

Welcome to the first issue of the *ProSafeBeef* newsletter

ProSafeBeef is an Integrated Project funded by the European Commission under the Sixth Framework Programme. Through research and innovation, *ProSafeBeef* aims to advance beef safety and quality across Europe. This will enable the beef chain in Europe to thrive and diversify, and become more competitive and sustainable. The project involves 41 leading research and industrial organisations working in 18 different countries. *ProSafeBeef* is a 5-year project which commenced in March 2007.

This issue is the first of a series of newsletters, which aim to update project partners and stakeholders on progress and key outputs from the project, together with news and events related to the European beef industry.



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ProSafeBeef overview

The key objectives of *ProSafeBeef* are:

- Developing and applying quantitative risk assessment models to monitor, trace, and reduce microbial/chemical contamination in the beef chain.
- Establishing novel control and intervention strategies for microbial pathogens at key points in the beef chain to maximize the safety of beef and beef products.
- Satisfying consumer demand for diversity and choice and both invigorate and add value to the beef chain by developing innovative processing techniques and products.
- Engaging with small and medium enterprises (SMEs), expert collaborators from developing countries and INCO partners with a vested interest in beef export to assist in delivery of the ProSafeBeef project.

The work programme of the project is divided into seven integrated pillars:

Pillar 1

Quantitative risk assessment of microbial and chemical hazards in beef.

Pillar leader

Dr. Geraldine Duffy,
Ashtown Food Research Centre,
Ireland
(Geraldine.Duffy@teagasc.ie).

This pillar will involve the development of quantitative risk assessment models for key microbial pathogens (verocytotoxigenic *E. coli*, *Salmonella*, *Listeria monocytogenes* and *Campylobacter*) in beef and beef products. Phenotypic and genotypic approaches will also be used to determine virulence potential, persistence and stress adaptation in pathogens transmitted through the beef chain.

The microbial risk assessment models will support the development and assessment of control and intervention strategies for microbial pathogens in pillar 2. This pillar will also assess the risk posed by a range of chemical residues (including anti-parasitic agents) in beef.

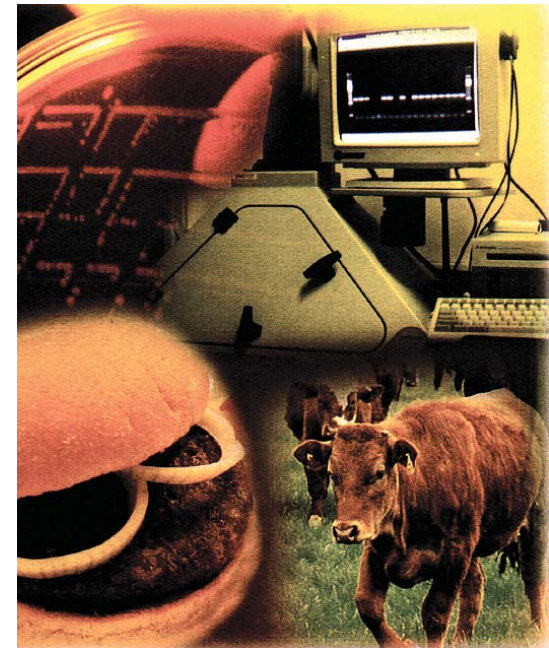
Pillar 2

Control and intervention strategies, which can be implemented along the fork-to-farm chain to ensure safe beef.

Pillar leader

Prof. George Nychas,
Agricultural University of Athens,
Greece
(gjn@aua.gr).

This pillar focuses on the development and validation of new science-based technologies, interventions and measures that can be used alone or in combination (multiple hurdle strategy) at key stages in the beef chain including primary production (on farm and in animals), slaughter (hide decontamination), processing (use of natural antimicrobials) and the distribution chain (chill chain management). The potential risk of encouraging microbial resistance or of inducing changes in the natural beef microflora as a consequence of applying any new strategy will be considered in parallel.



Pillar 3

Producing safe beef and beef products with enhanced nutritional and eating quality characteristics.

Pillar leader

Dr. Nigel Scollan,
Institute of Grassland
and Environmental Research,
United Kingdom
(Nigel.scollan@bbsrc.ac.uk).

This pillar focuses on improving the nutritional and eating quality of beef and beef products whilst assuring safety for the consumer. Research will focus on factors leading to the development of nutritionally enhanced, more oxidative stable and better tasting beef, either as muscle cut directly from the carcass or as innovative value-added products from the rest of the carcass. Consumer attitudes and safety aspects of the new products will be taken into account throughout this pillar.

Pillar 4

Innovations in processing to develop nutritive, convenient and added-value beef products.

Pillar leader

*Dr. Jens Petter Wold,
Matforsk AS,
The Norwegian Food Research Institute,
Norway
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This pillar is concerned with developing and applying on-line/at-line surveillance, control and optimisation strategies alongside appropriate modeling technologies to improve existing and/or develop new beef products from lower value and/or underutilised beef cuts. The pillar will contribute to the development of spectral surveillance and/or sorting systems optimised for specific beef products. In addition, the work of this pillar will focus on novel processing, cooking and packaging technologies.

Pillar 5

Consumer need for beef safety, information and acceptability of novel processed beef products.

Pillar leader

*Prof. Wim Verbeke,
Ghent University,
Belgium
(wim.verbeke@ugent.be).*

This pillar will investigate consumer perception, attitude and expectation with respect to beef safety, novel processing methods and new beef products. This will be achieved through a consumer programme that will include qualitative focus group discussions and quantitative experimental consumer research. This pillar will function as a horizontal activity, providing input to the other pillars about consumer needs and their expectations and acceptance of technologies and products developed by other pillars.

Pillar 6

Training, industry networking and dissemination of results.

Pillar leader

*Dr. Jean-Pierre Frençia,
Association pour le Développement de l'Institut de la Viande, France
(jp.frençia@adiv.fr).*

The overall objective of pillar 6 is to set-up a structured and sustainable demonstration, technology transfer, training and dissemination network dedicated to the beef chain. Pillar 6 will regularly communicate with the end users of the technology produced and invite them to participate in extension activities including training and demonstration. Emphasis will be placed on 'training the trainers' within the beef sector to allow up-skilling of industry personnel.

Pillar 7

Management and co-ordination

Pillar leader

*Declan Troy, Co-ordinator,
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Project Manager

*Robert Mooney,
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This pillar will oversee the management and co-ordination of the project.

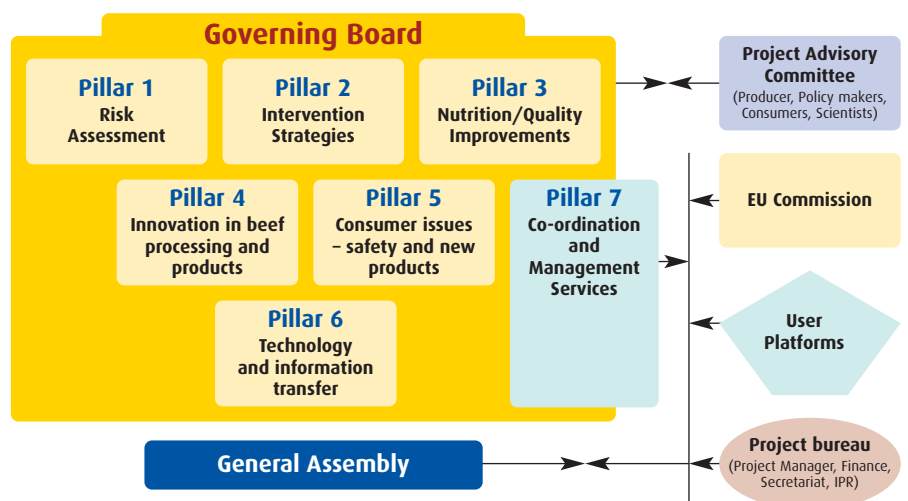
Expected achievements

ProSafeBeef will enable the beef industry in Europe to deliver innovative, novel, and improved fresh beef and beef products that are safe, high quality, and consumer-driven for national, regional and global markets thus allowing for a more competitive and sustainable industry.

This project will develop a strategically focused beef safety management system based on the principles of quantitative risk assessment and the development of new control and intervention strategies that inspire confidence in the beef chain and is consistent with the wider expectations and needs of European consumers.

The project will satisfy consumer demand for choice and both invigorate and add value to the beef chain (fork-to-farm) by developing innovative beef processing techniques and innovative beef products that are safe, attractive to the customer and of high nutritional quality.

ProSafeBeef will engage with SMEs, expert collaborators from developing countries and INCO partners with a vested interest in stimulating the beef industry by advancing beef safety through research and innovation. The research outputs will be delivered to stakeholders through a strategic work plan integrating demonstration, technology transfer, dissemination and training activities.



The project coordinator: an interview with Declan Troy



Declan Troy

Since 2004 Declan Troy has been Head of the Ashtown Food Research Centre, which is one of the main Food Research Centres in Ireland.

The Ashtown Food Research

Centre is part of Ireland's National Agriculture and Food Development Authority, which is called Teagasc, the Gaelic name for a "body of teaching or knowledge". Here Declan talks about his involvement in *ProSafeBeef* and his thoughts on what the project can achieve.

What is your background and how did this lead to your involvement in *ProSafeBeef*?

I am a chemist/biochemist by trade and have carried out many EU and national funded research contracts in meat science. Prior to being appointed Head of Centre I was Head of the Meat Technology Department here in Ashtown for 6 years. My research focus was mainly on the biochemical understanding of meat quality especially with regard to tenderness. Therefore I have published many papers on myofibrillar protein degradation and proteolytic activity.

I have coordinated 5 previous EU meat projects. When the EU decided to focus research efforts on large integrated projects my first thoughts revolved around getting the right people in the right place to do the right thing across Europe.

Teagasc has a remit to integrate its research programme across animal production and food processing with

a strong emphasis in food safety. With my experience in coordinating projects and the type of organisation that Teagasc is, the main "champions" of *ProSafeBeef* chose me to coordinate the effort to successfully submit the project proposal.

What do you most enjoy about your involvement with *ProSafeBeef*?

Although it is at an early stage I most enjoy "nurturing" results from conception (i.e. proposal phase) right to end-user application. *ProSafeBeef* will offer many opportunities to exploit results. Presenting and demonstrating these results to stakeholders is most satisfying.

What have you learned so far from your experiences of the *ProSafeBeef* project?

I have learnt a number of things since coordinating *ProSafeBeef*. Firstly you must keep your eyes wide open for new and emerging technologies that are evolving into new opportunities. An example of this is the potential to extract highly valuable bioactive components from meat and by-products. We have seen what the dairy industry is doing; the beef industry should at least examine these opportunities. I believe *ProSafeBeef* is flexible enough to accommodate these activities. Secondly the need to communicate effectively within the project is a real challenge. Smaller projects do not have this as a major challenge, but such a large project that involves 41 partners with up to 6 scientists within each partner institution presents real issues. Thankfully we have a great scientific community within the project and there are clear channels for good communication.

What is your vision of how *ProSafeBeef* can impact upon the beef industry?

ProSafeBeef will have a significant input on the beef industry by successfully transferring appropriate knowledge direct to the end user. We are all aware of the difficulties currently facing the beef industry. *ProSafeBeef* will generate knowledge and will be exploited by the industry to add value to beef and beef products. Not long ago, beef had a highly negative image in relation to food safety and more recently consumer health. *ProSafeBeef* will enable the beef industry in Europe to deliver innovative, novel and improved fresh beef and beef products that are safe, high quality, and consumer-driven for national, regional and global markets thus allowing for a more competitive and sustainable industry.

What is likely to be the long term legacy of the *ProSafeBeef* project beyond the 5 year funding period?

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Nutrition: what's the beef?

Many of us may be familiar with enjoying the taste of beef, and have often enjoyed a delicious steak, or beef bourignon on a special occasion. But what is there to know about beef's nutritional value? At times, beef and other red meats have received bad press in terms food safety or health concerns, and this may have caused the decline in beef consumption seen in some countries. It is common for men to eat more red meat than women, and this has been seen across Europe. There is also considerable variation in beef consumption across Europe: Spain, Denmark and the Netherlands eat more red meat and the UK eats considerably less.



Despite the changing trends in our consumption of beef, it is important to recognise that healthy eating advice across Europe considers lean beef, consumed in moderation, to be an important part of a healthy balanced diet. In moderate amounts, together with starchy carbohydrates, plenty of fruit and vegetables, and moderate amounts of milk and dairy products, lean beef can provide many of the essential nutrients we need for good health and well-being, as well as for healthy growth and development in children. Beef contains high quality protein and an important range of vitamins and minerals. Here, we take a closer look at some of the nutritional benefits.

Calories: The amount of calories beef provides differs depending upon the cut of the beef, and whether the fat has been trimmed, but as a guide 100g of cooked lean beef contains about 188-225 calories.

Protein: Beef is an important source of protein in the diet, which is essential for growth, maintenance and repair of the body. Beef is a high quality protein food because it contains essential amino acids that the body cannot make itself.

Fat: Beef also contains variable amounts of fat, and this contributes greatly to its great taste. Although fat can be useful to provide calories and essential nutrients to the body, foods high in fat should be eaten only in moderation. The type of fat in the diet is also important. The so-called 'bad' saturated fats have a detrimental effect on blood cholesterol levels, and therefore increase the risk of heart disease. More foods which contain the so-called 'good' mono- and poly-unsaturated fats should be eaten instead, as these types of fat have more beneficial effects on cholesterol levels. Whilst the fat content of beef varies depending upon the cut and trimming of the beef, lean beef tends to contain a mixture of 'good' monounsaturated fats and 'bad' saturated fats, in similar proportions.

Vitamins: Beef contains a number of B vitamins, including B1, B2, B5, B3, B6, B12, and folate. In fact, meat and other animal derived foods are the only foods which naturally provide vitamin B12 in the diet and so meat is particularly important source of this vitamin. Beef is also a source of vitamin D, which is essential for the development and maintenance of bone. Whilst the majority of vitamin D is made in the



body from the action of sunlight on the skin, meat makes a useful contribution to intakes, particularly in people with relatively little exposure to sunlight.

Minerals: Beef is an important dietary source of minerals, in particular iron and zinc. Iron is essential for the components of blood, and low intakes can lead to iron-deficiency anaemia. Beef is a good source of a type of iron called haem iron which is more readily available to the body than plant sources of iron. This is particularly important because iron intakes are lower than recommended in many areas of the world, particularly in women. Zinc is necessary for an effective immune system and contributes to the normal development of the reproductive system and also for healthy skin. Again, the zinc contained in meat is readily available to the body. Beef also contains useful amounts of selenium, magnesium, copper, cobalt, phosphorus, chromium and nickel, which are all needed in small amounts.

So overall, lean beef, consumed in moderation, is an important part of a healthy balanced diet. But, the nutritional value of beef does vary according to variation in the various cuts of meat, how the meat is prepared and cooked, and also differences in animal feeding. These factors will be considered in pillar 3 of the *ProSafeBeef* project. Workpackage 3.1, lead by Dr Aidan Moloney based at Teagasc, focuses on researching the factors which can lead to the development of nutritionally enhanced beef.

Beef up your business: the *ProSafeBeef* network

Historically, the beef industry has often been criticised for not implementing new knowledge on technologies. Transfer of knowledge and results on innovative technologies to the beef industry is especially slow because it encounters many human and technological barriers. Lack of time and technical knowledge, absence of formal mechanisms for knowledge dissemination and often general resistance to new technologies and work methods are some of the reasons for this.

ProSafeBeef intends to change this situation by effectively communicating information from the pillars' research activities, transferring technologies and developing training strategies for the end users and stakeholders in the beef chain. This work will also stretch to researchers, particularly young scientists, working in this field. Pillar 6 leader, ADIV is a partner with specialist expertise in meat industry technology transfer, particularly to other SMEs, and will be driving forward innovation and improvements in this area.

The principal activity to improve technology transfer is the setting up the *ProSafeBeef* network dedicated to technology transfer to SMEs. Workpackage 6.3 specifically focuses on this work (Technology transfer), and it also falls within the wider dissemination activities of workpackage 6.4

(Dissemination). Work is now underway on developing two transfer technology networks: a National Level Network and a European Level Network consisting of transnational SMEs. The networks are based on "learning-by-doing" and "learning-by-example" approaches, and a team of 'core team' trainers has been set up, who are being trained so that they are well equipped to deliver training and support.

The National Level Network

This network is directed towards individuals involved in Quality and Production Management. Participating companies will have 2-3 meetings with lectures on topics relevant to the *ProSafeBeef* project. Between meetings, each SME will have to implement or test specific tasks in house with the help of



one of a team of "core team" trainers. Because these national networks are targeted to Quality and Production Management staff, they will therefore emphasise technical, practical aspects and quality control benefits offered by the new technologies developed by *ProSafeBeef*.

The European Level Network

This network is mainly intended for decision makers and Chief Executive Officers. Trainers and representatives of SMEs will have international meetings to discuss their experience and promote the technologies and results developed within *ProSafeBeef*. These meetings will be coordinated with European conferences or exhibitions. Unlike national level networks, this EU network is focused on benefits, economic advantage or gain in competitiveness that decision makers and CEO can expect from the new technologies developed within *ProSafeBeef*.

Building up these networks is an ongoing process within the project. By actively participating in these networks SMEs can make the most of the important technologies and research findings of *ProSafeBeef*, and therefore reap clear benefits to their businesses. If you represent an SME, and are interested in becoming a member of either network please contact Jean-Pierre Frenca (jp.frenca@adiv.fr) at ADIV for more information.



Events

ProSafeBeef Annual General Assembly

The *ProSafeBeef* Annual General Assembly takes place in Ghent, Belgium, spanning the 2nd to the 4th of April 2008. At this annual meeting the whole consortium will come together to discuss relevant topics and share research ideas/techniques. As the project is still in its early stages and research being conducted under *ProSafeBeef* is still confidential, the meeting this year will not be in the form of a conference and hence is not open to the public. A conference is planned for year two of *ProSafeBeef*.

Dissemination activities

ProSafeBeef has been widely publicised even in this the first year of its operation. Here are some highlights.

- **Demo beef muscle profiling.**

This was a demonstration to select muscle for use in added value products, and took place on 24th May 2007, at Matforsk, Norway.

- **Discover a new technology for beef meat OSMOFODD®.**

This was a demonstration on pilot line (osmotic dehydration of meat), and took place on the 27th of February 2008 at ADIV, Clermont Ferrand, France.

- **Publication in Parliament Magazine (February 2008)**

This is a magazine that is produced in collaboration with the Directorate General (DG) Research. The Research Review will be presented to all delegates attending the European Commission's high level research events, as well as other audiences. The issue showcasing *ProSafeBeef* serves as platform for FP6 projects and Research Centres of Excellence.

ProSafeBeef, Advancing Beef Safety and Quality through Research and Innovation: European Framework Programme 6: (FOOD-CT-2006-36241)

More information

For more information on ProSafeBeef please visit our website at www.prosafebeef.eu or contact Robert Mooney, Project Manager, at robert.mooney@teagasc.ie.

ProSafeBeef is an Integrated Project supported under the 6th Framework Programme of the European Union. It involves 41 leading research and industrial organisations working in 18 different countries.

ProSafeBeef is a five year project which commenced on March 1st 2007

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