 11 of the Merger Regulation addressed to competitors of 8 November 2013; See replies to questions 3-6 and 8-13 of the Commission's request for information pursuant to Article 11 of the Merger Regulation addressed to bioproduction customers of 8 November 2013; See replies to questions 3-6 and 8-13 of the Commission's request for information pursuant to Article 11 of the Merger Regulation addressed to research customers of 8 November 2013.

²⁸⁷ See replies to questions 11 of the Commission's request for information pursuant to Article 11 of the Merger Regulation addressed to competitors of 8 November 2013, and of the Commission's request for information pursuant to Article 11 of the Merger Regulation addressed to customers of 8 November 2013.

²⁸⁸ See, for instance, the replies of Agilent, Merck Millipore, Promega and Qiagen to question 11 of the the Commission's request for information pursuant to Article 11 of the Merger Regulation addressed to competitors of 8 November 2013.

²⁸⁹ See, for instance, the replies of Agilent, Integrated DNA Technologies and Merck Millipore to question 12 of the the Commission's request for information pursuant to Article 11 of the Merger Regulation addressed to competitors of 8 November 2013

²⁹⁰ See replies to question 10 of the Commission's request for information pursuant to Article 11 of the Merger Regulation addressed to customers and competitors of 8 November 2013.

purchasers.²⁹¹ A considerable number of credible market players expressed an interest in acquiring it.²⁹²

403. Following this market test and further observations made by the Commission, Thermo Fisher has improved the commitments it had offered.
404. First, Thermo Fisher explicitly commits to divest the Gene Modulation Business to a purchaser with a proven manufacturing expertise in the life sciences sector. This should ensure that the Gene Modulation Business is divested to a purchaser that can develop it as a viable and effective force in gene silencing.
405. Second, Thermo Fisher has increased the duration of the sub-licence for the Thermo Fisher brand that it offers to the purchaser to one year. This should allow the purchaser to sell the existing inventory of the Gene Modulation Business in an effective manner.
406. Finally, and following the Commission's observations to this effect, Thermo Fisher has increased the duration of the non-solicitation clause, according to which it commits not to solicit the Key Personnel transferred with the Gene Modulation Business to [...] after the closing of the sale of the Gene Modulation Business.
407. The Commission has subsequently assessed the suitability and sufficiency of these final commitments to eliminate its serious doubts in the area of gene silencing reagents.
408. If sold to a suitable purchaser with the required manufacturing experience, the Gene Modulation Business comprises all the assets and resources that are necessary for that purchaser to be a viable and long-term effective competitive force in the supply of gene silencing reagents.
409. The purchaser will have at its disposal the strong Dharmacon brand, the Tush1 patent licence and all other relevant IP. The purchaser can couple these assets with the quality equipment and skilled personnel of Thermo Fisher, and the full breadth of its current product portfolio, know-how and general technology advantages. The purchaser can use these assets as a solid basis to further develop the Gene Modulation Business. The Commission considers that the Gene Modulation Business comprises all the assets to allow the purchaser to fully replicate the competitive constraint that Thermo Fisher has exerted in this area.
410. In view of the above, the Commission concludes that the Proposed Commitments are suitable and sufficient to eliminate the serious doubts raised by the Transaction in the area of gene silencing reagents.

²⁹¹ See replies to questions 13 of the Commission's request for information pursuant to Article 11 of the Merger Regulation addressed to competitors of 8 November 2013, and of the Commission's request for information pursuant to Article 11 of the Merger Regulation addressed to customers of 8 November 2013.

²⁹² See replies to questions 14 of the Commission's request for information pursuant to Article 11 of the Merger Regulation addressed to competitors of 8 November 2013 and of the Commission's request for information pursuant to Article 11 of the Merger Regulation addressed to customers of 8 November 2013.

V.B.3 Magnetic Beads

411. The market test confirmed that, subject to certain important caveats, the Magnetic Beads business to be transferred is a viable business that can compete effectively and on a lasting basis with Life Technologies and other suppliers of magnetic beads.
412. First, the vast majority of respondents who expressed an opinion indicated that the business can only be viable and competitive in the hands of a purchaser that already has manufacturing capabilities in the life science sector.²⁹³ As Turbobeads underlines, this is particularly the case as in the current situation, Thermo Fisher's Magnetic Beads business relies on other internal business resources within Thermo.²⁹⁴
413. Second, the respondents highlighted issues concerning the implementation of Thermo Fisher's commitment to divest, at the option of the purchaser, either its current production equipment or new equipment to be purchased by Thermo Fisher. These respondents underlined that it may be complex to transfer the equipment effectively and within a reasonably short timeframe. These respondents indicate that this process can be complex given the validation and audits required by current magnetic beads customers, the potential complexity of the bead types to be divested and the need to integrate, with the assistance of experienced personnel, the equipment into existing production facilities. Qiagen highlighted that the uncertainty that the ultimate investment cost can be recouped could decrease the number of purchasers that would ultimately be interested in the Magnetic Beads Business.²⁹⁵
414. It is therefore deducible from the market test that the commitments should include further arrangements to ensure that the transition of the equipment to the purchaser is as smooth as possible and that the necessary investment cost is reduced to the extent reasonably possible.
415. Third, the majority of respondents indicated that the number of sales personnel that Thermo Fisher proposed to divest was not sufficient.²⁹⁶ These respondents reiterate that customer relationships are important in the market for magnetic beads. It follows from this that it should be ensured that the Divestment Business contains sufficient sales personnel, taking account of the existing capabilities that Thermo Fisher has in this area.
416. Finally, a significant number of respondents stated that the duration of the sub-licence of the Thermo Fisher brand to sell existing inventory (6 months) is too short.²⁹⁷ These

²⁹³ See replies to question 2 of the Commission's request for information pursuant to Article 11 of the Merger Regulation addressed to customers and competitors of 8 November 2013.

²⁹⁴ See Turbobead's reply to question 2 of the Commission's request for information pursuant to Article 11 of the Merger Regulation addressed to customers and competitors of 8 November 2013.

²⁹⁵ Qiagen's reply to question 8 of the Commission's request for information pursuant to Article 11 of the Merger Regulation addressed to customers and competitors of 8 November 2013.

²⁹⁶ See replies to question 11 of the Commission's request for information pursuant to Article 11 of the Merger Regulation addressed to customers and competitors of 8 November 2013.

²⁹⁷ See replies to question 10 of the Commission's request for information pursuant to Article 11 of the Merger Regulation addressed to customers and competitors of 8 November 2013.

concerns mirror the ones that were voiced for the Gene Modulation and Cell Culture Businesses. Importantly, the respondents who express this concern include Parties that are potentially interested in purchasing the Divestment Business.

417. Following this market test and further observations made by the Commission, Thermo Fisher has improved the commitments it had offered.
418. First, Thermo Fisher explicitly commits to divest the Magnetic Beads Business to a purchaser with a proven manufacturing expertise in the life sciences sector. This should ensure that the Magnetic Beads Business is divested to a purchaser that can develop it as a viable and effective force in the supply of polymer-based magnetic beads.
419. Second, Thermo Fisher has strengthened the arrangements for the transfer of the production equipment to the purchaser. Thermo Fisher now explicitly commits to transport and install the production equipment at a manufacturing site chosen by the purchaser. It also commits to provide further support to enable the purchaser to utilise the equipment to manufacture magnetic beads of the same type and quality as currently manufactured by Thermo Fisher. The Commission considers that this eliminates any further risk in the implementation of the commitments, ensuring that it can produce the magnetic beads with the same consistency in size and the same quality of the beads that Thermo Fisher currently produces and significantly reducing the necessary investment cost for the purchaser.
420. Third, Thermo Fisher has increased the duration of the sub-licence to Thermo Fisher brand from six months to one year. This should allow the purchaser to sell the existing inventory of polymer-based magnetic beads in an effective manner.
421. Fourth, Thermo Fisher has [increased] the number of sales personnel to be transferred with the Magnetic Beads Business. It has also ensured that the sales personnel that is to be transferred, covers all existing top customers of Thermo Fisher for the supply of polymer-based magnetic beads. This ensures that the purchaser will immediately have at its disposal the necessary sales personnel to maintain the established commercial relationships with the customers of the Magnetic Beads Business. The Commission considers that this also addresses the comments that respondents in the market test made regarding the sufficiency of the sales personnel to be transferred.
422. Finally, and following the Commission's observations to this effect, Thermo Fisher has increased the duration of the non-solicitation clause, according to which it commits not to solicit the Key Personnel transferred with the Magnetic Beads Business to [...] after the closing of the sale of that Business. This longer period will allow the purchaser to preserve the viability and competitiveness of the Magnetic Beads Business pending the transfer of equipment and other assets of that business.
423. The Commission has subsequently assessed the suitability and sufficiency of these final commitments to eliminate its serious doubts in the area of polymer-based magnetic beads.
424. The Commission considers that on the basis of the results of the market test, its own assessment of the Proposed Commitments and the improvements that Thermo Fisher has made, its serious doubts in the area of magnetic beads are eliminated.

425. If sold to a suitable purchaser, the Magnetic Beads Business comprises all the assets and resources that are necessary for that purchaser to be a viable and long-term effective competitive force in the supply of polymer-based magnetic beads. Moreover, the divestiture of the Magnetic Beads Business would remove the entire overlap in the market for the production and supply of polymer-based magnetic beads to OEM customers, where serious doubts were raised.
426. The purchaser will have at its disposal the Sera-Mag brand, associated patents and other relevant IP, coupled with the equipment, know-how and skilled personnel currently employed by Thermo Fisher. The final arrangements regarding the transfer of the production equipment explicitly ensure that the purchaser can produce magnetic beads that have the same consistency in size and the same quality that Thermo Fisher currently offers. The purchaser can use these assets to develop the Magnetic Beads further. The Commission hence considers that the Magnetic Beads business comprises all the assets that allow the purchaser to fully replicate the competitive constraint that Thermo Fisher has exerted in this area.
427. The purchaser criteria ensure that the Magnetic Beads Business is sold to a purchaser with a wide manufacturing experience in the bio science sector. These criteria ensure that the purchaser can compete on the basis of a wide presence in the life sciences field, as Thermo Fisher has done. Importantly, these criteria also ensure that the purchaser has the necessary resources and skills to integrate the equipment into an existing manufacturing site. Thermo Fisher's commitment to transport and set-up the equipment at that site, [...] and the longer non-solicitation period for the Key Personnel of the Magnetic Beads Business, eliminates the remaining implementation risk in the integration process that was identified during the market test.
428. On this basis, the Commission considers that the commitments are effective and capable of being effectively implemented.
429. In view of the above, the Commission concludes that the Proposed Commitments are suitable and sufficient to eliminate the serious doubts raised by the Transaction in the area of polymer-based magnetic beads.

VI. CONDITION AND OBLIGATION

430. Under the first sentence of the second subparagraph of Article 6(2) of the Merger Regulation, the Commission may attach to its decision conditions and obligations intended to ensure that the undertakings concerned comply with the commitments they have entered into vis-à-vis the Commission with a view to rendering the concentration compatible with the internal market.
431. The achievement of the measure that gives rise to the structural change of the market is a condition, whereas the implementing steps which are necessary to achieve this result are generally obligations on the Parties. Where a condition is not fulfilled, the Commission's decision declaring the concentration compatible with the internal market and the EEA Agreement no longer stands. Where the undertakings concerned commit a breach of an obligation, the Commission may revoke the clearance decision in accordance with Article 8(6)(b) of the Merger Regulation. The undertakings concerned may also be subject to fines and periodic penalty payments under Articles 14(2) and 15(1) of the Merger Regulation.

432. In accordance with the basic distinction between conditions and obligations, the decision in this case is conditional on full compliance with the requirements set out in Section B of the final commitments, which constitute conditions. The remaining requirements set out in the other Sections of the said commitments are considered to constitute obligations.
433. The full text of the final commitments is annexed to this decision as Annex I and forms an integral part thereof.

VII. CONCLUSION

434. For the above reasons, the Commission has decided not to oppose the notified operation as modified by the commitments and to declare it compatible with the internal market and with the functioning of the EEA Agreement, subject to full compliance with the conditions contained in Section B of the commitments annexed to the present decision, and with the obligations contained in the other Sections of the said commitments.
435. This decision is adopted in application of Article 6(1)(b) in conjunction with Article 6(2) of the Merger Regulation.

*For the Commission
(signed)
Joaquín ALMUNIA
Vice-President*

Case M.6944 Thermo Fisher Scientific / Life Technologies

COMMITMENTS TO THE EUROPEAN COMMISSION

Pursuant to Article 6(2) of Council Regulation (EC) No. 139/2004 as amended (the "**Merger Regulation**"), Thermo Fisher Scientific Inc. (the "**Company**") hereby provides the following Commitments (the "**Commitments**") in order to enable the European Commission (the "**Commission**") to declare the proposed acquisition by the Company of Life Technologies Corporation ("**Life Technologies**") compatible with the internal market and the EEA Agreement by its decision pursuant to Article 6(1)(b) of the Merger Regulation (the "**Decision**").

The Commitments shall take effect upon the date of adoption of the Decision.

This text shall be interpreted in the light of the Decision to the extent that the Commitments are attached as conditions and obligations, in the general framework of EU law, in particular in the light of the Merger Regulation, and by reference to the Commission Notice on remedies acceptable under Council Regulation (EC) No. 139/2004 and under Commission Regulation (EC) No. 802/2004.

SECTION A. DEFINITIONS

For the purpose of the Commitments, the following terms shall have the following meaning:

Affiliated Undertakings: undertakings controlled by the Parties and/or by the ultimate parents of the Parties, whereby the notion of control shall be interpreted pursuant to Article 3 of the Merger Regulation and in the light of the Commission Notice on the concept of concentration under Council Regulation (EC) No. 139/2004.

Cell Culture Business: the business as defined in Section B and Exhibit A.

Closing: the transfer of the legal title of the Divestment Businesses to the Purchaser.

Divestment Businesses: the Cell Culture Business, the Gene Modulation Business and the Magnetic Bead Business.

Divestiture Trustee: one or more natural or legal person(s), independent from the Parties, who is approved by the Commission and appointed by the Company and who has received from the Company the exclusive Trustee Mandate to sell the Divestment Businesses to a Purchaser at no minimum price.

Effective Date: the date of adoption of the Decision.

First Divestiture Period: the period of [...] from the Effective Date.

Gene Modulation Business: the business as defined in Section B and Exhibit B.

Hold Separate Manager: the person or persons appointed by the Company for the Divestment Businesses to manage the day-to-day business of the Divestment Businesses under the supervision of the Monitoring Trustee.

Key Personnel: all personnel necessary to maintain the viability and competitiveness of the Divestment Businesses, listed in Exhibits A, B and C.

Life Technologies: Life Technologies Corporation, a US company incorporated under the laws of Delaware, with its head office at 5791 Van Allen Way, Carlsbad, California, United States of America.

Magnetic Bead Business: the business as defined in Section B and Exhibit C.

Monitoring Trustee: one or more natural or legal person(s), independent from the Parties, who is approved by the Commission and appointed by the Company, and who has the duty to monitor the Company's compliance with the conditions and obligations attached to the Decision.

Parties: Thermo Fisher Scientific Inc. and Life Technologies.

Personnel: all personnel currently employed by the Divestment Businesses, including Key Personnel, staff seconded to the Divestment Businesses, shared personnel and the additional personnel listed in Exhibits A, B and C.

Purchaser: the entity or entities approved by the Commission as acquirer or acquirers of the Divestment Businesses in accordance with the criteria set out in Section D.

Thermo Fisher Scientific Inc: a US company incorporated under the laws of Delaware, with its head office at 81 Wyman Street, Waltham, Massachusetts, United States of America.

Transaction: the Company's proposed acquisition of Life Technologies.

Trustee(s): the Monitoring Trustee and the Divestiture Trustee.

Trustee Divestiture Period: the period of [...] from the end of the First Divestiture Period.

SECTION B. THE DIVESTMENT BUSINESSES

Commitment to Divest

1. In order to restore effective competition, the Company commits to divest, or procure the divestiture of, the Divestment Businesses by the end of the Trustee Divestiture Period as a going concern to a Purchaser and on terms of sale approved by the Commission in accordance with the procedure described in paragraph 14. To carry out the divestiture, the Company commits to find a Purchaser and to enter into a final binding sale and purchase agreement for the sale of each of the Divestment Businesses within the First Divestiture Period. If the Company has not entered into a final binding sale and purchase agreement for the sale of the Divestment Businesses at the end of the First Divestiture Period, the Company shall grant the Divestiture Trustee an exclusive mandate to sell the Divestment Businesses in accordance with the procedure described in paragraph 23 in the Divestiture Period.
2. The Company shall be deemed to have complied with this commitment if, by the end of the Trustee Divestiture Period, the Company has entered into a final binding sale and purchase agreement, if the Commission approves the purchaser and the terms of sale in accordance

with the procedure described in paragraph 14 and if the closing of the sale of the Divestment Businesses takes place within a period not exceeding [...] after the approval of the purchaser and the terms of sale by the Commission.

3. In order to maintain the structural effect of the Commitments, the Parties shall, for a period of 10 years after the Effective Date, not acquire direct or indirect influence over the whole or part of the Divestment Businesses, unless the Commission has previously found that the structure of the market has changed to such an extent that the absence of influence over the Divestment Businesses is no longer necessary to render the proposed concentration compatible with the internal market.

Structure and Definition of the Divestment Businesses

4. The Divestment Businesses consist of:

- (1) The Cell Culture Business, as described in more detail in Exhibit A, which includes the following assets (referred to collectively as “**Assets**”):

- (a) all tangible and intangible assets (including intellectual property rights) which contribute to the current operation or are necessary to ensure the viability and competitiveness of the Cell Culture Business;
- (b) all raw materials, stocks, work in progress and semi-finished and finished goods relating to the Cell Culture Business;
- (c) all licences, permits and authorisations issued by any governmental organisation for the benefit of the Cell Culture Business;
- (d) all contracts, leases, commitments and customer orders of the Cell Culture Business; all customer, credit and other records of the Cell Culture Business (to the extent assignable);
- (e) the Key Personnel employed in the Cell Culture Business and any other Personnel necessary to ensure its continued economic viability, marketability and competitiveness; and
- (f) the benefit, for a transitional period of 12 months on terms and conditions equivalent to those at present afforded to the Cell Culture Business, of all current arrangements under which the Company or Affiliated Undertakings supply products or services to the Cell Culture Business, as detailed in Exhibit A, unless otherwise agreed with the Purchaser.

- (2) The Gene Modulation Business, as described in more detail in Exhibit B, which includes the following assets (referred to collectively as “**Assets**”):

- (a) all tangible and intangible assets (including intellectual property rights), which contribute to the current operation or are necessary to ensure the viability and competitiveness of the Gene Modulation Business;

- (b) all raw materials, stocks, work in progress and semi-finished and finished goods relating to the Gene Modulation Business;
 - (c) all licences, permits and authorisations issued by any governmental organisation for the benefit of the Gene Modulation Business;
 - (d) all contracts, leases, commitments and customer orders of the Gene Modulation Business; all customer, credit and other records of the Gene Modulation Business (to the extent assignable);
 - (e) the Key Personnel and any other Personnel currently employed in the Gene Modulation Business necessary to ensure its continued economic viability, marketability and competitiveness; and
 - (f) the benefit, for a transitional period of 12 months on terms and conditions equivalent to those at present afforded to the Gene Modulation Business, of all current arrangements under which the Company or Affiliated Undertakings supply products or services to the Gene Modulation Business, as detailed in Exhibit B, unless otherwise agreed with the Purchaser.
- (3) The Magnetic Bead Business, as described in more detail in Exhibit C which includes the following assets (referred to collectively as “**Assets**”):
- (a) all tangible and intangible assets (including intellectual property rights) which contribute to the current operation or are necessary to ensure the viability and competitiveness of the Magnetic Bead Business;
 - (b) all raw materials, stocks, work in progress and semi-finished and finished goods relating to the Magnetic Bead Business;
 - (c) all licences, permits and authorisations issued by any governmental organisation for the benefit of the Magnetic Bead Business;
 - (d) all contracts, leases, commitments and customer orders of the Magnetic Bead Business; all customer, credit and other records of the Magnetic Bead Business (to the extent assignable);
 - (e) the Key Personnel employed in the Magnetic Bead Business and any other Personnel necessary to ensure its continued economic viability, marketability and competitiveness; and
 - (f) the benefit, for a transitional period of 2 years on terms and conditions equivalent to those at present afforded to the Magnetic Bead Business, of all current arrangements under which the Company or Affiliated Undertakings supply products or services to the Magnetic Bead Business, as detailed in Exhibit C, unless otherwise agreed with the Purchaser.

SECTION C. RELATED COMMITMENTS

Preservation of Viability, Marketability and Competitiveness

5. From the Effective Date until Closing, the Company shall preserve the economic viability, marketability and competitiveness of the Divestment Businesses, in accordance with good business practice, and shall minimise as far as possible any risk of loss of competitive potential of the Divestment Businesses. In particular the Company undertakes:
 - (a) not to carry out any act upon its own authority that might have a significant adverse impact on the value, management or competitiveness of the Divestment Businesses or that might alter the nature and scope of activity, or the industrial or commercial strategy or the investment policy of the Divestment Businesses;
 - (b) to make available sufficient resources for the development of the Divestment Businesses, on the basis and continuation of the existing business plans; and
 - (c) to take all reasonable steps, including appropriate incentive schemes (based on industry practice), to encourage all Key Personnel to remain with the Divestment Businesses.

Hold-Separate Obligations

6. The Company commits, from the Effective Date until Closing, to keep the Divestment Businesses separate from the businesses it is retaining and to ensure that Key Personnel of the Divestment Businesses – including the Hold Separate Manager – have no involvement in any business retained and *vice versa*. The Company shall also ensure that the Personnel do not report to any individual outside the Divestment Businesses.
7. Until Closing, the Company shall assist the Monitoring Trustee in ensuring that the Divestment Businesses are managed as distinct and saleable entities separate from the businesses retained by the Parties. The Company shall appoint a Hold Separate Manager for each Divestment Business who shall be responsible for the management of that Divestment Business, under the supervision of the Monitoring Trustee. The Hold Separate Manager shall manage the Divestment Business independently and in the best interest of the business with a view to ensuring its continued economic viability, marketability and competitiveness and its independence from the businesses retained by the Parties.

Ring-fencing

8. The Company shall implement all necessary measures to ensure that it does not after the Effective Date obtain any business secrets, know-how, commercial information, or any other information of a confidential or proprietary nature relating to the Divestment Businesses. In particular, the participation of the Divestment Businesses in a central information technology network shall be severed to the extent possible, without compromising the viability of the Divestment Businesses. The Company may obtain information relating to the Divestment Businesses which is reasonably necessary for the divestiture of the Divestment Businesses, which is reasonably required to maintain the viability of the Divestment Businesses, or whose disclosure to the Company is required by law.

Non-solicitation Clause

9. The Company undertakes, subject to customary limitations, not to solicit, and to procure that Affiliated Undertakings do not solicit, the Key Personnel transferred with the Divestment Businesses for a period of:
 - (a) [...] after Closing in the case of the Cell Culture Business and the Gene Modulation Business; and
 - (b) [...] after Closing in the case of the Magnetic Bead Business.

Due Diligence

10. In order to enable potential purchasers to carry out a reasonable due diligence of the Divestment Businesses, the Company shall, subject to customary confidentiality assurances and dependent on the stage of the divestiture process:
 - (a) provide to potential purchasers sufficient information as regards the Divestment Businesses; and
 - (b) provide to potential purchasers sufficient information relating to the Personnel and allow them reasonable access to the Key Personnel.

Reporting

11. The Company shall submit written reports in English on potential purchasers of the Divestment Businesses and developments in the negotiations with such potential purchasers to the Commission and the Monitoring Trustee no later than 10 days after the end of every month following the Effective Date (or otherwise at the Commission's request).
12. The Parties shall from the Effective Date inform the Commission and the Monitoring Trustee on the preparation of the data room documentation and the due diligence procedure and shall submit a copy of an information memorandum in respect of each of the Divestment Businesses to the Commission and the Monitoring Trustee before sending the memorandum out to potential purchasers.

SECTION D. THE PURCHASER

13. In order to ensure the immediate restoration of effective competition, the Purchaser, in order to be approved by the Commission, must satisfy the following criteria (the "**Purchaser Requirements**"):
 - (a) be independent of and unconnected to the Parties;
 - (b) have the financial resources, proven manufacturing expertise in the life sciences sector and incentive to maintain and develop the relevant Divestment Business as a viable and active competitive force in competition with the Parties and other competitors; and
 - (c) neither be likely to create, in the light of the information available to the Commission, *prima facie* competition concerns nor give rise to a risk that the implementation of the

Commitments will be delayed, and must, in particular, reasonably be expected to obtain all necessary approvals from the relevant regulatory authorities for the acquisition of the relevant Divestment Business.

14. The final binding sale and purchase agreement shall be conditional on the Commission's approval. When the Company has reached an agreement with a purchaser, it shall submit a fully documented and reasoned proposal, including a copy of the final agreement(s), to the Commission and the Monitoring Trustee. The Company must be able to demonstrate to the Commission that the proposed purchaser meets the Purchaser Requirements and that the relevant Divestment Business is being sold in a manner consistent with the Commitments. For the approval, the Commission shall verify that the proposed purchaser fulfils the Purchaser Requirements and that the relevant Divestment Business is being sold in a manner consistent with the Commitments. The Commission may approve the sale of each Divestment Business without one or more Assets or parts of the Personnel, if this does not affect the viability and competitiveness of that Divestment Business after the sale, taking account of the proposed purchaser.

SECTION E. TRUSTEE

I. Appointment Procedure

15. The Company shall appoint a Monitoring Trustee to carry out the functions specified in the Commitments for a Monitoring Trustee. If the Company has not entered into a binding sale and purchase agreement one month before the end of the First Divestiture Period or if the Commission has rejected a purchaser proposed by the Company at that time or thereafter, the Company shall appoint a Divestiture Trustee to carry out the functions specified in the Commitments for a Divestiture Trustee. The appointment of the Divestiture Trustee shall take effect upon the commencement of the Trustee Divestiture Period.
16. The Trustee shall be independent of the Parties, possess the necessary qualifications to carry out its mandate, for example as an investment bank or consultant or auditor, and shall not have or be reasonably likely to have a conflict of interest. The Trustee shall be remunerated by the Parties in a way that does not impede the independent and effective fulfilment of its mandate. In particular, where the remuneration package of a Divestiture Trustee includes a success premium linked to the final sale value of the Divestment Businesses, the fee shall also be linked to a divestiture within the Trustee Divestiture Period.

Proposal by the Company

17. No later than one week after the Effective Date, the Company shall submit a list of one or more persons whom the Company proposes to appoint as the Trustee to the Commission for approval. No later than one month before the end of the First Divestiture Period, the Company shall submit a list of one or more persons whom the Company proposes to appoint as Divestiture Trustee to the Commission for approval. The proposal shall contain sufficient information for the Commission to verify that the proposed Trustee fulfils the requirements set out in paragraph 16 and shall include:
 - (a) the full terms of the proposed mandate, which shall include all provisions necessary to enable the Trustee to fulfil its duties under these Commitments;

- (b) the outline of a work plan which describes how the Trustee intends to carry out its assigned tasks; and
- (c) an indication whether the proposed Trustee is to act as both Monitoring Trustee and Divestiture Trustee or whether a different trustee may be proposed (if subsequently required) as the Divestiture Trustees for the two functions.

Approval or Rejection by the Commission

18. The Commission shall have the discretion to approve or reject the proposed Trustee(s) and to approve the proposed mandate subject to any modifications it deems necessary for the Trustee to fulfil its obligations. If only one name is approved, the Company shall appoint or cause to be appointed, the individual or institution concerned as Trustee, in accordance with the mandate approved by the Commission. If more than one name is approved, the Company shall be free to choose the Trustee to be appointed from among the names approved. The Trustee shall be appointed within one week of the Commission's approval, in accordance with the mandate approved by the Commission.

New Proposal by the Company

19. If all the proposed Trustees are rejected, the Company shall submit the names of at least two more individuals or institutions within one week of being informed of the rejection, in accordance with the requirements and the procedure set out in paragraphs 15 to 18.

Trustee Nominated by the Commission

20. If all further proposed Trustees are rejected by the Commission, the Commission shall nominate a Trustee, whom the Company shall appoint, or cause to be appointed, in accordance with a trustee mandate approved by the Commission.

II. Functions of the Trustee

21. The Trustee shall assume its specified duties in order to ensure compliance with the Commitments. The Commission may, on its own initiative or at the request of the Trustee or the Company, give any orders or instructions to the Trustee in order to ensure compliance with the conditions and obligations attached to the Decision.

Duties and Obligations of the Monitoring Trustee

22. The Monitoring Trustee shall:
- (i) propose in its first report to the Commission a detailed work plan describing how it intends to monitor compliance with the obligations and conditions attached to the Decision.
 - (ii) oversee the on-going management of the Divestment Businesses with a view to ensuring its continued economic viability, marketability and competitiveness and monitor compliance by the Company with the conditions and obligations attached to the Decision. To that end the Monitoring Trustee shall:

- (a) monitor the preservation of the economic viability, marketability and competitiveness of the Divestment Businesses, and the keeping separate of the Divestment Businesses from the business retained by the Parties, in accordance with paragraphs 5 and 6 of the Commitments;
 - (b) supervise the management of the Divestment Businesses as a distinct and saleable entity, in accordance with paragraph 7 of the Commitments;
 - (c) (i) in consultation with the Company, determine all necessary measures to ensure that the Company does not after the Effective Date obtain any business secrets, know-how, commercial information, or any other information of a confidential or proprietary nature relating to the Divestment Businesses, in particular strive for the severing of the Divestment Businesses' participation in a central information technology network to the extent possible, without compromising the viability of the Divestment Businesses, and (ii) decide whether such information may be disclosed to the Company as the disclosure is reasonably necessary to allow the Company to carry out the divestiture or as the disclosure is required by law;
 - (d) monitor the splitting of assets and the allocation of Personnel between the Divestment Businesses and the Company or Affiliated Undertakings;
- (iii) assume the other functions assigned to the Monitoring Trustee under the conditions and obligations attached to the Decision;
 - (iv) propose to the Company such measures as the Monitoring Trustee considers necessary to ensure the Company's compliance with the conditions and obligations attached to the Decision, in particular the maintenance of the full economic viability, marketability or competitiveness of the Divestment Businesses, the holding separate of the Divestment Businesses and the non-disclosure of competitively sensitive information;
 - (v) review and assess potential purchasers as well as the progress of the divestiture process and verify that, dependent on the stage of the divestiture process, (a) potential purchasers receive sufficient information relating to the Divestment Businesses and the Personnel in particular by reviewing, if available, the data room documentation, the information memorandum and the due diligence process, and (b) potential purchasers are granted reasonable access to the Key Personnel;
 - (vi) provide to the Commission, sending the Company a non-confidential copy at the same time, a written report within 15 days after the end of every month. The report shall cover the operation and management of the Divestment Businesses so that the Commission can assess whether the business is held in a manner consistent with the Commitments and the progress of the divestiture process as well as potential purchasers. In addition to these reports, the Monitoring Trustee shall promptly report in writing to the Commission, sending the Company a non-confidential copy at the same time, if it concludes on reasonable grounds that the Company is failing to comply with these Commitments;

- (vii) within one week after receipt of the documented proposal referred to in paragraph 14, submit to the Commission a reasoned opinion as to:
 - (a) the suitability and independence of the proposed purchaser and the viability of the relevant Divestment Business after the sale; and
 - (b) whether the relevant Divestment Business is sold in a manner consistent with the conditions and obligations attached to the Decision, in particular (if relevant) whether the sale of the relevant Divestment Business without one or more Assets or all of the Personnel affects the viability of that Divestment Business after the sale, taking account of the proposed purchaser.

Duties and Obligations of the Divestiture Trustee

- 23. Within the Trustee Divestiture Period, the Divestiture Trustee shall sell at no minimum price the relevant Divestment Business to a purchaser, provided that the Commission has approved both the relevant purchaser and the relevant final binding sale and purchase agreement in accordance with the procedure laid down in paragraph 14. The Divestiture Trustee shall include in the sale and purchase agreement such terms and conditions as it considers appropriate for an expedient sale in the Trustee Divestiture Period. In particular, the Divestiture Trustee may include in the sale and purchase agreement such customary representations and warranties and indemnities as are reasonably required to effect the sale. The Divestiture Trustee shall protect the legitimate financial interests of the Company, subject to the Company's unconditional obligation to divest at no minimum price in the Trustee Divestiture Period.
- 24. In the Trustee Divestiture Period (or otherwise at the Commission's request), the Divestiture Trustee shall provide the Commission with a comprehensive monthly report written in English on the progress of the divestiture process. Such reports shall be submitted within 15 days after the end of every month with a simultaneous copy to the Monitoring Trustee and a non-confidential copy to the Company.

III. Duties and Obligations of the Company

- 25. The Company shall provide and shall cause its advisors to provide the Trustee with all such cooperation, assistance and information as the Trustee may reasonably require to perform its tasks. The Trustee shall have full and complete access to any of the Company's or the Divestment Businesses' books, records, documents, management or other personnel, facilities, sites and technical information necessary for fulfilling its duties under the Commitments and the Company and the Divestment Businesses shall provide the Trustee upon request with copies of any document. The Company and the Divestment Businesses shall make available to the Trustee one or more offices on their premises and shall be available for meetings in order to provide the Trustee with all information necessary for the performance of its tasks.
- 26. The Trustee shall provide the Monitoring Trustee with all managerial and administrative support that it may reasonably request on behalf of the management of the Divestment Businesses. This shall include all administrative support functions relating to the Divestment Businesses which are currently carried out at headquarters level. The Company shall provide and shall cause its advisors to provide the Monitoring Trustee, on request, with the information

submitted to potential purchasers, in particular give the Monitoring Trustee access to the data room documentation and all other information granted to potential purchasers in the due diligence procedure. The Company shall inform the Monitoring Trustee on possible purchasers, submit a list of potential purchasers, and keep the Monitoring Trustee informed of all developments in the divestiture process.

27. The Company shall grant or procure that Affiliated Undertakings grant comprehensive powers of attorney, duly executed, to the Divestiture Trustee to effect the sale, the Closing and all actions and declarations which the Divestiture Trustee considers necessary or appropriate to achieve the sale and the Closing, including the appointment of advisors to assist with the sale process. Upon request of the Divestiture Trustee, the Company shall cause the documents required for effecting the sale and the Closing to be duly executed.
28. The Company shall indemnify the Trustee and its employees and agents (each an "**Indemnified Party**") and hold each Indemnified Party harmless against, and hereby agrees that an Indemnified Party shall have no liability to the Company for any liabilities arising out of the performance of the Trustee's duties under the Commitments, except to the extent that such liabilities result from the wilful default, recklessness, gross negligence or bad faith of the Trustee, its employees, agents or advisors.
29. At the expense of the Company, the Trustee may appoint advisors (in particular for corporate finance or legal advice), subject to the Company's approval (this approval not to be unreasonably withheld or delayed) if the Trustee considers the appointment of such advisors necessary or appropriate for the performance of its duties and obligations under the Mandate, provided that any fees and other expenses incurred by the Trustee are reasonable. Should the Company refuse to approve the advisors proposed by the Trustee the Commission may approve the appointment of such advisors instead, after having heard the Company. Only the Trustee shall be entitled to issue instructions to the advisors. Paragraph 28 shall apply *mutatis mutandis*. In the Trustee Divestiture Period, the Divestiture Trustee may use advisors who served the Company during the Divestiture Period if the Divestiture Trustee considers this in the best interest of an expedient sale.

IV. Replacement, Discharge and Reappointment of the Trustee

30. If the Trustee ceases to perform its functions under the Commitments or for any other good cause, including the exposure of the Trustee to a conflict of interest:
 - (a) the Commission may, after hearing the Trustee, require the Company to replace the Trustee; or
 - (b) the Company, with the prior approval of the Commission, may replace the Trustee.
31. If the Trustee is removed according to paragraph 30, the Trustee may be required to continue in its function until a new Trustee is in place to whom the Trustee has effected a full hand over of all relevant information. The new Trustee shall be appointed in accordance with the procedure referred to in paragraphs 15 to 20.
32. Beside the removal according to paragraph 30, the Trustee shall cease to act as Trustee only after the Commission has discharged it from its duties after all the Commitments with which the Trustee has been entrusted have been implemented. However, the Commission may at

any time require the reappointment of the Monitoring Trustee if it subsequently appears that the relevant remedies might not have been fully and properly implemented.

SECTION F. THE REVIEW CLAUSE

33. The Commission may, where appropriate, in response to a request from the Company showing good cause and accompanied by a report from the Monitoring Trustee:
- (i) grant an extension of the time periods foreseen in the Commitments; or
 - (ii) waive, modify or substitute, in exceptional circumstances, one or more of the undertakings in these Commitments.
34. Where the Company seeks an extension of a time period, it shall submit a request to the Commission no later than one month before the expiry of that period, showing good cause. Only in exceptional circumstances shall the Company be entitled to request an extension within the last month of any period.

Brussels, 19 November 2013

.....
duly authorised for and on behalf of
Thermo Fisher Scientific Inc.

EXHIBIT A: The Cell Culture Business

Thermo Fisher proposes to divest its entire HyClone cell culture business (excluding single use technologies (“SUT”)), which includes the following assets:

HyClone sera and media facilities. Thermo Fisher processes and manufactures HyClone sera and media at the sites listed below, all of which would be divested as part of this offer. These facilities represent an autonomous cell culture business, including procurement, manufacture, operations and supply chain, customer service, finance, sales and marketing organisations. As discussed below, Thermo Fisher also hydrates a small amount of media at facilities in Cramlington, UK, and Beijing, China, but those facilities will not be part of the divestiture because the Cramlington facility is by and large an SUT facility and the Beijing facility is primarily used for Thermo Fisher’s microbiological division.

- *Omokora facility, Tauranga, New Zealand:* This cGMP site is used to process and manufacture New Zealand Fetal Bovine Serum (“FBS”), New Zealand Calf sera and New Zealand Adult Bovine sera. It is composed of 17,000 square feet across multiple buildings that include manufacturing lines (filtration, freezers, incubators, pooling tank, filling equipment and packaging equipment) as well as supply chain and operations infrastructure (shipping and logistics, quality assurance and inventory control). The facility has an annual production capacity of [150-200],000 litres. Its utilisation rate in 2012 was [30-40]%, and its output was [10-20],000 litres of FBS, [10-20],000 litres of calf sera and [10-20],000 litres of adult bovine sera.
- *Mordialloc facility, Melbourne, Australia:* This cGMP facility is used to process and manufacture Australian FBS. It is a 5,500 square feet building that includes manufacturing lines (single-use filtration, freezers, incubators, single-use pooling tank, single-use filling equipment and packaging equipment) as well as supply chain and operations infrastructure (shipping and logistics, quality assurance and inventory control). The facility has an annual production capacity of [90-100],000 litres. Its utilisation rate in 2012 was [10-20]%.
- *Omaha, Nebraska facility:* This 2,200 square feet facility is exclusively dedicated to the processing of US calf blood into raw newborn calf sera. The facility contains centrifuges and a freezer. The facility has an annual production capacity of [300-500],000 litres. Its utilisation rate in 2012 was [10-20]%.
- *Green Bay, Wisconsin facility:* This 14,000 square feet facility is exclusively dedicated to the processing of US calf blood into raw calf sera. The facility contains centrifuges and a freezer. The facility has an annual production capacity of [700-1000],000 litres. Its utilisation rate in 2012 was [20-30]%.
- *Logan, Utah facilities:* Thermo Fisher currently manufactures and distributes media and sera at its Logan, Utah facilities as follows:
 - Sera and liquid media facility: This cGMP facility is about 55,000 square feet, and includes both sera and media operations.
 - *Sera:* The facility is used to process and manufacture US FBS, Calf sera and Equine sera. It includes manufacturing lines and inventory storage (filtration, freezers, incubators, pooling tank, filling equipment and packaging equipment).

The facility has an annual production capacity of about [600-800],000 litres. Its utilisation rate in 2012 was [50-60]%.

- *Media*: This facility is used to manufacture liquid media and includes coolers, powder milling equipment, powder blending equipment, liquid hydration equipment (stainless steel tanks and single-use bags), filtration equipment, filling lines, packaging equipment. It has an annual production capacity of [20-30] million litres. Its utilisation rate in 2012 was [70-80]%.
- Powder media and component facility: This cGMP facility is dedicated to the manufacture of dry powder media, media component storage and raw sera warehousing. It is about 55,000 square feet. The facility is equipped with coolers, powder milling equipment, powder blending equipment, liquid hydration equipment (stainless steel and single-use), filtration equipment, filling lines, and packaging equipment. It has an annual production capacity of about [500-1000] tons. Its utilisation rate in 2012 was [50-60]%.
- USDA FBS & porcine sera facility: This cGMP facility is used to process and manufacture USDA FBS (Central American origin) and porcine sera. It is a 3,000 square feet building that includes manufacturing equipment (single-use filtration, freezer for finished sera, incubators, single-use pooling tank, single use filling equipment, bottling line and boxing station). The facility has an annual production capacity of [100-200],000 litres. Its utilisation rate in 2012 was [20-30]%, and its output was [10-20],000 litres of USDA FBS and [0-10],000 litres of porcine sera.
- Distribution warehouse facility: This cGMP facility spans approximately 50,000 square feet and contain sera and media finished product storage freezers with a capacity of [750-950],000 litre for finished sera products and [900-1600],000 litre for finished media products. While this warehouse is primarily used for storage of finished sera and media, it also currently houses a small SUT inventory, which will be relocated within [...] of completion of the divestiture.
- General administration building: This approximately 18,000 square feet facility houses the administrative staff and operations (finance, customer service, management, marketing, human resources, accounting and finance), and is also offered as part of the divestiture offer. All SUT personnel located in this building will be moved to another location within [...] of completion of the divestiture; the migration of IT systems will take up to [...].
- *Singapore*: This new 30,000 square feet facility manufactures dry powder media. It is equipped with coolers, powder milling equipment, powder blending equipment and packaging equipment. [...]. It is in start-up mode and in the process of being validated.
- *Aalst, Belgium*: This facility has 16,000 square feet of storage and distribution space for finished product sera and media. It is equipped with 12,000 square feet of ambient storage, 2000 square feet of refrigerated storage and 2000 square feet of freezer storage. While this warehouse is primarily used for storage of finished sera and media, it also currently houses a small inventory of non-cell culture products, which will be relocated within [...] of completion of the divestiture.

Product lines. The proposed divestiture includes Thermo Fisher's entire HyClone sera and media product lines, including, but not limited to, ANZ FBS, US FBS, and USDA FBS, and all HyClone liquid and dry powder media (including process liquids) product lines.

Brand names and intellectual property. As part of the proposed divestiture, Thermo Fisher offers to transfer the rights to all intellectual property, technology and know-how associated with its sera and media operations, including its proprietary media formulations. The intellectual property to be transferred to the purchaser includes:

- Hyclone™ and HyQ™: these brands and trade marks will be assigned to the purchaser. Immediately following the assignment, the purchaser will be required to grant Thermo Fisher an exclusive licence to use these trade marks/brand names in relation to Thermo Fisher's single use technology products and in any pre-existing company or legal entity name for two years. In that licence agreement, the purchaser will also agree not to use either brand name for SUT products or any products other than media and sera, in perpetuity;
- The Alpha Calf™ brand and trade mark;
- The FetalClone I™ brand and trade mark;
- The FetalClone II™ brand and trade mark;
- The FetalClone III™ brand and trade mark;
- The Cosmic Calf™ brand and trade mark; and
- Proprietary information kept as trade secrets relating to details on production processes, including in relation to standard operating procedures, for both sera and media.

Thermo Scientific name. Thermo Fisher will grant a licence to the purchaser to use the Thermo Scientific name for a period of two years in order to facilitate the sale of existing inventory held by the Cell Culture Business and to allow the purchaser to transition to packaging featuring its own corporate name and branding. For the avoidance of doubt:

- This licence will apply only in respect of inventory existing at the date of the sale of the Cell Culture Business and which has already been labelled with the Thermo Scientific name; and
- This licence will no longer apply in respect of any particular Stock Keeping Unit (SKU) labelled with the Thermo Scientific name once the purchaser has made sales of that SKU labelled without the Thermo Scientific name.

Personnel. The divestiture business will include all dedicated sera and media manufacturing employees covering all areas of operation, including processing, filling, packaging, operations and supply chain (approximately [...] full time employees).¹ Notably, Thermo Fisher also offers to transfer all key sera and media product management, quality, R&D, product management, and technical support personnel, as well as all personnel responsible for sera procurement (who have the relationships with abattoirs and blood collections). In addition, the divestiture will include an appropriate allocation of the personnel that split their time between sera and media, on the one hand, and SUT products, on the other hand (including sales, marketing, quality control, distribution, customer service and other support functions) (approximately [...] full time employees).

¹ Thermo Fisher will provide necessary leaders for appropriate support of the business. [...]

Key Personnel. The Key Personnel and their functions are as follows:

- [...] – Vice President / General Manager;
- [...] – Director Finance/IT;
- [...] – Director Sales and Marketing;
- [...] – Director Quality / Regulatory Affairs;
- [...] – Director Human Resources;
- [...] – Director Operations;
- [...] – Director Sera Procurement; and
- [...] – Director R&D and Field Application.

Supply chain. Thermo Fisher will provide its existing distribution capabilities and infrastructure at the above-listed facilities and relevant supply chain personnel.

Thermo Fisher distributes the bulk of its cell culture products in North America and Europe from its dedicated cell culture distribution facilities in Logan and Aalst which are included in the divestiture.² Thermo Fisher's Asia Pacific customers are served either directly or by Thermo Fisher's shared service centres in Japan and China. These shared service centres will not be part of the divestiture because they are used for distribution of many different products (beyond cell culture), but that should not have any meaningful impact on the divestiture buyer's cell culture business because (1) the most likely divestiture buyers will already have their own distribution facilities; (2) the divestiture buyer can use third party warehousing providers similar to what Thermo Fisher does in many countries; or (3) the divestiture buyer can easily build its own cell culture warehouse (it is essentially no more than leased space with a freezer). Nonetheless, Thermo Fisher commits to continue to distribute sera and media products on behalf of the divestiture buyer under a transitional services agreement, for up to [...].

Inventory. The divested business will include transfer of Thermo Fisher's entire HyClone sera and media inventory, which currently amounts to approximately [600-700],000 litres of sera (including [20-30],000 litres of ANZ FBS and [100-200],000 litres of US FBS), [10-20] million litres of liquid media and [100-200] tons of powder media. Thermo Fisher estimates that this inventory would last [...], on average.

Customer contracts. The divested business will include transfer of all existing sera and media supply contracts between Thermo Fisher and its bioproduction and research customers to the extent those contracts can be assigned. Thermo Fisher will provide its cell culture customer database and invoicing information.

Distributors / Dealers. Thermo Fisher will facilitate the assignment of its existing distributor / dealer arrangements, to the extent possible.

² Thermo Fisher distributes a small portion of its media and sera for research customers through CCG.

SUT is not part of the divestiture. Thermo Fisher will not divest its SUT business because (1) SUT is not an overlap product, and (2) SUT is not needed to compete successfully in the sera and media markets, as LIFE and other suppliers have demonstrated. All but one of Thermo Fisher's SUT facilities are standalone buildings dedicated to SUT operations that will not raise any separation issues for the sera and media business. The only (minor) exception is Thermo Fisher's SUT facility in Cramlington, which also houses a small media hydration operation.

- Thermo Fisher primarily uses its Cramlington facility for SUT manufacturing and, therefore, has not included this facility in its divestiture proposal. A small part of this facility is dedicated to media hydration for European customers.
- Tolling agreement for media sold in SUT bags. Some of Thermo Fisher's customers purchase its media in SUT bags. To minimise disruption for those customers, Thermo Fisher is prepared to enter into a tolling agreement to supply the divestiture buyer with SUT bags, so that the divestiture buyer can continue to supply the media in the same SUT bags, just like Thermo Fisher does today.

Media hydration equipment. As mentioned above, the Cramlington and Beijing facilities will not form part of the divestiture. However, the media hydration equipment contained in these two facilities will be offered to the purchaser to be used at a different site or sites. That equipment includes liquid hydration equipment, filtration equipment, filling lines and packaging equipment. The Cramlington facility has a production (practical) capacity of about [0-10] million litres with a utilisation rate of [20-30]% in 2012. The Beijing facility has a production capacity of about [500-700],000 litres with a utilisation rate of [60-70]% in 2012.

Transitional supply to Thermo Fisher. Thermo Fisher's cell culture division currently supplies minimal amounts of both sera and media products to other parts of Thermo Fisher for use in research and other applications. The value of such sales was less than [...] in 2012. Thermo Fisher would require the purchaser to continue supplying Thermo Fisher with the same products for a maximum of 3 years (at current transfer prices, which are above cost).

EXHIBIT B: The Gene Modulation Business

To resolve the Commission's concerns about the parties' overlap in siRNA and miRNA, Thermo Fisher, therefore, commits to divest the assets described below, comprising its gene modulation business in Lafayette, Colorado (subject to the limitations below, such as the retention of certain executives and personnel at the Lafayette facility ([...]) who will remain with Thermo Fisher because they have responsibilities in its molecular biology business beyond gene modulation).

Lafayette, Colorado facility: This is the only location where Thermo Fisher develops and manufactures gene modulation products (including siRNA, shRNA, and miRNA reagents and libraries), as well as Thermo Fisher's distribution hub for gene modulation products (all of Thermo Fisher's customers of gene modulation products are supplied from the Lafayette facility). Thermo Fisher acquired the facility through its purchase of Dharmacon, Inc. in 2004, and has since expanded it. It is now a leased 78,721 square feet facility, spread across two buildings (65,971 and 12,750). The manufacturing processes at the Lafayette facility include RNA and DNA synthesis; siRNA plating, storage and retrieval; RNA viral construct production and plating; viral particle production; and gene content clone distribution. The Lafayette facility is a standalone, autonomous site, including R&D, manufacturing operations and supply chain, customer service, finance, and sales and marketing organisations, as well as management for the referenced product lines.

Product lines. The gene modulation product lines manufactured in Lafayette include:

- All siRNA reagents and libraries including:
 - siGENOME
 - On-TARGETplus
 - Accell
 - lncRNA
- All shRNA reagents, viral particles, and libraries including:
 - GIPZ
 - TRIPZ
 - Decode
 - TRC
- All miRNA reagents and libraries including:
 - miRIDIAN
 - shMIMIC
- RNAi controls

- DharmaFECT transfection reagents³
- cDNA and ORF clones and gene collections
- Custom RNA, DNA, and other molecules

Personnel. If divested in its entirety, the gene modulation business in Lafayette would include:

- Approximately [...] employees (including several original Dharmacon employees).
- Manufacturing, materials sourcing, distribution, marketing, sales and management (including all key gene modulation product management).
- A complete R&D and bio-informatics team, a Call Centre (including customer service and technical support), and administrative support functions such as Finance and IT.

Most personnel currently at the Lafayette facility would be part of the divested business, except a few executives and some other personnel that manage aspects of Thermo Fisher's molecular biology business beyond gene modulation ([...] employees). Those employees will be transferred to another Thermo Fisher location if the Lafayette facility is divested.⁴ The divested business would also include several sales representatives in the US and in other countries that represent and sell the gene modulation products.

Key Personnel. The Key Personnel and their functions are as follows:

- [...] – Vice President / General Manager;
- [...] – Director of Operations;
- [...] – Finance Director;
- [...] – R&D Director;
- [...] – Marketing Director;
- [...] – North America Sales Director;
- [...] – EU Sales Director; and
- [...] – APAC & Distributor Sales Director.

³ But note that the divestiture will not include Thermo Fisher's *TurboFect* transfection reagents because those are manufactured in its facility in Vilnius, Lithuania and the Commission has not expressed concern about the parties' overlap in transfection reagents.

⁴ In the event of a divestiture of the Lafayette facility, the transfer of Thermo Fisher's limited non-gene modulation operations out of the Lafayette facility (some personnel and IT-systems) may take up to six (6) months to complete.

Supply chain and infrastructure. Thermo Fisher will provide existing direct distribution capabilities at the Lafayette facility and relevant personnel, together with access on a transitional basis to the shared services centres in Germany, Japan and China.

Distributors / Dealers. Thermo Fisher will facilitate the assignment of distribution agreements with third party distributor partners to the extent that they are assignable.

Information technology. Thermo Fisher will provide the code relating to the legacy Dharmacon and Open Biosystems websites and the underlying content which support the aforementioned product lines.

Tuschl licence. Thermo Fisher's gene modulation business includes one of a total of four licences to the Tuschl patents granted by MIT. Thermo Fisher's Tuschl patents licence will be transferred to the purchaser of the gene modulation business (or otherwise terminated by Thermo Fisher).

Other intellectual property. Thermo Fisher's gene modulation business includes intellectual property, technology and know-how related to the development, design and manufacture of its siRNA, shRNA and miRNA product lines, including:

- siGENOME design;
- On-TARGETplus design;
- Accell molecule design;
- SMARTvector design;
- miRIDIAN designs;
- shMIMIC design;
- SMARTchoice design;
- Gene sequences; and
- ACE chemistry processes.

Thermo Fisher uses or expects to use some of intellectual property covering the development, design and manufacture of the above product lines (notably intellectual property covering gene sequences but also the ACE chemistry processes) for broader purposes than the gene modulation business. Therefore the transfer to the divestiture buyer of the ACE chemistry processes will be subject to a licence back for applications outwith gene silencing; and the intellectual property relating to gene sequences will be the subject of an exclusive licence to the divestiture buyer for gene modulation applications.

Brand names. Thermo Fisher's gene modulation business includes the rights to the Dharmacon and Open Biosystems brands, as well as the names to various product lines, such as:

- siRNA product names (e.g., siGENOME, ON-TARGETplus, Accell);

- shRNA product names (e.g., GIPZ, TRIPZ, Decode);
- miRNA product names (e.g., shMIMIC, miRIDIAN); and
- DharmaFECT.

Thermo Scientific name. Thermo Fisher will grant a licence to the purchaser to use the Thermo Scientific name for a period of one year in order to facilitate the sale of existing inventory held by the Gene Modulation Business and to allow the purchaser to transition to packaging featuring its own corporate name and branding.

Customer contracts. Customers typically purchase gene modulation products on an *ad hoc* basis. Thermo Fisher will provide relevant customer records to the purchaser.

Inventory transfer. Virtually all of Thermo Fisher's inventory of gene modulation products is warehoused at the Lafayette facility. This inventory, which includes all existing siRNA, shRNA and miRNA reagents and libraries, as well as the extensive cDNA and ORF collections, would be transferred to the divestiture buyer as part of a full divestiture of the gene modulation business.

EXHIBIT C: The Magnetic Bead Business

Thermo Fisher proposes to divest its existing magnetic bead business (excluding its facilities used for the production and supply of magnetic beads). This business will be carved out from Thermo Fisher's existing clinical diagnostics business. The objective of the divestment is to allow the purchaser to manufacture magnetic beads of the same type and quality and under the same brand names as currently manufactured by Thermo Fisher.

The Magnetic Bead Business will include the following assets:

Brand name. As part of the divestiture, Thermo Fisher commits to assign the Sera-Mag™ and Sera-Mag SpeedBeads™ brand names and associated trade marks to the purchaser.

Thermo Scientific name. Thermo Fisher will grant a licence to the purchaser to use the Thermo Scientific name for a period of one year in order to facilitate the sale of existing inventory held by the Magnetic Bead Business and to allow the purchaser to transition to packaging featuring its own corporate name and branding.

Other intellectual property. In addition to the above brand names and trade marks, Thermo Fisher will offer to assign all intellectual property rights which contribute to the current operation or are necessary for the manufacture and supply of Thermo Fisher's magnetic bead products. This includes a transfer of the following:

- (i) **Patents:** relating to (a) the manufacture of magnetic beads with negligible residual magnetism and (b) the reduction of response time of the beads to a magnet;
- (ii) **Know-how:** Thermo Fisher also commits to provide a purchaser with access to Thermo Fisher's transfer plan relating to the execution of its recent move of its magnetic bead production facilities from Indianapolis, Indiana, to Fremont, California, on the basis that the confidential information contained in such plan remains confidential and personal to the purchaser. Together with the transfer of personnel with R&D and operations capabilities (described below), this will assist the purchaser in managing the validation of its new facilities.

Equipment. Thermo Fisher will offer to the purchaser its equipment used in the manufacture of magnetic beads, or, at the option of the purchaser, equivalent new equipment (to be acquired by Thermo Fisher). Thermo Fisher will transport and install this equipment at a manufacturing location chosen by the purchaser. Thermo Fisher will provide such support as is reasonably required to enable the purchaser to utilise the equipment to manufacture magnetic beads of the same type and quality as currently manufactured by Thermo Fisher.

Transitional supply agreement. Thermo Fisher expects that it could take up to two years for the above-mentioned equipment to be installed at the purchaser's premises and validated by customers. Thermo Fisher will therefore offer the purchaser the benefit of entering into a transitional supply agreement ("**Transitional Supply Agreement**") under which Thermo Fisher will supply the purchaser with magnetic beads for resale⁵ (to meet the reasonable needs of the purchaser) until such time as the magnetic beads equipment is removed from Thermo Fisher's facilities or, if the purchaser elects to

⁵ This will ensure the purchaser can operate the Magnetic Bead Business as a viable entity until the purchaser has completed customer and site revalidation at its production facilities.

acquire new equipment from Thermo Fisher, up to a maximum of two years (following the purchase of the Magnetic Bead Business). Under the Transitional Supply Agreement, Thermo Fisher will supply the purchaser with magnetic beads at standard costs of sales terms.

As Thermo Fisher uses magnetic beads in the production of downstream products, including products that are marketed under the Pierce brand, the Transitional Supply Agreement will also provide for Thermo Fisher to continue self-supply of magnetic beads until the magnetic beads equipment is removed from Thermo Fisher's facilities or until six months after a decision by the Commission to approve the proposed transaction under Phase 1 of the EUMR (whichever is sooner). At the end of the Transitional Supply Agreement, Thermo Fisher will cease to manufacture magnetic beads at its facilities in Fremont, California.

Customer contracts. The divestiture business will include transfer of all existing magnetic bead supply contracts between the Thermo Fisher magnetic bead business and its customers to the extent those contracts can be assigned. Thermo Fisher will provide its magnetic bead customer database and invoicing information.

Personnel. The divestiture business will include all employees whose function predominantly relates to the manufacture and/or supply of magnetic beads, which equates to six full-time employees across the following functions:

- 2 full-time employees in sales *OR* 1 full-time employee in sales and 1 full-time employee in marketing;
- 1 full-time employee in R&D;
- 2 full-time employees in operations (manufacturing); and
- 1 full-time employee in operations (quality assurance/quality control).

Key Personnel. Thermo Fisher is prepared to consider each of the six above-mentioned employees as Key Personnel.

Supply chain. The purchaser will be able to enter into a Transitional Supply Agreement with Thermo Fisher for supply chain and distribution services, until such time as it is able to supply magnetic beads from its own facilities (up to a maximum of two years), on equivalent terms as currently supplied to Thermo Fisher's magnetic bead business.

Inventory. Upon the expiry of the Transitional Supply Agreement, the divestiture business will include the transfer of Thermo Fisher's entire remaining magnetic bead inventory as well as any remaining inventory of raw materials specific to the production of magnetic beads at the Fremont facility.

Facilities are not part of the divestiture. Thermo Fisher's magnetic bead business is conducted on several sites in Fremont, California. These facilities are primarily used for the production and supply of products other than magnetic beads. Separating these facilities would be difficult and impose disproportionate costs on Thermo Fisher, given the very limited size of Thermo Fisher's presence in magnetic beads. For a purchaser with suitable production facilities, the divestiture business contains all the assets necessary to ensure its viability and competitiveness.

Distributors / Dealers. The divestiture business will not include Thermo Fisher's distribution facilities; however, Thermo Fisher will continue to distribute magnetic beads on behalf of the purchaser, for the duration of the Transitional Supply Agreement.