

COST Action B20: Mammary Development, Function and Cancer

The COST Programme

The Cooperation in Science and Technology Programme (COST) is an inter-governmental framework for European Co-operation in the field of Scientific and Technical Research. COST is managed by the European Science Foundation, and in May 2005 supported almost 200 Actions involving nearly 30 000 scientists from 32 European member countries and more than 50 participating institutions from 11 non-member countries. These Actions are networks of coordinated national research project in fields which are of interest to a minimum number of participants (at least 5) from different member states. COST Actions cover basic and pre-competitive research as well as activities of public utility. The members of each Action are drawn from member countries which have ratified the Action, and their activities are informed by a programme accepted by the ESF management at time of application and reviewed on an annual basis throughout the Action. Each Action comprises three principal activities: the workshops where the science or technology matters of the Action are presented and discussed; the Action's short-term scientific missions, which allow contacts made during workshop networking to be developed; and, thirdly, the dissemination of the Action's science through publication or electronic communication.

Action B20: Mammary Development, Function and Cancer

Action B20 was conceived as a means of promoting life science research in the field of mammary biology. Its principal focus has been on biomedical research aimed at improving human health and well-being. In the field of mammary biology this translates into a focus on breast cancer, which remains a major disease of Western societies, and human lactation, which is increasingly recognized as conferring substantial and long-term health benefits which extend well beyond childhood, both for mother and offspring. The Action has, however, extended its membership beyond the community of biomedical scientists. From the outset it was intended to be an interdisciplinary forum, welcoming the contributions of agricultural biologists just as it sought the participation of clinical scientists and epidemiologists. There were a number of practical reasons for taking this challenging, but potentially more rewarding interdisciplinary approach. The first was that the Action would act as, and be seen to benefit from, the success of a previous Action #825 on Mammary Biology, which connected a community of mammary biologists whose interests were in

basic scientific research or, otherwise, were supported by national agricultural research programmes. COST Action 825 had demonstrated for the first time a 'critical mass' of European research in the field of mammary biology, and had provided a forum in which EU scientists could meet outside continental America. A second reason for Action B20's interdisciplinary approach was that basic research in dairy animals is, with a caveat regarding extrapolation between species, sometimes capable of identifying novel biological mechanisms present in man and, in some circumstances, offers experimental models suitable for their detailed study. Thus, large animal studies ostensibly focused on control of dairy production can give insight into mammary developmental mechanisms also found in man, and so inform biomedical study of the tissue's normal or neoplastic growth.

Engagement with clinicians and epidemiologists was, on the other hand, intended to stimulate the adoption of a reductionist explanatory approach to study of susceptibility to, and the aetiology of, breast cancer. At a practical level, this means the application of basic science, from biochemistry through cell and molecular biology to genomic and proteomic analysis, to interrogate the molecular mechanisms underpinning epidemiological indications of disease susceptibility or prognosis, and then to apply this knowledge innovatively to reduce risk or improve treatment of breast tumours.

The potential power of this interdisciplinary approach to create new collaborations between hitherto unacquainted scientists, coupled with the incentive to generate new information and approaches to a disease that continues to be a major health problem across the Union, successfully engaged the support of the COST Secretariat and its panel of reviewers. The Action was approved in the spring of 2001, and held its first Management Committee meeting in July of that year.

Principal Objective

The main objective of Action B20, articulated in its original proposal, is to apply fundamental science and new technologies to the study of mammary gland function in normal and diseased conditions, resulting in the generation of new therapeutics protocols, in the interpretation of epidemiological data on breast cancer and mammary gland infections, and in the development of sustainable, welfare-friendly agriculture. To achieve this objective the Action's scientific activities are led, and its administrative affairs managed, by an international Management Committee, and delivered through the activities of five Working Groups.

Working Group Structure

The Action is managed by a committee comprising two national delegates from each participating country. The Management Committee is chaired by Professor Antonella Baldi (University of Milan) and the Action's affairs are administered in Brussels by Professor Mihail Pascu, who also attends Management Committee meetings.

To implement its scientific programme, activities are channelled through five Working Groups, each led by one or two nominated co-ordinators. These five Working Groups are structured in order to create an interdisciplinary network and to deliver the Action's objective of knowledge transfer to inform clinical research, medical practice and human health promotion. Two of the Working Groups are thematic in structure: Working Group 1 on Mammary Gland Development, Function and Neoplasia; and Working Group 2 on Milk Components, Nutrition and Health. The remaining three Working Groups are Technical by definition: their aim is to promote the application of powerful new technologies in mammary biological research. Working Group 3 is focused on Cell Biology, Working Group 4 covers Genomics, Proteomics and Bioinformatics, while Working Group 5 is based in Epidemiology. Activity in these Working Groups will aim to pool expertise and research tools and, through the organization of joint meetings of thematic and technical Working Groups, ensure that the data they generate are disseminated and interpreted in a manner that optimizes European research competitiveness.

Scientific remit

The Action's mission is to be seen as the principal vehicle in Europe for the promotion of scientific research on the biology of the mammary gland, with the objective that, on completion of the Action, a strong self-sustaining network of European research collaboration is in place. The platform for achieving these objectives has been laid through our meeting programmes, and the initiatives taken to involve a wide community of scientists, both in terms of life-science discipline and geographical spread. This has posed a number of challenges. First, the previous Action on Mammary Biology had a significant agricultural bias, arising from the strength of European mammary research focused on outputs for the dairy industry. One challenge has been to continue to encourage that agri-biotechnological research while stimulating the engagement of biomedical scientists whose activities and knowledge generation are viewed in a political context as being of particular importance to the European population. This was instrumental in forming the Working Group framework of the Action, and has been a recurrent theme in our meetings, which have deliberately sought to bring together academic researchers with agricultural scientists, and these with clinical scientists and epidemiologists.

A second challenge has been to extend the Action geographically, and in particular through the new member

countries. To this end, scientists from eastern Europe have been contacted and encouraged to attend the Action's workshops, and opportunities have been taken to organize meetings in those countries, allowing a strong representation – and sometimes the first international exposure – for the host's mammary science. The potential to establish formal trans-Atlantic relations is designed to enrich the COST Actions' activities: Action B20 has taken advantage of this opportunity, and Canada is routinely represented in the Action's scientific programmes and its Management Committee meetings. In order to realize fully the potential of this interdisciplinary approach, and to extend the Action across the EU as a whole, the Action has made application for a one-year extension, which would integrate recent members into the network, and widen membership in new member countries.

Networking Activities

The Action has organized a series of eleven successful meetings ranging across the spectrum of scientific interests described in the original proposal. We have, in addition, sponsored a total of 15 Short Term Scientific Missions. These have enabled young scientists (and some not so young!) to learn new techniques, or forge new research alliances through face to face discussion. In doing so, we have realized to a significant degree two important objectives of the Action, one being to catalyse interdisciplinary research in the field of mammary biology, the second being to make the work of animal/agri-biotechnological scientists available to biomedical researchers, and *vice versa*. By embracing a 'mixed culture', and organizing workshop programmes in which cancer specialists rub shoulders with epidemiologists and animal biologists, new research connections have been made, and existing ones have been strengthened. The Management Committee recognizes that this is in large part due to the efforts of meeting organizers who have produced innovative programmes, representative of both the scientific interests and geographical diversity of the Action's membership, with the support of working group co-ordinators who have helped to shape the meetings, and to ensure that the over-arching objectives of the Action are met through a balance of subject matter and speakers.

Action Workshops

The scientific content of the Action's programme of meetings and workshops is described in detail on its web site at <http://users.unimi.it/costb20/home.htm>, and is presented in detail in this special issue of *Journal of Dairy Research*. It is noteworthy that the objectives of interdisciplinarity and pan-European dialogue are reflected in the scope of the workshop topics and their venues. For example, an international workshop on transgenesis in Budapest was followed by a meeting in Ayr, Scotland, where the topics were secretion and cancer-related cell biology. The cellular and molecular biology of the tissue has, unsurprisingly,

Table 1. Management Committee Members

Austria	Professor Wolfgang DOPPLER Wolfgang.doppler@uibk.ac.at	Professor Mathias MULLER Mathias.mueller@vu-wien.ac.at
Belgium	Professor Christian BURVENICH christian.burvenich@rug.ac.be	—
Cyprus	Dr Pavlos NEOPHYTOU pav@mendelcenter.org	Dr Kyriacos KYRIACOU kyriacos@cing.ac.cy
Czech Republic	Dr. Pavel SOUCEK psoucek@szu.cz	—
Denmark	Dr Kristen SEJRSEN kr.sejrsen@agrsci.dk	Dr Anne E. LYKKESFELDT al@cancer.dk
Finland	Professor Timo YLIKOMI timo.ylikomi@uta.fi	Mr Mikko GRIINARI mikko.griinari@helsinki.fi
France	Dr Michèle OLLIVIER-BOUSQUET ollivier@jouy.inra.fr	Dr Lyliane ROSETTA rosetta@infobiogen.fr
Germany	Professor Dr Dieter SCHAMS physio@weihenstephan.de	Professor Dr Bernd GRONER groner@em.uni-frankfurt.de
Greece	Prof. Elias CASTANAS castanas@med.uoc.gr	—
Hungary	Dr Zsuzsanna BOSZE bosze@abc.hu	Dr Imre KACSKOVICS ikacsko@univet.hu
Ireland	Professor Finian MARTIN finian.martin@ucd.ie	—
Israel	Professor Arie GERTLER gertler@agri.huji.ac.il	—
Italy	Professor Antonella BALDI (CHAIR) antonella.baldi@unimi.it	Professor Gianfranco GABAI gianfranco.gabai@unipd.it
Malta	Professor Marie Therese CAMILLERI PODESTA mcam3@um.edu.mt	Professor Alfred CUSCHIERI acus1@um.edu.mt
Norway	Professor Giske URSIN giskeu@basalmed.uio.no	—
Poland	Professor Tomasz MOTYL t_motyl@hotmail.com	—
Slovenia	Professor Dr Peter DOVC peter.dovc@bfro.uni-lj.si	—
Spain	Dr Armand SANCHEZ armand.sanchez@uab.es	—
Sweden	Dr Eva Hellmén Eva.Hellmen@afys.slu.se	—
Switzerland	Professor Dr Jurg W. BLUM juerg.blum@itz.unibe.ch	Dr Anne-Catherine ANDRES anne-catherine.andres@dkf.unibe.ch
The Netherlands	Professor Jan A. MOL j.mol@vet.uu.nl	Professor Cees J. CORNELISSE c.j.cornelisse@lumc.nl
United Kingdom	Dr. Bruce WHITELAW bruce.whitelaw@bbsrc.ac.uk	Dr. Colin James WILDE (VICE-CHAIR) c.wilde@hannah.ac.uk
Canada (non-COST)	Professor John P. Wiebe jwiebe@uwo.ca	—
ESF COST Office	Professor Mihail PASCU mpascu@cost.esf.org	—

been a recurrent theme through the workshops, and a principal subject of Working Group 1 and 3 meetings. Control of the cell population by apoptosis was the subject of a meeting in Warsaw (June 2004), and the tissue's immunological mechanisms and its processing of prion

proteins were discussed in Ghent and Jouy, France respectively. Again, with the interdisciplinary approach made possible by the range of interests represented in the Action, an innovative meeting focused on animal models of breast cancer took place in Treviso in October 2003.

Several meetings, including one organized by Working Group 5 in Montpellier in 2003, have brought epidemiologists into contact with biomedical scientists, prompting exchange of views on the biological basis of risk factors for disease, and in particular breast cancer. In meetings organized by Working Group 4 and held in Utrecht in 2002 and 2004, clinical diagnosis of breast cancer has been linked into the growing genomic and proteomic data linking susceptibility, disease aetiology and patient prognosis.

Throughout, opportunities have been taken to link with other groups with complementary interests: the meeting held in Ghent, Belgium, was arranged jointly with Action 822 on Apoptosis, whereas the Bled meeting of Working Group 2 in September 2004 ran alongside the European Society of Animal Production annual meeting and a Workshop on the Biology of Lactation in Farm Animals.

It is impossible in this article to do justice to the range of life science presented at these meetings. The content of this special Journal issue does, however, illustrate the scope and quality of these events, and the Action's Management Committee are indebted to those meeting presenters who have contributed review papers, and/or their time and expertise, to make this special publication possible.

Short-term scientific missions

The programme of short-term scientific missions offers an unusual opportunity for young scientists, or in some cases established scientists, to spend a period of up to one month in a laboratory in another member country. For the young researcher, this has generally had the purpose of learning new techniques not available in their home institution. In practice, the mission provides – perhaps for the first time – the post-graduate or young post-doctoral researcher with an opportunity to experience life in another research environment, where science and the community of scientists may be organized in different ways to those they are familiar with. Short-term scientific missions also allow these young researchers to become acquainted with their counterparts in another country and, perhaps, based on a shared knowledge of the mammary gland and its biology, to form relationships that develop with their careers. This can be a formative experience, and a valuable catalyst to achieving the Action's objective of a sustainable pan-European network of mammary researchers.

Short-term scientific missions have also been used by established researchers as a springboard for new international projects. Much can be planned – including scientific objectives, methodology, funding procurement – in a short visit to a prospective collaborator, and face-to-face discussion can resolve issues and forge working relationships that would be impossible through correspondence or snatched conversations at conferences. Where the STSM programme has been used in this way, it has resulted in productive collaborations, in some cases demonstrated

by publication, or a series of publications between collaborating laboratories.

In Conclusion

Action B20 continues to welcome new participants to its meetings, and is actively seeking the involvement of more clinicians and epidemiologists, to promote the transfer of basic science into clinical practice. We continue to encourage scientists newly introduced to the Action, through participation in our meetings, to build on contacts made at those events, and to access funds available under the STSM programme. Recognizing the opportunity offered by expansion of the EU, we are seeking to establish robust contacts with scientists in the new accession countries. As part of this process, we are encouraging Management Committee members from new participating countries (see Table 1) to recruit their colleagues and national collaborators to membership of the Action. Finally, looking to the future, and to ensure the long-term well-being of research in the field of mammary biology, we shall continue to encourage the participation of young researchers in Action meetings through, for example, the routine organization of poster sessions associated with each meeting, or the inclusion of a session of short presentations from young pre- or post-doctoral scientists. To those who read and enjoy the content of this special issue of *Journal of Dairy Research*, we offer a warm invitation to the next COST Action meeting on Mammary Development, Function and Cancer.

Antonella Baldi
Cost B20 chair

Acknowledgement

This special issue of *Journal of Dairy Research* was made possible by the generous contribution of research papers by a representative group of the participants in the Action's meetings. We thank them for the time and effort they have invested, and for their support of the objectives of this publication and the Action as a whole. The Journal's editorial staff has donated its time to edit the special issue, no small task, and I am indebted to David Chamberlain, Eric Needs and Angela Lawrie for this generous gesture in support of the Action. Finally, I wish to express my thanks to the organizations which have underwritten the cost of this publication: the generous support of the Hannah Foundation and the Institute of Food Research, Norwich, UK is gratefully acknowledged. Similarly, publication would not have been possible without a financial commitment by the European Science Foundation, administered by Professor Mihail Pascu.

Colin Wilde
Ayr
22 May 2005