

General Information	
Preliminary title of the European Partnerships	European Partnership for Animal Health (PAH)
Short description of the partnership	Deliver key knowledge, services and products to significantly improve the control of animal infectious diseases and animal welfare in a coordinated way, thus sustain animal production and protect public health. It will involve most reference laboratories, embark funding agencies and cooperate with private sectors. By 2030, programmes will be further aligned, the animal health and welfare R&I ecosystem will be stronger, improving preparedness and providing additional solutions to prevent, detect and respond to priority infectious animal diseases, fight AMR, and improve animal welfare.
Services directly involved	Lead services: AGRI/B2 and SANTE/D1 Other services: DG RTD/E3; RTD/F3; MARE
Context and problem definition <i>[this section is new compared to the previous template]</i>	<p>Animal diseases are estimated to cause 20% loss in productivity, according to the World Organisation for Animal Health (OIE). In addition to large epidemics that spread beyond geopolitical borders (Foot and Mouth Disease -FMD, Bovine Spongiform Encephalopathy -BSE, Classical Swine Fever -CSF, and more recently Avian Influenza -HPAI, African Swine Fever -ASF), whose costs are in hundreds of millions (FMD, Influenza, ASF), sometime billions of Euros (BSE), many infectious diseases are endemic and less ‘visible’ but cost equally a lot, mainly to farmers. Diseases may re-emerge after eradication and new diseases emerge periodically; a large proportion of them are zoonoses (diseases transmissible between animals and humans). For the period 2014-2020, more than 1 billion EUR are allocated by the EU to fund animal health measures implemented in member States, from emergency measures to programmes for the eradication, control and surveillance of animal diseases and zoonoses. Anti-microbial resistance -AMR, is another growing threat to animal and human health, requiring a holistic –“One Health” approach. AMR is responsible for an estimated 33,000 human deaths per year in the EU. It is also estimated that AMR costs the EU 1.5 billion EUR per year in healthcare costs and productivity losses. The large use of anti-microbials in the livestock sector is contributing to AMR. The challenge is to find innovative solutions to reduce the need to use of anti-microbials. Vaccines against a number of animal diseases do not exist or are not fully efficient. Limitation on the use of anti-microbials and insufficient research into new ones raises challenges to disease prevention and control.</p> <p>The initiative is prepared now for the following reasons:</p> <ul style="list-style-type: none"> • The transboundary character of infectious diseases makes it a common challenge for many countries. The risk of introduction into new territories is constant (see ASF emergence in Asia, after Africa and Europe). Climate change (temperature rise) exacerbates the risk of incursion of exotic vector borne diseases (Blue Tongue, West Nile Fever...). • AMR is serious challenge to be addressed at EU (and global) level(s). • Public research budgets for animal health have a decreasing trend, but challenges are still present, even increasing (e.g. due to climate change, to new risks). • New opportunities are offered by recent technologies (e.g. genetics, genomics, microbiome), which require coordination and cooperation to deliver large experiments/data sets. • “Easy” vaccines were found for several pathogens already (sometimes through FP projects, i.e. for CSF, Blue Tongue). For other diseases, e.g. ASF, it is challenging to design efficient and safe vaccines, due e.g. to complex and evolving pathogens with mechanisms to avoid immune response by the host, sometimes acting in combination with other micro-organisms. In addition, the vast number of pathogens makes it difficult for the research community

	<p>(private or public) to address even some important ones. The production of new vaccines and improvement of existing ones will require significant additional knowledge such as new approaches to antigen selection and production, antigen delivery, improved adjuvants, vaccine administration, before products could be ready for commercialisation. Other treatments, including alternatives to AMs and new/improved diagnostics, and new scientific information/tools for risk analysis, are important to control these animal diseases. Delivering on these require ambitious coordination and cohesion among actors.</p>
<p>Objectives and expected impacts</p>	<ul style="list-style-type: none"> ▪ The overall aim of the partnership is to foster scientific progress by improving coordination of research activities on the major infectious diseases of livestock and zoonoses so as to hasten the delivery of improved control methods; to strengthen the linkages between and reduce the duplication of European (/global) research efforts on infectious diseases of animals (including transboundary animal diseases and zoonoses) and their impact, including AMR, and maximise the efficient use of expertise and resources and accelerate coordinated development of control methods. ▪ The partnership will help delivering candidate vaccines, diagnostics, therapeutics and key scientific information/tools to support risk analysis and disease control (from preparedness to management), including e.g. epidemiology, ecology, host-pathogen interaction. Involvement of the industry would facilitate exploitation of the knowledge generated. ▪ The benefits to society will arise from a reduction of risk to human health (reduction of risk of zoonoses, of AMR threat, of food-borne pathogens); from a more efficient animal production (fewer losses) and related reduction of greenhouse gases as a co-benefit of better animal health; from better food security. The partnership will contribute to improve animal welfare, which is an increasing societal demand. ▪ The benefits to the economy will be linked to the benefits mentioned above, but also to fewer food scares and smoother animal/food trade, to better competitiveness of the animal health industry. The partnership will provide socio-economic benefits in rural areas, providing additional tools to farmers and veterinarians to improve sustainability of production ▪ The partnership will support the EU (and global) regulatory framework for animal disease control and related EU policies (e.g. zoonoses, food safety, animal welfare). It will help reducing the cost to EU in its funding of disease control measures in Member States. ▪ Priority domains (e.g. diseases and related issues) can be identified during preparation or at the start of the partnership. Monitoring could be organised around them. Some priority domains will lead to products/services within a typical partnership duration of 5-7 years (e.g. advance in the development of vaccine delivery platforms and adjuvants with promising attributes, diagnostics easy to use in the farm to improve early warning of diseases). However, certain priorities (e.g. brand new vaccines/therapeutics) will certainly require a sustainable partnership beyond that duration, in order to support innovation pathways from basic science to marketable products and services.
<p>Necessity test: rationale for a European Partnership</p>	<p>Health of Animals has a series of consequences on the economy of the livestock/food sector, on trade, on food security, on health of citizens (zoonoses, Antimicrobial Resistance), thus it is subject to EU policies/strategies.</p> <p>Building on pre-existing initiatives (e.g. ERA-NETs), the partnership will foster coordination on integration of research funding on infectious animal diseases including transboundary diseases and their impact (e.g. zoonoses, AMR), at least among public research programme owners/managers, involving as much as possible the private sector.</p> <p>Related domains (e.g. animal welfare, precision farming, animal genetics, nutrition) could be considered. R&I aspects of microbiological (zoonotic) food</p>

	<p>safety would be addressed, while ensuring synergies with other potential partnerships and avoiding overlaps.</p> <p>Investing EU funding in a partnership on this field would be needed as:</p> <ul style="list-style-type: none"> ▪ No single MS has the capacity on its own to address the challenges faced when developing new vaccines and diagnostic tools, understanding epidemiology of diseases etc. Not least against transboundary diseases. Furthermore, collaboration with industry in the animal health sector would be important to set up R&I priorities in this area, help commit their resources, and facilitate exploitation of generated knowledge into innovative products and approaches. ▪ New diseases/challenges, decreasing research budgets, duplication of work, insufficient industry interest in some domains and the need for data require a partnership approach to increase efficiency and efficacy of the animal health research sector, around shared priorities, rather than scattered topics in work-programmes ▪ The development and ‘validation’ of products, such as treatments or new vaccines may require a continuum in the R&I chain, starting from basic research on the understanding of the pathogen and its interaction with the host, to industrial production of innovative products. ▪ There is history of successful but relatively modest EU public-public research partnerships mainly ERA-NETs: The FP7 EMIDA, followed by ANIHWA, succeeded to mobilising over 70 million euros in several joint calls funded from member countries. An international network of public research funders, STAR-IDAZ was supported by FP7 and was followed up by an ‘International Research Consortium (STAR-IDAZ IRC), opening new avenues for global cooperation. A new ERA-NET for international coordination of research on infectious animal diseases is planned for end 2019 (ICRAD). Those activities provided improved collaboration on research prioritisation and procurement for public institutions while companies were involved only marginally into research projects until now. The momentum is there to strengthen the level of collaboration between public entities, and with the private sector, but shifting gear is necessary. <p>Involvement of all interested EU countries will be sought. Consideration should be given to open the partnership to international participation as AMR and infectious diseases are cross-border issues that have an impact on international trade, and the animal health industry preferably contemplates markets beyond a single continent.</p>
<p>Relevant for the following parts of Horizon Europe</p>	<p>Pillar II 'Global Challenges and European Industrial Competitiveness'</p> <ul style="list-style-type: none"> <input checked="" type="checkbox"/> Cluster Health <input type="checkbox"/> Cluster Culture, creativity and inclusive society <input type="checkbox"/> Cluster Civil Security for Society <input type="checkbox"/> Cluster Digital, Industry and Space <input type="checkbox"/> Cluster Climate, Energy and Mobility <input checked="" type="checkbox"/> Cluster Food, Bioeconomy Natural Resources, Agriculture and Environment <input type="checkbox"/> Cross-cluster <input checked="" type="checkbox"/> Pillar III ‘Innovative Europe’
<p>Currently identified links with other partnership candidates / Union programmes</p>	<p>Currently identified links with other partnerships are :</p> <ul style="list-style-type: none"> • The proposed Innovative Health Initiative, if it would address issues relevant to animal health (zoonoses, AMR). • The planned partnership on food systems, in respect of food safety • JPI AMR on the human-animal-environment interface of AMR JPI HDHL on food safety along the food chain • H2020 Infrastructure project VetBioNet <p>Other Union programmes: to be further investigated</p>

Does the proposed partnership build on currently active ones?	<p>ERA-NET ICRAD (H2020 SC2 SFS-31-2019 scope C): on-going evaluation; planned duration: five years starting Autumn 2019 (co-funded call in first year)</p> <p>EJP One Health, partly: at least on the AMR issue (food-borne zoonoses would possibly be captured under the ‘food systems’ planned partnership)</p> <p>Those currently active networks will represent the basis to build an integrated partnership in the Animal Health sector, which will open to new partners from EU and beyond, such as other public/private Research Institutes and likely the private sector, enhancing coordination of current activities towards common goals.</p>
Expected type and composition of partners	<ul style="list-style-type: none"> ▪ At least: Public research programme owners/managers in animal health in Europe ; possibly research funders, such as foundations ▪ As much as possible: <ul style="list-style-type: none"> ▪ Public research programme owners/managers from non-European countries willing to coordinate efforts on animal health research ▪ ‘industrial’ sector (including SMEs), in particular pharmaceutical industry, diagnostic industry ▪ Depending on scope, either as partners or as stakeholders: public or private actors in related domains, such as feed (additives) industry; animal welfare; genomics; environmental health; precision farming ▪ As stakeholders: veterinary profession, animal farming community; organisations (OIE, FAO; EFSA; EMA)
Contributions and commitments expected from partners	<p>To achieve critical mass, the public sector contribution should be a significant proportion of national expenditures (MSs spend circa 300-400 million/year). Mobilisation of resources will depend on whether resources are redirected from within programme managers’ activities member of the consortium (internal calls; +/- in kind contribution), or whether research activities are performed mainly through external calls requiring ‘in cash’ funds. Mobilisation is expected to be easier in the former case. The ICRAD ERA-NET proposal plans at least €16 million in cash for the co-funded call. One such call every year for five years would mobilise €80 million in cash. On this basis, the financial contribution for the partnership should be at least €100 million, but could likely up to 200-300 M€ if ‘in kind’ contributions are included.</p> <p>The contribution from the private sector (industry) will depend on their commitment and the format of their contribution. Exploratory discussions were inconclusive so far. The animal health pharmaceutical industry spends circa 400 million/year- including pet animals.</p>
Currently envisaged implementation mode(s).	<p><input checked="" type="checkbox"/> Co-programmed European Partnership</p> <p><input checked="" type="checkbox"/> Co-funded European Partnership</p> <p><input type="checkbox"/> Institutionalised European Partnership</p> <ul style="list-style-type: none"> <input type="checkbox"/> Article 185 <input type="checkbox"/> Article 187 <input type="checkbox"/> EIT-KIC
Justification of the implementation mode	<p>The co-funded model is preferred because:</p> <ul style="list-style-type: none"> • The large EU/global regulatory framework requires research to support policy (assessing and managing risks) and public research is more appropriate to provide independent assessment. • Animal health research is traditionally quite prominent in the public sector, not least because of the seriousness of many infectious diseases and their impact on agri-food production, trade, consumer confidence. • There is a history of public-public partnership in animal health research (e.g. a SCAR collaborative working group is operational since 2005). • A significant proportion of the research needs relate to basic research (e.g. understanding pathogens, their evolution and their interactions with host, environment), and public research is more prone to develop such research activities than the private sector.

	The implementation mode will depend on the flexibility of the co-funded model, in particular how far the private sector beyond foundations, i.e. the industry, can be associated/involved. An option may be one partnership with a co-programmed and a co-funded part. Another option would be an additional co-programmed partnership with the industry.
Proposed starting year	2023/2024