



PROEUHEALTH

Newsletter No. 3

May 2003

Food, GI-tract Functionality and Human Health Cluster



2nd PROEUHEALTH Workshop Taormina, Sicily, Italy (3–5 March, 2003)

Last year in Finland, the first PROEUHEALTH Workshop participants had to be brave due to the temperature falling to -20°C in addition to the fact that Lapland, above the Arctic Circle, is almost completely dark at that time of year. In that respect, the second workshop required the same fortitude as Taormina lies at the base of Etna, the biggest (3323 m) and most active volcano of Europe, that had just recently erupted.

The serenity and style of the 13th century monastery and palace of San Domenico formed an unforgettable backdrop for the event.



The cluster in full speed

In his opening words to the 2nd PROEUHEALTH Workshop on 3 March 2003, Dr. Jürgen Lucas of the EU Commission pointed out that the Cluster is gradually reaching a stage of full functionality. Several scientists are participating in various projects and, as Prof. Tiina Mattila-Sandholm mentioned only a few minutes after Dr. Lucas, the processes are becoming increasingly interesting as results are beginning to show.

During the first day of the Workshop, the PROEUHEALTH co-ordinators presented the results obtained for each of the 8 projects so far. The projects are described in the workshop proceedings, which can be ordered from the co-ordinator at VTT Biotechnology.

HIGHLIGHT RESULTS — PROEUHEALTH CLUSTER

MICROBE DIAGNOSTICS (2nd year)

Project Co-ordinator: Prof. Michael Blaut
Blaut@www.dife.dk

- Development of high throughput microarrays with over 100 different phylogenetic probes
- Isolation and characterisation of several new GI tract isolates, 20 new species, 10 new genera
- Use of cell sorting
- Molecular methods to monitor functional gene expression
- Development of functional probes for determining *in situ* microbial glycohydrolase activity



DEPROHEALTH (2nd year)

Project Co-ordinator: Dr. Annick Mercenier
annick.mercenier@rdls.nestle.com

- Protective effect of lactic acid bacteria in a colitis model
- Improved delivery of antigens by specific cell envelope mutations in selected LAB
- Delivery of anti-inflammatory molecule (IL-10) in human (approved GMO trials ongoing)



PROGID (2nd year)

Project Co-ordinator: Prof. Fergus Shanahan
f.shanahan@ucc.ie

- Ulcerative colitis and Crohn's disease patients enrolled for an approved, EU-wide trial
- Gene-based biomarker for mucosal lesions (β -globin)
- Ulcerative colitis and Crohn's disease patients show unstable intestinal microbiota



CROWNALIFE (2nd year)

Project Co-ordinator: Dr. Joël Doré
dore@jouy.inra.fr

- New microbes isolated and characterised from the elderly
- New microbial diversity in elderly individuals based on the large 16S rDNA sequence library
- Base line studies in the elderly have commenced
- New probiotic isolates (15 candidate probiotics)
- 20 recommended probes for clinical trials



PROTECH (2nd year)

Project Co-ordinator: Prof. Dietrich Knorr
Dietrich.Knorr@TU-Berlin.de

- Database of viability, stability, stress factors in progress
- Detection of strain-specific synbiotics
- Improved survival of probiotics through induced tolerance
- Functional genomics analysis of stress response



PROPATH (1st year)

Project Co-ordinator: Prof. Luc De Vuyst
ldvuyst@vub.ac.be

- High throughput screening antimicrobial activity against *Helicobacter pylori* & *Salmonella*
- Germ-free mice studies of colonization by LAB
- New antimicrobial compounds discovered



EU & MICROFUNCTION (1st year)
Project Co-ordinator: Prof. Glenn R. Gibson
g.r.gibson@reading.ac.uk

- Crosstalk between microbes & host gut tissues
- Optimal combination of prebiotics/probiotics determined
- New mucus-degrading bacterium isolated
- Human trial on synbiotics commenced



PROSAFE (1st year)
Project Co-ordinator: Prof. Herman Goossens
herman.goossens@uza.be

- 600 strains obtained from the industry and scientists
- AFLP typing and antibiotic susceptibility testing of most isolates performed
- Database establishment of probiotic safety commenced



THE DEBATE

The late afternoon debate “Probiotics — dead or alive” that was chaired by the Cluster Scientific Platform Co-ordinator Prof. Willem de Vos received the most attention. The pre-set roles of the debate were clear: Dr. Arthur Ouwehand of the University of Turku (Finland) was to argue for the use of killed probiotics and Dr. Glenn Gibson of the University of Reading (UK) for

living cells. A few highlights from the speeches of the debate openers:

- *The living cells and the dead cells attach to the gut lumen in the same way in principle (AO).*
- *Probiotics have GRAS status; there are no adverse metabolites (AO).*
- *There are several benefits in the use of dead cells; for instance, the cold chain is not necessary for viability, long shelf-life, etc. (AO).*
- *A clear possibility exists for a missed opportunity; the idea should at least be seriously tested (AO).*
- *To be able to compete well in the gut, cell viability is needed (GG).*
- *In order to relieve lactose intolerance, cell viability is necessary. For immune system regulation, it probably is not (GG).*
- *The probable effects against mutagenesis, high cholesterol, digestion and chronic gastric disorders; cell viability is also necessary (GG).*



The audience actively commented on these subjects. Some excerpts from the pros and cons presented:

- *Interaction between the dead and living cells in the gut always occurs. What would the proportions and the minimum dosages be though?*
- *Focus on prebiotics to stimulate the gut's own flora as there probiotics are no longer necessary!*
- *Living microbes can pass through the upper intestine more efficiently than dead microbes can!*
- *Humans are not "germ-free"!!*
- *Even when microbes are dead, their enzymes still exist and are functional in the gut.*
- *Probiotics need to replicate; thus, they need to be alive!*
- *Live/dead cells can cause different reactions in the immune system.*
- *Dead probiotics should be called "postbiotics"!*



Diseases — Day 2

The cluster workshop continued on March 4 with several presentations of EU projects about gut health-related subjects. The focus of the day was clearly on how we could effect serious GI-tract diseases like IBS, IBD and colon cancer with food and functional food ingredients. This meant that the issues were definitely interesting and meaningful to all listeners.

Many of the statements earlier believed to be true such as “you can decrease the risk of colon cancer with a diet rich in fibre” were scrutinised. It was commonly acknowledged that we would need many more end-points for our assessments than just the discovery of adenomas, etc.

Prebiotics had their pros and cons in Tuesday's presentations as well. Some speakers defended prebiotics by presenting physiological facts of the GI tract surface

(300 m²) and the logic that if you positively influence such a large surface, some beneficial health effects must be forthcoming. Others, however, claimed just the opposite.

Prof. Kaisa Poutanen of VTT Finland, who hosted the debate on “the challenges of ageing in the diet”, stated that the cluster should not just debate pro/prebiotics, it should also take the effects that plant-based foods and food ingredients have into account on a larger scale. This challenge, together with later presentations, provoked an active discussion about the recent changes in nutritional pyramid recommendations.

Then came the time for some philosophical discussion and comments. Prof. Ian Rowland, University of Ulster, Northern Ireland launched the discussion with his speech and analyses of the consequences that ageing will have on the population of

the EU. These consequences would definitely cover quality of life and health costs. After a very interesting presentation about which food ingredients would be not only necessary but also highly recommendable for each age group, Prof. Rowland made an interesting remark:

“Is the use of functional foods aimed for Healthy Ageing or Design Death ?”

Although sessions were long, the workshop was not just hard work and no play. A gala dinner was organised on Tuesday night in the spectacular dining hall of the Hotel San Domenico.



The climax of the evening was clearly the half-improvised play featuring the project co-ordinators of the cluster. In the “Adventures of the Little Bug Called Gutsie”, Dr. Joël Doré played the main character, a very sympathetic gut bug, Gutsie.



Gutsie travelled through the GI tract meeting such disorderly bacteria as *Cl. Difficile* (Luc de Vuyst), *Yersinia enterocolitica* (Herman Goossens), *microvillae* (Jürgen Lucas, Glenn Gibson), vancomycin-resistant enterococcus (Annick

Mercenier), IBD (Fergus Shanahan), peristaltics (Maria Saarela, Liisa Lähteenmäki), flatulence (Dr. Charlie Daly) and finally the friendly scientist (Micha Blaut) and Gutsie’s friend *Bifidobacterium longum* (Willem De Vos).



Gutsie proved to be a tremendous performance, including the rapporteur Dietrich Knorr!



The third day of the workshop was dedicated to the consumer

In the first presentation of the day, Prof. Klaus Grunert, MAPP, Denmark, monitored the quality of the food from the consumer perspective. Clearly, the most important quality factor for food appears to be sensory pleasure, although a shift towards such parameters as healthiness and naturalness is noticeable. In addition, the convenience factor for food plays an important role in consumer choice situations.

Various subjective trade-offs appear in all food products and their individual characteristics — high fat content vs. poorer health effects, better taste. For consumers, credence quality is a very complex matter as they cannot truly “feel” it. In other words, the external product parameters are quite often more important in the choice situation than the true product properties.

A great problem affecting the whole functional food sector is the consumers’ poor understanding of the dose responses of products; to be able to implement the approved recommendations through the food value chain up to the consumer market will be a major concern for both the industry and all other parties involved.

Later the same day, Prof. Patrick Morrissey of UCC (Ireland) profoundly analysed the aspects of food in conjunction with elderly people. The various symptoms connected with ageing form a tremendous challenge to

the food industry. On the other hand, they offer a great opportunity for further developing the speciality functional foods designed for this sector.

Some startling statistics about the increase in such diseases as osteoporosis and eating disorders were given in later presentations; for example, every year, one million fractures in Europe are caused by osteoporosis or 90% of Europeans are not receiving the RDA for vitamin D from their diet. These statistics could not fail to be noticed by anyone in the audience.

Last but not least, the PROEUHEALTH Consumer Platform Co-ordinator Dr. Liisa Lähteenmäki presented cluster activities in the consumer section. Over 10,300 leaflets have been distributed in 11 national languages throughout Europe. PROEUHEALTH is turning into both a well-known and welcome message.

**For more information on the Food, GI-tract Functionality and Human Health Cluster, please contact its Co-ordinator:
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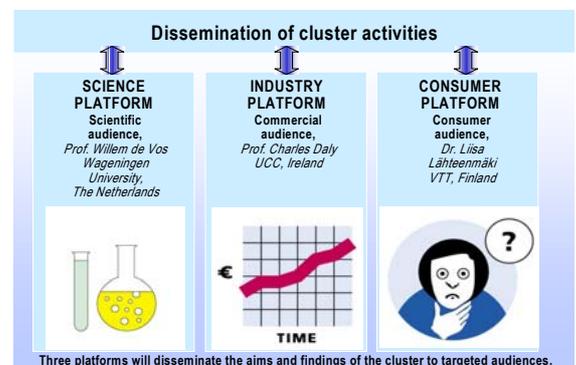
PROEUHEALTH Industry platform meeting

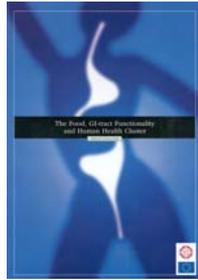
**31 March 2003
Bristol Stephanie,
91–93 Avenue Louise, Brussels**

10:30–11:00	Reception and coffee
11:00–11:15	Opening and welcome Professor Charles Daly, UCC, Ireland
11:15–11:30	Cluster activities Professor Tiina Mattila-Sandholm, VTT, Finland

Chairman Prof. Willem de Vos, WAU, Netherlands

11:30–11:45	Scientific developments in PROEUHEALTH cluster, Professor Willem de Vos, Wageningen University, Netherlands
11:45–12:15	Diagnostic tools and gut health, Professor Michael Blaut, DIFE, Germany
12:15–13:15	Lunch
13:15–13:45	Elderly and probiotics, Dr. Joel Dore, INRA, France
13:45–14:15	Clinical trials, Professor Kevin Collins and Professor Fergus Shanahan, UCC, Ireland
14:15–14:45	Probiotics and pathogens, Prof Luc de Vuyst, VUB, Belgium
14:45–15:15	Coffee
15:15–15:45	Second generation probiotics, Dr. Annick Mercenier, Nestec, Switzerland
15:45–16:15	Technological aspects, Professor Dietrich Knorr, TUB, Germany
16:15–16:45	Probiotics, prebiotics and future prospects, Professor Glenn Gibson, Reading University, UK
16:45–17:15	Future actions, joint possibilities, input from Industry Platform Members and Charles Daly





3rd PROEUHEALTH WORKSHOP

March 14-17, 2004

Melia Sitges,
Sitges, Spain

March 14, 2004 – EU project closed meetings 0900-1800

March 15, 2004 – PROEUHEALTH cluster 0900-1730

Cluster Achievements, innovations and highlights 2001-2004

- 0900-0945 Microbe diagnostics – Michael Blaut et al
- 0945-1030 Host-microbe interaction & guthealth – Glenn Gibson et al
- 1030-1100 Coffee
- 1100-1145 The Elderly gut-Joël Doré et al
- 1145-1230 IBD and chronic diseases – Fergus Shanahan et al
- 1230-1400 Lunch & posters at PROEUHEALTH market
- 1400-1445 Second generation probiotics - Annick Mercenier et al
- 1445-1530 Fight against *Helicobacter* - Luc deVuyst et al
- 1530-1600 Coffee
- 1600-1645 Safety from medical perspectives – Herman Goossens et al
- 1645-1730 Technology of probiotics and prebiotics – Dietrich Knorr et al

March 16, 2004 – Cluster achievements, industry and consumer platform

Cluster achievements in poster session 900-1200

- 900-1200 Poster sessions (young and senior scientists will present specific project results)
- 1200-1400 Lunch, posters at PROEUHEALTH market

Industry statements & Consumer platform 1400-1700

- 1400-1700 Industry statements and Consumer platform will be based on panel discussion from Q raised by consumer organisations
Industry statements by
Nestle, Orafiti, Danone, Unilever, Numico, Danisco, Valio, Rhodia, Probi Ab, Tine, Zeiss, Microscreen, Alimentary Health, Beldem S.A., Dexter Com srl

March 17, 2004 – 6th frameworkprogramme & New member states

- 0900-0930 Food Safety and Quality, Liam Breslin & Jürgen Lucas, EU Research
- 0930-1000 Food claims directive EU DG Health and Consumer Protection, Basil Mathioudakis
- 1000-1030 Future prospects for gut health – Prof Willem De Vos, WCFS-WU, NL
- 1030-1130 New projects and Actions from New Member States
- 1130-1200 CRAFT project on microencapsulation of probiotic products – Jerome Panes, FR
- 1200-1400 Farewell lunch at PROEUHEALTH market