



**EAS**  
Enterprise Estonia



Bio-Competence Centre of  
Healthy Dairy Products LLC



European Union  
Regional Development Fund



Investing in your future

# **Bio-Competence Centre of Healthy Dairy Products LLC (BioCC)**

**Ene Tammsaar**  
**CEO**  
**02.04.2014**



**EAS**  
Enterprise Estonia



Bio-Competence Centre of  
Healthy Dairy Products LLC



European Union  
Regional Development Fund



Investing in your future

**From research to valuable new products.**

**Probiotic cheese SÜDAMEJUUST.  
SILAGE INOCULANT E-98**

# BioCC

The Bio-Competence Centre of Healthy Dairy Products LLC (Bio-CC) is a private company, established on December 2004 by the Estonian companies and universities in compliance with the national Competence Centre Program.

## 2 universities and 9 entrepreneurs

**The driving force of BioCC is consumer demand for healthy food** (changes in our living environment, aging of population, people with weakened immune system, including. cancer, allergies, metabolic syndrome, obesity, high blood pressure, diabetes, etc.

\*the whole world is searching with the help of food industry the science-based solutions for prevention and reduction of health problems

\* milk is a high valuable and irreplaceable food

\* dairy sector is one of the most important industries in Estonian agriculture

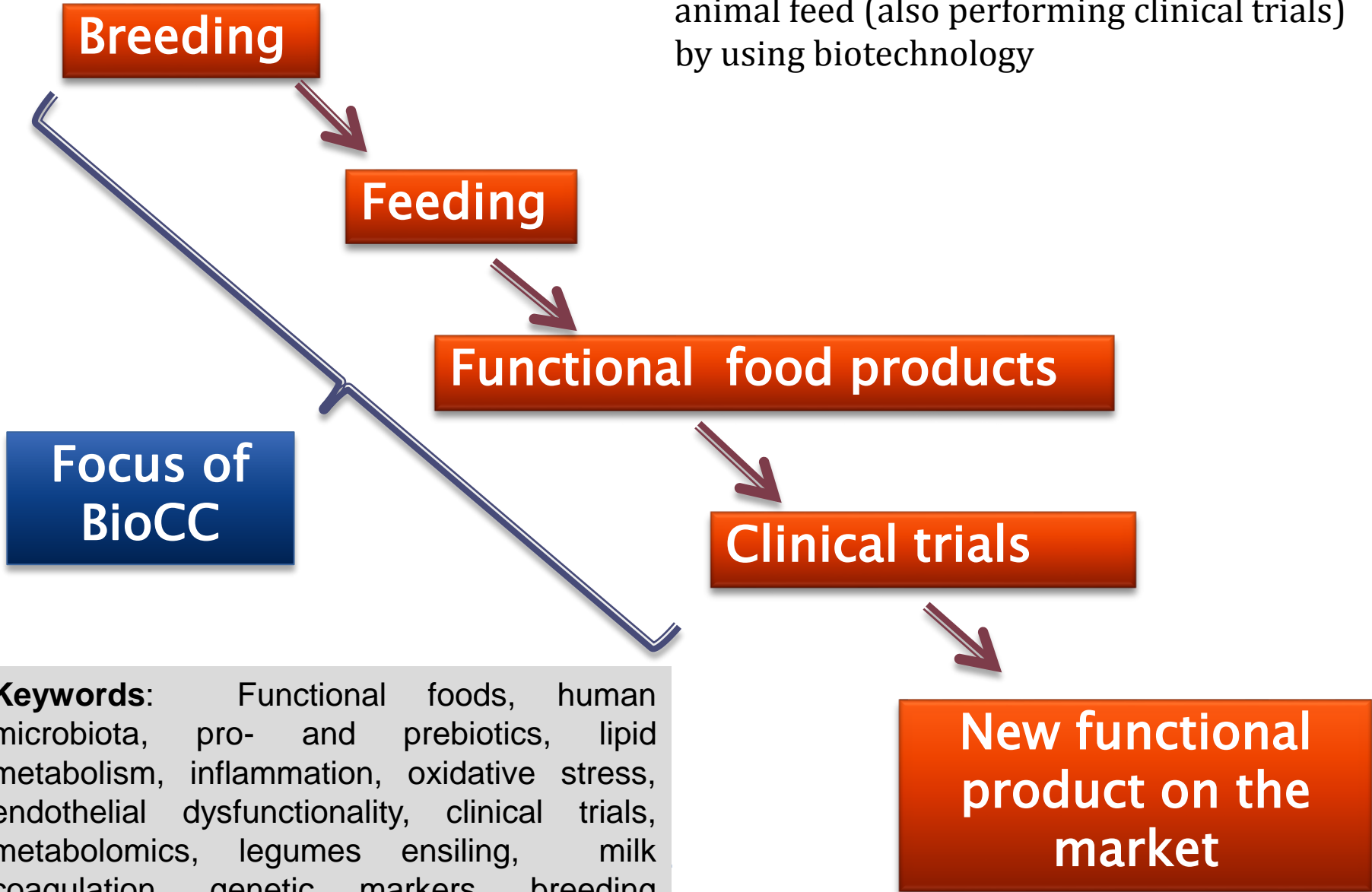
\* taking into account market demand already in the phase of milk production, i.e. livestock breeding, feeding and keeping

•In the BioCC the principle “from farm to fork” is fully in force

•Applied research.



BioCC- Developing healthy food stuff and animal feed (also performing clinical trials) by using biotechnology



**Keywords:** Functional foods, human microbiota, pro- and prebiotics, lipid metabolism, inflammation, oxidative stress, endothelial dysfunctionality, clinical trials, metabolomics, legumes ensiling, milk coagulation, genetic markers, breeding programme, PUFA, reological properties of dairy products, natural antioxidants.

# Shareholders/partners

- BioCC has limited partnership, 51% of shares belong to enterprises and 49% to universities.
- Estonian **University** of Life Sciences
  - Institute of Veterinary Medicine and Animal Sciences (Department of Nutrition and Animal Products Quality)
  - Department of Animal Genetics and Breeding
  - Department of Food Science and Hygiene
- **University of Tartu**
  - Department of Microbiology
  - Department of Biochemistry
- **Animal Breeders' Association of Estonia**
- **E-Piim Production**
- **Starter ST Ltd**



Bio-Competence Centre of  
Healthy Dairy Products LLC



# Consortium Partners

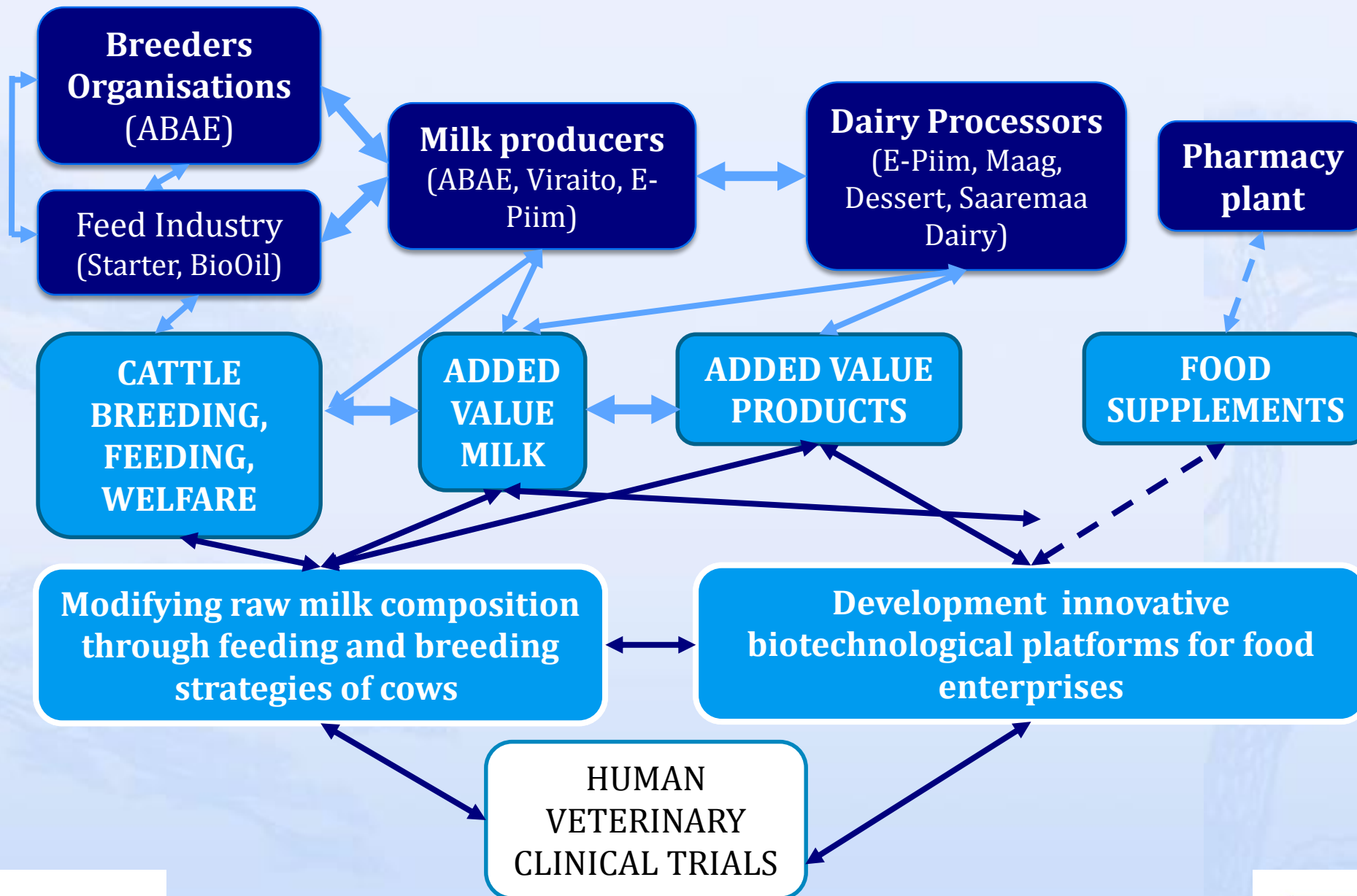
- MAAG Dairy Industry Ltd.
- Dessert Ltd
- Estonian Animal Recording Centre (EARC)
- BioOil Ltd
- Saaremaa Dairy Ltd
- Viraito LLC



# Partners involved in projects

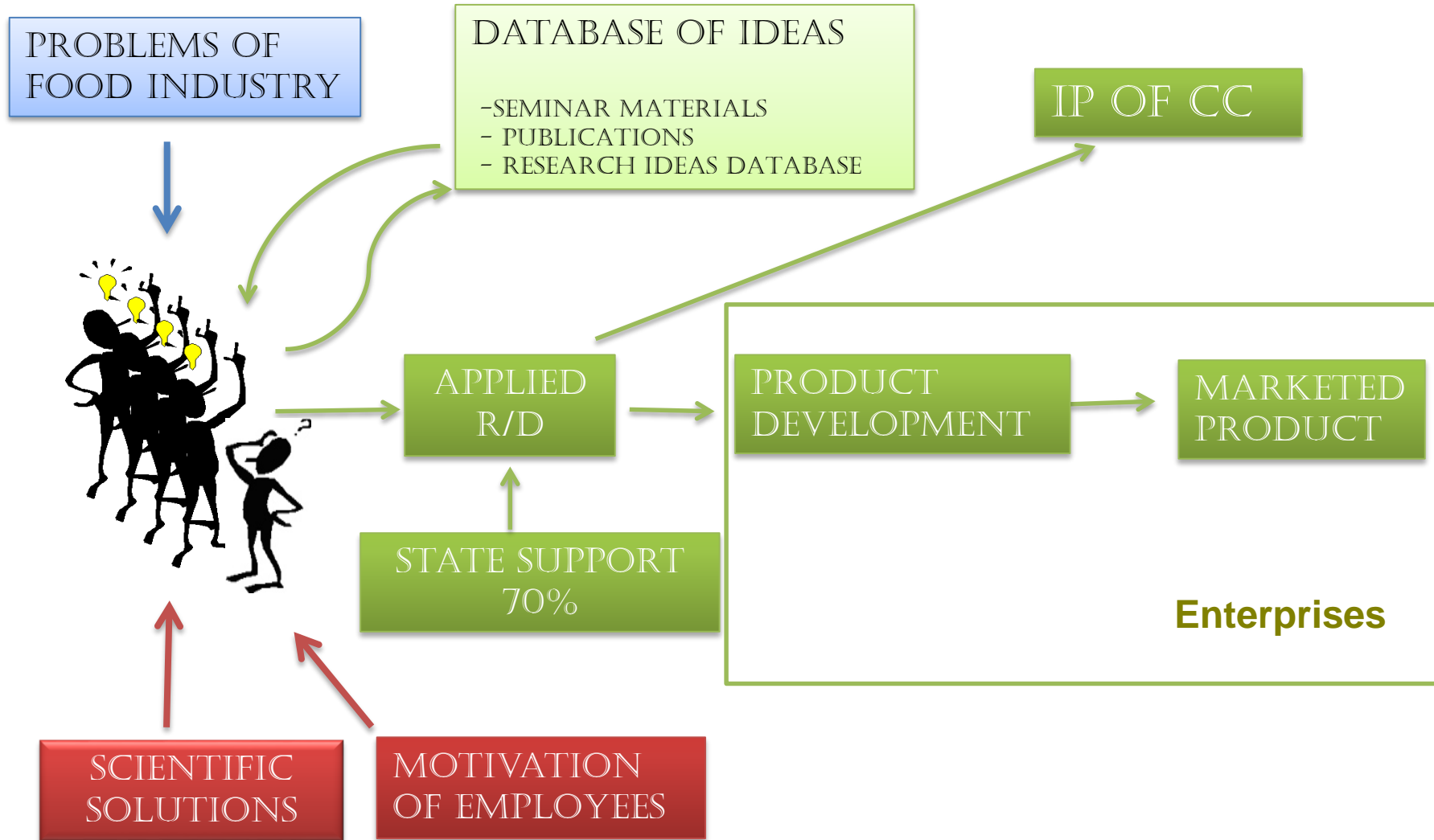
- **Bacula**
- Nopri talu
- Pajumäe talu
- Luke farm
- Metsavenna talu
- Piisonifarm
- Tubri kitsefarm
- Tartu Agro
- Põlva Agro
- **Felix**







# Idea generation process of BioCC Products



# *Lactobacillus plantarum* TENSIA® (DSM 21380)

- Origin: isolated from a healthy Estonian infant in 1995.
- Belongs to BioCC
- Deposited in DSM

## Health effects of TENSIA®

- The **reduction of peripheral blood (systolic and diastolic) pressure** and improvement of some other cardio-vascular risk factors
  - BioCC granted licence of TENSIA to E-Piim Production
  - E-Piim Production launched Südamejuust Harmony to the market
- Approved by clinical trials ((800 persons), that:



# Probiotic Harmony™ Südamejuust (Heart - friendly cheese)

Approved by clinical trials ((800 persons), that:  
Regular, at least for 8 week consumption of 50g/day probiotic *Lactobacillus plantarum* TENSIA® comprising Südamejuust helps to maintain the cardio-vascular system / heart health through reduction of blood pressure

*Südamejuust*  
Tugevdab Sinu tervist ning mõjub hästi südame tööle ja veresoontele

125 g

*Harmony*™  
*Südamejuust*

*Harmony*™  
*Südamejuust*  
See on juust, mis ei ole lihtsalt maitsev, vaid mõjub hästi ka tervisele. Probiotilise juustu Harmony mõjutab kasulikult südame-veresoontkonna tööd. Harmony™ Südamejuust sisaldab probiootilist laktoobatsilli tüve *Lactobacillus plantarum* TENSIA Tervisliku Piima Biotehnoloogia Arenduskeskuse litsentsi alusel.

Probiotilise juustu tarbimine kuulub mitmekülgse ja tasakaalustatud toitumise juurde, mis koos füüsilise aktiivsusega on vajalik tervislikuks elustiiliks.

**Koostis:**  
pasteeritud piim, juuretis, mikrobioloogiline loop, taoline heakvaliteet, looduslik ma x 1,6%, *Lactobacillus plantarum* Tensia ma 10<sup>9</sup> pss/1 g-s

**100g tootet sisaldab keskmiselt:**  
energiat 310kJ/74kcal, valgu 7,7g, süsivesikuid 0g, sh sahkruid 0g, rasva 26g sh küllastunud rasvhapped 15g, kolesterool 0g, naatrium 0,6 g.

**Hoidustingimused:**  
temperatuuril +2 kuni +8 °C, saliteel  
hinnitud kestvus <8%.

**Parim enne:** vaata pakendilt.

**Tootja:**  
PJ S-Pim Piimatööstus Meie  
Välja 4 Piimatööstus 48302, Eesti  
www.spim.ee

**TEHNIKA**  
**Teab head**  
EE 119 ED

4 740142 002024

<http://www.tensia.eu/>

# Südamejuust (Heart cheese) comprising *Lactobacillus plantarum* TENSIA

- According to research results with subjects with metabolic syndrome from the Russian Food Institute (Russian Academy of Science) the Südamejuust Harmony™ is functional product with a special marking and E-Piim Production is entered the Russian market.
- **The launching of Südamejuust took place in 17. Septembre 2012 in Estonian Embassy in Moscow. Selling in the biggest supermarket in Russia**



**COMMISSION IMPLEMENTING REGULATION**  
**(EU) No 1111/2011 of 3 November 2011 concerning the authorisation of**  
**Lactobacillus plantarum (NCIMB 30236) as a feed additive for all animal species**  
**(Text with EEA relevance)**

***Lactobacillus plantarum* E-98 (NCIMB 30236) authorized by EFSA as technological additive and carried into EU registry**

**BioCC granted licence of E-98 to Starter ST OÜ.**  
**Starter ST OÜ launched market NORDSIL - Estonian first silage additive approved by EFSA**

- Isolated from Estonia
- Deposited in the NCIMB
- During 7 years
  - Characterized in vitro,
  - Suitability for technological handling in lab –scale silages and in field experiments on different material (legumes, grasses, high-clostridia silages)
  - tested also by an independent laboratory
- **Enables to produce good-quality feed**



# **A key to success- development of mental infrastructure, created IP and partners covering the entire processing chain**

The research staff is experienced and internationally qualified (Centre of Excellence).

BioCC provides an excellent basis for postgraduate research and training.

Researchers and postgraduate students have an opportunity to carry out their experiments at the partners' milk processing plants,

24 Doctoral and Master's theses defended (2009-2013), 34 peer-reviewed publications

**Partners' rights, obligations, liability and ownership and use of the intellectual property (IP) are set out in the Consortium Agreement**

The IP of the project results belongs to the BioCC, 33 patents, 19 patent applications

If the BioCC is not interested in the IP of the outcome, the partner whose staff has attended in the creation of IP have the right to claim. Partner has the obligation to inform the BioCC of the created IP.

Publication restrictions - before publication of the research article, conferences material partners need BioCCs written consent

Licenses for R&D purposes are free for BioCCs consortium partners,

- the consortium partners of the BioCC major business partners, E-Piim, Saaremaa Dairy, Maag Dairy, Animal Breeders' Association of Estonia, are milk producers and cattle breeders, ensures extensive application of the results of the R&D work in dairy production.



# Interests of science and industry

## The interests of the industry

Products good competitiveness

- Easy and quick entry to the market
- To be first to enter the market
- Possibly inexpensive to produce
- The highest possible profit
- Uniqueness
  - legal protection (patent)
  - trade secret

## The interests of the science

Dilemma: “publish or perish”

Presentation of the results as soon as possible to the public (you're the first who came to the idea)

Scientific presentations

Publication (in peer- reviewed) international journals, conference materials

Commercialization of academic research should be in the right order: “**Patent, Publish and Flourish**”„

**In order to avoid later problems: at the outset lay down rules (e.g. consortium agreement) stating partners activities, rights and responsibility,**

# To EIP

- Successful and close collaboration between industry and research
- Both academic and industrial partners should have clear common goals.
- Consortium support to multi-lateral R&D co-operation and thus bringing a new quality to existing bi-lateral relationships.
- The realization of the strategy aimed at the development of the technology portfolios of the primary partners of the consortium.
- The Scientific Council to advise on the whole scientific work - coordinating research schedules, etc

Evaluations from external experts are extremely important.

**Partners' rights, obligations, liability and ownership and use of the intellectual property (IP) are set out in the Consortium Agreement**







**EAS**  
Enterprise Estonia



Bio-Competence Centre of  
Healthy Dairy Products LLC



European Union  
Regional Development Fund



Investing in your future

# THANK YOU!

Ene Tammsaar  
CEO  
02.04.2014