



VINNOVA REPORT  
VR 2009:03

**First evaluation of the**  
**BERZELII CENTRA PROGRAMME**  
**and its centres**

**EXSELENT**  
**UCFB**  
**UPPSALA BERZELII**  
**SBI BERZELII**

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First Evaluation of the

# BERZELII CENTRA PROGRAMME

and its Centres

EXSELENT  
UCFB  
Uppsala Berzelii  
SBI Berzelii

by

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## **Preface**

In this evaluation report the Swedish Research Council (VR) and the Swedish Governmental Agency for Innovation Systems (VINNOVA) present the first evaluation of the Berzelii Centra programme.

The Berzelii Centra programme can be regarded as one of several programmes in the second generation of Competence Research Centres (CRCs), i. e. investments in strong research and innovation milieus. In 1995, NUTEK launched the first generation of CRCs providing a ten-year investment in 28 Competence Centres at 8 Swedish Universities. VINNOVA and the Swedish Energy Agency took over responsibility of these CRCs in 2001 and finalized the programme. This form of investments has during recent years been implemented in several research funding organisations in Sweden.

In accordance with instructions given in the research bill 2004, VINNOVA and VR have together initiated a slightly modified CRC version named the Berzelii Centra Programme (and also part of the second generation of CRCs). A specific characteristic of this programme is the strong connection between scientific excellences at the international frontline and large innovation potential; typical research areas where the industry hesitates to enter into strong collaboration without having well developed or verified knowledge.

The first generation of CRCs has, generally speaking, been very well received by Swedish society. Also, in an International and Global context, the Swedish CRC programmes have a very good reputation. The aim is to achieve concentration of resources in university research to deliver strong industrial impact. This is done by creating excellent multidisciplinary research environments at the universities in which industrial companies actively participate. In the second generation of CRCs the programmes has also been changed to permit public partners to participate.

At present VR and VINNOVA is running 4 Berzelii Centres. The centres evaluated in this report have been operating for nearly two years, and have almost finished Phase 1. The evaluation of Phase 1 is focused on the measures taken to build an effective organisation and the potential for long-term development. The evaluations also can have an impact on the Swedish CRC programmes and assist their progression towards world-leading research programmes.

Although each CRC has a formal name, centres are often generally referred to by an acronym. In this evaluation the following Berzelii Centres were reviewed:

- Exselent = Extremely Selective and Enantio-selective Nanoporous Materials for Controlled Sorption and Catalysis
- UCFB = Umeå Plant Science Center - A Berzelii Centre within forest biotechnology
- Uppsala Berzelii = Uppsala Berzelii Technology Center for Neurodiagnostics
- SBI Berzelii= Stockholm Brain Institute - A Berzelii Centre for Cognitive and Computational Neuroscience

On behalf of VINNOVA and VR we want to express our great appreciation to all the international scientific evaluators. The evaluation team accomplished their very hard work with great enthusiasm and professionalism. Their reports will be of great value for the further development of each centre and the Berzelii Centra programme.

Stockholm in November 2008



Pär Omling  
Director General  
VR



Per Eriksson  
Director General  
VINNOVA

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# 1 Introduction

From Monday, September 1, 2008, through Thursday, September 4, 2008, four Berzelii Centres supported by VR and VINNOVA were evaluated. The centres were in the final months of Stage 1, the first, two-year part of a planned ten-year programme.

The international evaluation team had generalist and specialist evaluators. The generalist evaluators were Douglas Reeve, Anne H Anderson, and Björg Aase Sörensen who participated in all interviews. There were two specialist evaluators for each centre (see table below and Appendix C).

The team was exceptionally well supported from start to finish by the VINNOVA programme staff (Erik Litborn, Mattias Lundberg, and Thomas Eriksson), VR programme staff (Margareta Eliasson and Sten Söderberg) and the VINNOVA programme managers for each Centre (Mats Jarekrans, Jonas Brändström, Eva Pålsgård, and Katarina Nordqvist).

The format for the evaluation was the same for each centre:

- 1 Pre- meeting of evaluators and VINNOVA/VR staff
- 2 Scientific evaluation by specialists
- 3 Evaluators' private conference
- 4 Meeting with PhD students
- 5 Generalist evaluation (with participation of specialist evaluators) and
- 6 Evaluators' conference and report writing

This report is co-authored by the evaluators. Sections on individual centres were co-authored by the participating evaluators and the overview section was co-authored by the three generalist evaluators.

## 1.1 The evaluation team

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Professor **Russel E. Morris**, University of St Andrews, SCOTLAND

Professor **Teemu Teeri**, University of Helsinki, FINLAND

Professor **Chung-Jui Tsai**, University of Georgia, USA

## **2 Acknowledgement**

We thank the whole VR/VINNOVA team and all the many centre participants for their efforts in setting up instructive and efficient presentations and facilities for the evaluation. We also thank the specialist evaluators for their partnership, and most particularly for sharing their abundant knowledge.

### **3 Programme Level - Overall Impressions**

The Berzelii Centra Programme is new and this evaluation is taking place at a very early stage in its development and in the development of individual centres. It is believed by the generalist evaluators, that the Berzelii concept is an excellent way to support internationally leading research linked to sustainable growth through technological development. The Berzelii Centres are actively engaged in building bridges between science and innovation and in creating environments for the development of the next generation of people with high technical and innovation competence. These centres offer an important and distinctive new mechanism that fills a gap between basic science centres and VINN Excellence university-industrial partnerships.

The concept of the Berzelii Centre is evolving. The generalist evaluators thought it useful to articulate Berzelii Centre characteristics. We believe these characteristics give definition to the unique opportunities of the Berzelii programme:

- rigorous science of the highest international quality,
- a clear and shared intellectual and cultural identity,
- a distinctive Berzelii environment for development of young people,
- a coherent strategy of basic and applied research aligned with the vision and mission of the Centre,
- inter-disciplinarity in research,
- research project leadership in pairs or groups,
- a significant and growing proportion of projects undergoing translation from science to innovation,
- active collaboration with industry,
- multi-lateralism in industry collaborations.

The generalist evaluators were very impressed with the centres. Also the scientific evaluators had high praise for the outstanding quality of international-level science being undertaken. Each of the four centres evaluated are emerging in their own way, but some general issues warrant attention.

The success of centres in creating a clear intellectual and cultural identity is quite mixed and remains a challenge for most centres. This is in part due to the natural challenges of creating a new institutional identity where existing

institutions, departments, research groups, etc. already have an established identity and significant other funded activities.

There are also some difficulties in creating functional organizations that will provide structures and processes with which centre partners can provide leadership and management. These are large, complex operations involving many different types of people; university professors, scientists, students, and industry partners; and many different types of work units; university departments, research groups, institutes, multiple companies and sometimes hospitals and/or multiple universities. Attention to organizational development issues will be critical to the success of the Berzelii Centres.

Another significant challenge in the evolution of the Berzelii Centres will be the translation of basic science into industrial innovation, particularly with the expectation that projects will involve multiple industry partners.

Women are generally under-represented in science, engineering and medical research and it is desirable to increase participation by women. In particular, the senior ranks of academics and industry partners in most centres were dominated by men although there is a higher proportion of women among the students and junior researchers. Clearly, generational changes are underway in Sweden as in many other developed countries.

The generalist evaluators found the evaluation process an efficient way to probe the progress, strengths and weaknesses of these new centres and to provide constructive feedback to the centres and to VINNOVA/VR programme staff. There are opportunities for improvement in individual centres and in the overall programme as articulated in the report and recommendations that follow.

The VINNOVA/VR centres have made excellent progress in a short time. We look forward to their great success.

### **3.1 Recommendations for VINNOVA/VR**

Our recommendations arising particularly with respect to the current Berzelii Centres are:

- 1 That VINNOVA/VR encourage Berzelii Centres to undertake development of their own distinctive intellectual and cultural identity, aligned with Berzelii values, structures, and processes and develop means of articulating and communicating this identity to internal and external stakeholders.
- 2 That the report of the Centre to the Evaluation Team be co-authored by the Centre Director and the Management Team, that all be signatories to the report, and that the report should be approved by the Board of Directors prior to submission.

- 3 That VINNOVA/VR review the financial statements of all Centres to ensure compliance with all financial rules and completeness and to identify any issues of concern to the Evaluation Team in advance of the evaluation meeting.
- 4 That Berzelii Centre staff be encouraged to establish contact with the VINNOVA Tiger Programme for gender issues in research organizations in order to enhance gender related practices.

Our recommendations concerning the Berzelii Centra Programme, more generally are:

- 5 That VINNOVA/VR clarify the expectations of Berzelii Centres for organizational structures, processes and timing, particularly with respect to the collaboration agreement, co-funding, the International Scientific Advisory Board, the Board of Directors
- 6 That VINNOVA/VR commission a study of the organizational development and organizational benchmarking of Berzelii Centres and facilitate the provision of organizational development expertise to Berzelii Centres.
- 7 That VINNOVA/VR encourage Berzelii management groups to network and share good organizational practice.
- 8 That, in future, Centre Evaluation Reports contain more scientific information in the main text (an overview of project integration with major research themes and half a page per project) and that a web link to an appendix with expository figures and data be provided.
- 9 That the VINNOVA/VR Centre contact person should provide a one-page briefing note to flag important issues for the Evaluation Team.

## **4 Assessments of the Individual Centres**

### **4.1 Evaluation of the EXSELENT Berzelii Centre at Stockholm University**

#### **4.1.1 Introduction**

On Monday, September 1, in the morning, the Centre Director, Professor Xiaodong Zou and colleagues of the EXSELENT Berzelii Centre, representatives of the Board of Directors and the University briefed the Scientific Experts of the Evaluation Team, Ann Chippindale and Russell Morris, on the scientific progress and range of projects. The meeting in the afternoon was also attended by the Generalist Evaluators, Doug Reeve, Anne Anderson and Björg Aase Sörensen, additional Board members and the Vice-Chancellor of Stockholm University, Kåre Bremer. The afternoon discussion covered organization and management, finance, interaction between industry and university, intellectual property, vision and strategy, student recruitment and educational activities. We thank all members of the Centre and the VINNOVA/VR team for their efforts in setting up instructive and efficient presentations and facilities for the evaluation.

#### **4.1.2 Research Vision, Strategy and Competence Profile**

Porous materials are defined as solids possessing pores or channels in the diameter range 0.5 – 2 nm (microporous), 2 – 50 nm (mesoporous) and > 50 nm (macroporous). The use of porous materials in certain industrial applications is relatively mature (e.g. catalytic cracking in the petroleum industries, ion exchange in water softening and detergents etc). However, all these uses rely on purely inorganic framework materials. Currently, new areas of application utilising novel classes of solids incorporating inorganic-organic hybrids and purely organic materials are being developed for use in several emerging technologies such as gas storage and separations, fine chemical synthesis, catalysis and biomaterials. One of the challenges for those involved in basic research in this area is that the emerging technological applications are in a range of quite different areas spanning many industries, from pharmaceuticals and medicine to environmental remediation and energy storage. There is no such thing as a ‘porous materials industry’ per se, but there is significant interest from a wide range of commercial companies undertaking these many different activities.

The aim of this Centre is to explore new fundamental research areas and develop potential applications through new links with industrial partners, in order to strengthen Sweden's academic-commercial links in this emerging area. The research vision is to establish EXSELENT as a long lived, sustainable (>10 years lifetime) internationally-leading Centre for Porous Materials. This will be achieved by developing a strong research environment, both within the Centre and in collaboration with industrial and external partners.

#### **Leading International Collaborative, University-Industry Research**

The academic members of the Centre have a high reputation in the porous materials community. There are ongoing collaborations with several research groups around the world (see below). There is less in the way of demonstrable pre-existing collaborative research with industry as most of the world-leading results generated by members of the Centre are focused on problems in fundamental porous materials science.

#### **Centre Core Competency - People and Facilities**

The Centre comprises 10 project leaders overseeing 55 active researchers. There is clear evidence of world-leading scientific endeavour among the project leaders, as demonstrated by publications in the highest quality general science and chemistry journals (such as *Science*, *Nature Materials*, *Journal of the American Chemical Society*, *Angewandte Chemie*, etc.) and the awarding of several important national and international prizes over the last few years. The Centre is very well equipped with the instrumentation required to carry out high level fundamental and applied research within Stockholm University and YKI, together with access to central facilities such as the synchrotron source at Maxlab in Lund. Some of the equipment base has been recently acquired through grants to the project leaders from other sources (i.e. not as part of the Berzelii Centre funding). The members of the Centre should be congratulated in their ability to raise other research funding, and it is further demonstration of the high regard in which they are held by their peers.

### **4.1.3 Research Programme**

#### **Scientific Leadership - Project Generation, Development and Selection**

The research strategy for Stage 1 is to complete 13 rather small basic science projects in the three areas of synthesis of novel porous materials, materials processing and functionalisation, and new methods for structural characterization. The projects seem to have been generated principally by the academic scientists, without significant input from external industrial partners. The selection criteria for adopted projects included the need for



collaboration between different project leaders with diverse chemical interests to build interactions within the Centre itself prior to seeking external industrial participation. This is an unusual approach, given the stated aims of the Centre to develop academic-industrial links, but does allow the members of the Centre to demonstrate the compatibility of their expertise to potential external partners. It was good to see junior faculty and PhD students taking responsibility for the presentation of their high quality science.

The vision for Stage 2 is to develop more applications-oriented projects in the areas of heterogeneous catalysis, separation and storage, and biomaterials. One bilateral project with a biomaterials company is already in place. However, there is no concrete evidence at the moment of progress in designing projects that will include the involvement of multiple companies in the same research project, which is one of the desired outcomes for the funding providers. It is not yet absolutely clear how the projects to be included in Stage 2 will be selected, although there are discussions ongoing to put in place a robust, transparent mechanism for such decisions. Stage 2 will inevitably include a mix of basic and applied science, which will run in parallel. This is sensible, as it will allow the most successful projects from Stage 1, which may not be immediately relevant to industry, to continue to maturity.

### **Research Project Critiques - Science, Methodology and Technological Outcomes**

It is still relatively early in the lifetime of the Centre and, given the basic research focus of Stage 1, it is not surprising that there are no technological outcomes as yet. However, there is significant evidence of high quality science in the projects currently being undertaken and there is a reasonable expectation of success in developing at least a sizeable portion of the research portfolio into work of commercial value. Overall the methodology to complete the science is very suitable, and reflects the excellence of the individual project leaders. The members of the Centre are to be commended for the overall standard of the science they are generating.

### **Relationship to International Groups**

Centre members demonstrated that their work in several project areas is competitive with that of international groups and clearly world-leading in some of these. There is healthy collaboration with a number of research groups worldwide and several PhD students and postdoctoral workers have had the opportunity to spend time abroad as part of their training.

## **Overall View - Productivity, Critical Size and Value-added of the Centre**

The EXSELENT Centre for Porous Materials comprises a good mix of experienced researchers with established international reputations and young researchers of great promise. At the present time the expertise of the members covers several aspects of chemistry and it is clear that they have achieved critical size in the area of porous materials' chemistry. However, there is scope to include academic researchers from other disciplines to increase the breadth of expertise. While the Centre does contain some chemical engineers, representatives from biology and other aspects of engineering might be included in the future. Addition of engineering expertise was specifically highlighted by one of the project leaders as a way to improve the Centre.

The productivity is excellent especially in terms of the quality of scientific publications. Members of the Centre should be commended on this aspect, and we hope that the high quality of science will be maintained over the course of the project's lifetime. At present one patent has been filed and it is to be hoped that more will be forthcoming in the near future as commercially exploitable results are generated.

In summary, whilst there are challenges associated with engaging in more industrial collaborations and broadening the multi-disciplinary expertise, the scientific quality of the research completed in the Centre is outstanding and forms a sound foundation upon which to build. Clearly there has been significant value added by virtue of the more extensive collaborations between Centre members, but in the future we expect this to be supplemented by significant new industrial collaboration.

### **4.1.4 Centre Partners**

#### **Partners' Needs Identification and Articulation**

Berzelii Centres combine basic and applied science. This evaluation took place at the end of Stage 1, two years into the Centre's development. Given this context the intensity of the engagement with industry is not very high as yet. The rules of the Berzelii programme do not require a Centre agreement be signed by this stage. At the evaluation meeting it became apparent that the lack of such an agreement was hindering the active involvement of industry in project specification.

At present industry needs are identified in a number of ways; from the academics' knowledge of the potential applications of their science and from bilateral interactions between academics and individual partners such as Perstorp and Nobel Biocare, and from input from the Board of Directors, on which nearly all the industry partners are represented. It would have been

helpful to the Evaluation Team if the descriptions of the Stage 1 projects had included their potential interest to partner companies. Seminars and industry days have been organized to introduce industry to the Centre and its research competencies. This is all appropriate for this early stage of the Centre and for its combined mission of conducting fundamental science as well as applied research.

As the Centre develops it will be important to engage partners more actively to identify industry needs. As the researchers are aware, identifying scientifically interesting projects whose outcomes are valued by more than one industry partner will be an interesting challenge for Stage 2 but one which the Centre is qualified to tackle.

### **Partner Participation in Innovation and Technology Translation**

As noted above, at this relatively early stage the Centre is interacting with industry but not yet very actively collaborating with them in joint projects. There are a number of positive indications of how this will grow in later stages. Nobel Biocare has financed a guest professor at SU for 5 years, and the recipient, Professor Chen, leads one of the Centre's projects. This significant investment is supplemented by the 100% secondment to SU of Dr Simon Jegou, also of Nobel Biocare, where he will be heavily involved in the Centre. At the evaluation meeting, we were pleased to learn that Perstorp intends to increase significantly its activities in EXSELENT, and plans to second staff, corresponding to four full time equivalents, over the next two years. AstraZeneca also indicated that it hoped to extend its interaction with, and support for, Centre activities.

From meeting with the PhD students, it seems that they have little interaction with the industry partners or YKI at present. Several would be interested in greater interaction with companies and have career aspirations to work in industry. This should be encouraged.

### **Partner Complement**

The Centre has 5 partners:

- AstraZeneca
- Biovitrum
- Nobel Biocare
- Perstorp Speciality Chemicals
- The Institute for Surface Chemistry (YKI).

Three of the partner companies are in the general area of healthcare. The excellent science that the academic researchers are conducting has potential applications to a wider range of industries than are currently represented in EXSELENT. As the Centre moves to Stage 2, marketing the potential

benefits of EXSELENT to this wider constituency should be a priority. The Evaluation Team feels that the Board of Directors should play an important role here. The expertise of YKI and/or Bruce Lyne could be particularly helpful in this respect.

The current partner companies are not as yet making significant financial contributions and this must grow considerably in Stage 2 and beyond, given the exceptional range of expertise and associated research to which partners will have access in EXSELENT. To meet the funders' expectations for the later stages of a Berzelii Centre, this increase may well have to be combined with a larger set of active industrial collaborators.

Recommendation:

- 1 That increased industry participation by existing and new partners should be a matter of priority for the Board of Directors, YKI as a partner institution, the Director and the Centre senior academics.

#### **4.1.5 Organization and Management of the Centre**

##### **The Board's Role**

The Board of Directors was well represented at the evaluation meeting. The Board membership has appropriate representation from Stockholm University, YKI and industry partners; it is a bonus to have a member of the European Parliament on the Board. The Board has taken a strong interest in Centre development.

However, the Evaluation Team was not impressed by the effectiveness of the Board in leading the drafting of the Centre Agreement in a timely fashion. The Agreement is required for Stage 2, which starts January 1, 2009, and yet a draft for circulation to academics will not be ready until the end of September. Similarly, the Evaluation Team was not impressed by the Board's vaguely articulated strategies for identifying and winning new industry partners.

Recommendation:

- 2 That the Centre agreement be expedited in order to successfully proceed to Stage 2 so that discussions for increased support from existing and new industry partners are facilitated.

##### **Management Team Structure, Processes and Performance**

The present Management Team consists of the Centre Director, the Centre Research Coordinator and the economy administrator. They very ably assembled the Evaluation Report, which was thorough and well organized and responded fully to the VINNOVA instructions.

The Evaluation Team believes that there should be greater involvement of a wider range of senior Centre academics in the Management Team. We understand that there will be three theme leaders named shortly.

Recommendations:

- 3 That the theme leaders are named and that their responsibility to Centre leadership is clearly articulated and understood by all.
- 4 That the theme leaders become part of the Management Team

The Centre Director stated that all projects are assessed every six months by written report and according to well-established performance criteria. However, it was not clear that the structures and processes for scientific leadership were entirely satisfactory. There was some hesitation, particularly from the senior academics, when we asked how a project might be terminated. It is of great importance to the future success of the Centre that the senior academics give their active support to the development of the Centre and to the Management Team. Research in the area of innovation clearly shows, that in the formative stages of innovative organizations, the visible commitment of senior figures is critical to future success.

#### **International Scientific Advisory Board's Role**

The International Scientific Advisory Board members have impressive credentials. However, the Scientific Advisory Board has never met. The Centre Director plans to send the project reports for evaluation to the Advisory Board members in October-November for their comments to be returned before Christmas. There are no plans for the Scientific Advisory Board to visit the Centre before Stage 2. This is not a satisfactory use of an International Scientific Advisory Board according to VR- VINNOVA guidelines.

Recommendation:

- 5 That the International Scientific Advisory Board meet in Stockholm before the start of Stage 2 in order to review thoroughly scientific progress and planning for the Centre.

#### **Relationship to the University and University Units**

The Centre is well situated in a strong chemistry department and draws on a wide range of academics and facilities to create an impressive group. However, the Centre is in many ways not a distinct unit. As an example of the present lack of an intellectual core, the PhD students we met did not have any sense of affiliation to the Centre. In addition, work clearly done, in whole or in part before the existence of the Centre, is reported as work of the Centre. For instance, two PhD theses, one completed in 2007 and one in 2008 are claimed by the Centre.

### **Communication Strategy and Execution**

It is clear that the Centre needs to develop further its visual and cultural identity. It would seem that the Management Team will need assistance in this effort.

Recommendation:

- 6 That the Centre undertakes to develop further the intellectual, visual, and cultural identity of the Centre.
- 7 That the web site is updated and made more informative.

### **4.1.6 Training Personnel of High Competence**

#### **Recruiting and Developing People of International Competence and Experience**

Investment in new areas of competence is critical in any innovation effort. The Berzelii Centre has earned an excellent reputation, mainly due to the merits of its scientific staff. Now the challenge is to develop new capabilities. This good reputation has secured the recruitment of talented young people from Sweden as well as from abroad (4 out of 7 PhD students the Evaluation Team met were from different countries outside Sweden). At the present time the age balance across the Centre is good. Interviews with the PhD students indicate that the international stature of the Centre is a very positive influence for those applying for a research position in the Centre. However, mechanisms of career and skills development for younger researchers were not explicitly described.

Recommendation:

- 8 That training in entrepreneurship is made available to all and that junior researchers and students are encouraged to partake.

#### **Mobility of Personnel between University and Industry**

Several of the PhD students that the Evaluation Team met regarded a connection with industry as an asset and as a reason for choosing to study at the Centre. However, the discussion with the Centre staff did not give any clear picture of opportunities for short-term placement of PhD students or researchers in industry, although this is encouraged by the Director.

#### **Gender Perspective**

This issue covers two aspects:

- 1) the numerical representation of the sexes and
- 2) gender awareness in the research environment.

While there is an approximate gender balance amongst the PhD students, this does not seem to be the case amongst the membership of the Centre as a whole. A long term plan includes improvement and strengthening of awareness in this area. The potential of a new approach to the science/philosophy of science as developed in gender research is not as yet reflected in the Centre's practice. The Centre, in line with VINNOVA's mandate, should be encouraged to exploit the opportunities within the Tiger programme.

Recommendation:

- 9 That the Centre take action to hire women at the senior level.

### **Contributions to University Education**

It was not clear from the presentations or the report what additional contribution to the university education emanates from the Berzelii Centre. This should be considered as they move to Stage 2. The Berzelii Centre should make important contributions to university education by serving as an example of multilevel and multi-partner collaboration with industry. PhD students within the Centre have the opportunity to get an understanding of the whole collaboration process from initial negotiations, declarations of interest and intent, outlining of collaborative agreements and methods of evaluating the process and its outcomes.

#### **4.1.7 Financial Report for Stage 1**

##### **Income Sources**

Stage 1 cash income from VINNOVA/VR is 16 MSEK and the University is reported as contributing 17.9 MSEK in kind. Industry contributed no cash and with the exception of Nobel Biocare, contributed little in kind during Stage 1. At the meeting Perstorp indicated that they would soon start in kind contribution involving the funding of four FTEs over the first two years of Stage 2, a most welcome development. Despite this, the Evaluation Team was concerned at the modest contributions of industry partners. It is important to reiterate that the transition to Stage 3 requires industrial funding of 5 MSEK per annum.

The Centre academic team is to be commended for their impressive success in winning funding from other sources. Table 12 articulates 38 MSEK in grants won in related areas of science.

##### **Expenditures**

There seems to be a good balance of expenditures among the projects.

According to the Stage 1 budget, the University received overhead of 4.1 MSEK under the cash column (67% of salaries paid in cash). The

Evaluation Team was concerned that the University is to receive another 4.5 MSEK in overhead under the in kind column and what this means in assessing the net in kind contribution made by the University. The Evaluation Team will recommend to VINNOVA/VR, as a general procedure, that they review the financial statements of Centres to ensure compliance with all financial rules and identify any issues of concern to the Evaluation Team in advance of the evaluation meeting.

The University is also to be paid 4.8 MSEK for "Material, running costs etc.". This is not articulated and seems excessive.

Recommendation:

- 10 That the Centre explains items such as "Material, running costs etc." and reports to VINNOVA/VR.

### **Recommendations to the Centre**

Our recommendations are:

- 1 That increased industry participation by existing and new partners should be a matter of priority for the Board of Directors, YKI as a partner institution, the Director and the Centre senior academics.
- 2 That the Centre agreement be expedited in order to successfully proceed to Stage 2 so that discussions for increased support from existing and new industry partners are facilitated.
- 3 That the theme leaders are named and that their responsibility to Centre leadership is clearly articulated and understood by all.
- 4 That the theme leaders become part of the Management Team.
- 5 That the International Scientific Advisory Board meet in Stockholm before the start of Stage 2 in order to review thoroughly scientific progress and planning for the Centre.
- 6 That the Centre undertakes to develop further the intellectual, visual, and cultural identity of the Centre.
- 7 That the web site is updated and made more informative.
- 8 That training in entrepreneurship is made available to all and that junior researchers and students are encouraged to partake.
- 9 That the Centre take action to hire women at the senior level.
- 10 That the Centre explains items such as "Material, running costs etc." and reports to VINNOVA/VR.

Our recommendations to VINNOVA/VR concerning the overall Berzelii Centra Programme are given in the overview section of this report. Among the programme recommendations, those that are particularly pertinent to this Centre are numbers 1, 2 and 4:



- 1 That VINNOVA/VR encourage Berzelii Centres to undertake development of their own distinctive intellectual and cultural identity, aligned with Berzelii values, structures, and processes and develop means of articulating and communicating this identity to internal and external stakeholders.
- 2 That the report of the Centre to the Evaluation Team be co-authored by the Centre Director and the Management Team, that all be signatories to the report, and that the report should be approved by the Board of Directors prior to submission.
- 3 That Berzelii Centre staff be encouraged to establish contact with the VINNOVA Tiger Programme for gender issues in research organizations in order to enhance gender related practices.

Stockholm September 1, 2008



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Professor Douglas Reeve



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Professor Anne Anderson



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Professor Russel Morris



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Professor Ann Chippindale



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Professor Björg Aase Sörensen

## **4.2 Evaluation of the UCFB Berzelii Centre at Umeå University**

### **4.2.1 Introduction**

On Tuesday, September 2, in the morning, the Centre Director, Professor Ove Nilsson and colleagues of the Berzelii Centre for Forest Biotechnology briefed the Scientific Experts of the Evaluation Team, C. J. Tsai and Teemu Teeri, on the scientific progress and range of projects. The meeting in the afternoon was also attended by the Generalist Evaluators, Doug Reeve, Anne Anderson and Björg Aase Sörensen and representatives of the Board of Directors including Carl Kempe, Chair of the Centre Board, and the partner universities (Ulf Heyman, University Director, Swedish University of Agricultural Sciences (SLU) and Göran Sandberg, Vice Chancellor, Umeå University (UmU)). The afternoon discussion covered organization and management, finance, interaction between industry and university, intellectual property, vision and strategy, student recruitment and educational activities. We thank all members of the Centre and the VINNOVA/VR team for their efforts in setting up instructive and efficient presentations and facilities for the evaluation.

### **4.2.2 Research Vision, Strategy and Competence Profile**

Application of the expanding volume of detailed genetic and molecular data to forestry has both great potential and great challenges. Several plant genomes have been sequenced, along with the general plant model *Arabidopsis*, notably also poplar, representing an angiosperm tree. Although vastly different in size and appearance, *Arabidopsis* and poplar are taxonomically related. Although not obvious at first sight, processes such as wood development can be approached using powerful genetic techniques in *Arabidopsis*, and with relative ease applied to poplar. Gymnosperm trees (spruce and pine) are taxonomically distant from both angiosperm herbs (*Arabidopsis*) and trees (poplar, birch, eucalyptus etc.). However, their importance in boreal forestry makes it both scientifically and economically worthwhile to extend the principles of molecular analysis to these species as well.

Research groups forming the Centre have world class reputation in applying molecular genetic analysis to understand the processes of wood development and growth. Before availability of the poplar genome sequence, they had pioneered poplar genomics by analysing the pool of expressed genes (the transcriptome) in poplar. With this method they grasped the majority of functional genes already before the whole genome was known (and importantly, contributed to annotation, or interpretation, of the whole genome when it was worked out). With microarray techniques,

they pinpointed a large number of genes involved in the process of wood formation and committed themselves to a huge task of functionally analysing those using reverse genetics (transgenic poplar trees). This would not have been possible without the involvement of the company SweTree Technologies (STT), importantly taking also care of the IP issues generated by the plant scientists in Umeå.

The concept of producing gene level data on the economically important tree species relies on switching between the general plant model (Arabidopsis) and the tree model (poplar). This data has great potential to forest tree improvements, in fact by several different approaches from clonal propagation of elite lines to genetically modified trees. Forest industries, despite their extreme importance to the Swedish economy, however, have not (so far) devoted their R&D efforts to basic sciences (like pharmacy and telecom industries have). A main function of the Berzelii Centre is to close this gap by engaging the industries in forest biotechnology projects. This engagement requires effort from both sides, as the scientists need to become aware of the goals and ambitions of the forest industry while the industry needs to get familiar with and understand what modern plant science has to offer. The Berzelii centre also educates PhDs, who in the long run aim at populating part of the forest R&D positions to facilitate knowledge dissemination.

### **Leading International Collaborative, University-Industry Research**

The academic members of the Centre have a high reputation in plant sciences and an outstanding record of high impact publications. Connections to, and collaborations with, other research groups around the world are extensive. The Berzelii Centre is formed within the Umeå Plant Science Centre (UPSC). However, UPSC is a virtual entity and it is also possible to view UPSC standing on several strong legs of which the Berzelii Centre is one. During the last decade of its (virtual) existence, UPSC has advanced to its present world-leading status by persistent valuing of scientific excellence. Another important operation was to establish a company taking care of IP issues (STT, which is owned by the researchers themselves and by forest industries). STT has been the main channel for commercialization of the ideas and the Berzelii Centre inherits this feature from UPSC.

### **Centre Core Competency - People and Facilities**

The Centre presently comprises of 24 research groups consisting of over one hundred PIs, post doctoral researchers, graduate students and technicians. Core facilities (sequencing, arrays, proteomics, metabolomics etc.), serving the whole UPSC, are a central asset of the Berzelii Centre. While their development is critical, their maintenance and quality operation may not be strategically achieved by regular project funding. Two new core facilities

have been set up specifically in the Berzelii Centre, the BioBank and the spruce somatic embryogenesis and transformation platforms.

The Berzelii Centre implements a new level of self-organization among its research groups. They form three "task forces", chaired by two PIs and concentrating on different but overlapping research areas of high relevance to the forest products industry. The task force groups come up with project ideas, which they first evaluate and rank within the groups and then between the groups. The best research ideas are presented to the board of the Berzelii Centre, which has reserved some strategic money for starting new research leads. This organization has proved to be very effective in bringing together the groups and in generating new ideas.

### **4.2.3 Research Programme**

#### **Scientific Leadership - Project Generation, Development and Selection**

Despite a delay in the Berzelii project start up, considerable progress has been made in fostering collaborative discussion within and between task forces. To date, two projects have been selected for funding by the Centre's strategic funds, based on internal discussion and prioritization according to the following criteria:

- scientific excellence
- collaborative nature
- common interest across task forces.

The projects were then adopted by the Board, a necessary deviation from the proposed plan due to delay in Board's operation.

The plan for Stage 2 is to make this call for proposals an annual activity. In addition, specific funds will also be made available to support more applied projects in collaboration with the industrial partners. It is critically important that new project discussion involves industrial partners to the extent possible, and as early as feasible, even with knowledge gaps, so that issues of immediate industrial relevance can begin to be addressed sooner rather than later. The same goes for actual project selection where the Board should play a more proactive role in the early stage of discussion and selection.

#### **Research Project Critiques - Science, Methodology and Technological Outcomes**

It is still relatively early in the lifetime of the Centre to expect technological outcomes, especially given the basic research focus of Stage 1.

Establishment of the two new technical platforms (Spruce and BioBank) promises to further strengthen the already world-leading technical

competence of the Center, and complement the dual model systems (*Arabidopsis* and *Populus*) currently being employed. The Berzelii Centre members have continued the trajectory of excellence in scientific productivity, judging from the quantity and quality of publications the Centre has produced during the first stage. Overall, the methodology to tackle the scientific challenges is sound, and reflects the excellence of the individual project leaders. The members of the Centre are to be commended for the overall high standard of the science they are generating.

### **Relationship to International Groups**

The Centre is clearly world-leading in forest biotechnology research, an observation backed by VINNOVA's international benchmarking study. There is healthy collaboration with a number of research groups worldwide, including joint postdoc programmes with France, Canada and Denmark. The Centre also actively supports PhD students and postdoctoral researchers to attend international conferences.

### **Overall View - Productivity, Critical Size and Value-added of the Centre**

The Berzelii Centre comprises a good mix of senior researchers with established international reputations and junior researchers of great promise. It is clear that they have reached critical size in the three thematic areas. Importantly, new recruits are being pursued strategically to further complement existing expertise. A greater challenge facing the Centre is the necessity to expand its industrial partnership, perhaps beyond forestry industry and/or Sweden.

Productivity is excellent especially in terms of the quality of scientific publications. Members of the Centre should be commended on this aspect, and we hope that the high quality of science will be maintained over the course of the project's lifetime.

In summary, the scientific quality of the research completed in the Centre is outstanding and forms a sound foundation upon which to build. Clearly there has been significant value added by virtue of the more extensive collaborations between Centre members. The very generous cash and in-kind contributions from SLU and UmU are particularly critical in ensuring long-term support of top-notch scientists at the Center.

## **4.2.4 Centre Partners**

### **Partners' Needs Identification and Articulation**

Berzelii Centres combine basic and applied science. This evaluation took place at the end of Stage 1, approximately two years into the Centre's development. Given this context, it is understandable that the intensity of

the engagement with industry is not very great as yet. The rules of the Berzelii programme do not require a Centre agreement be signed by this stage. The Centre faces the challenge that the forestry industry is not very active in research and development and has little expertise in the basic science areas of forest biotechnology.

At present industry needs are identified from the academics' knowledge of the potential applications of their science and from the Board/Steering Committee's guidance on the strategic direction for the Centre. The Board/Steering Committee has representatives of almost all the industry partners. It would have been helpful to the evaluation team if the descriptions of the Stage 1 Task Forces had included their potential interest to partner companies. The evaluation report also mentions outreach activities to introduce industry to the Centre and its research competencies. This is all appropriate for this early stage of the Centre and for its combined mission of conducting fundamental as well as applied research.

As the Centre develops it will be important to engage partners more actively in order to identify industry needs. SweTree Technologies could play an important role in identifying and articulating industry partners' needs as the Centre moves to Stage 2 and beyond. Identifying scientifically interesting projects whose outcomes are valued by more than one industry partner, will be a challenge for Stages 2 and 3.

### **Partner Participation in Innovation and Technology Translation**

At this relatively early stage the Centre is interacting with some industry partners, notably SweTree, but not yet very actively collaborating with companies in joint projects. The evaluation report mentions that such collaborations are planned for Stage 2 although we did not learn of much detail on these projects or the form or scale of anticipated industry engagement.

Given the relative dearth of research capacity in the forestry industry, significant and active partner participation in collaborative projects will be a considerable challenge. An important outreach event is the one on Forest Biotechnology planned with the Swedish Forest Industries Federation.

Again SweTree Technologies (STT), the spin out company from UPSC and other universities, in which the academics are shareholders, and in which the other industry partners are also members, has the expertise to collaborate and will need to be very actively engaged. Given the valuable role that STT can play, it will be important that the relationship is clarified to prevent any appearance of conflict of interest with respect to the dual role that researchers hold as academics within the Centre and shareholders in STT as WoodHeads (the holding company of the academics involved in

STT). Notwithstanding STT's role in Stage 2, the Centre may need additional industry partners with whom to collaborate.

A prerequisite for active collaboration with several companies in each of the task forces, will be to sign appropriate agreements on the role of STT and for the collaboration agreement for the Centre.

From meeting with the PhD students, it seems that they have little interaction with the companies and have career aspirations to work in industry. This should be encouraged.

Recommendations:

- 1 That a date be set for the joint programme on Forest Biotechnology of the Berzelii Centre and Swedish Forest Industries Federation (planned for the fall of 2008 according to the report but now delayed)
- 2 That the Centre take prompt and concerted action to establish an agreement with SweTree to formalize SweTree's role as a facilitator of translation of science to industrial innovation, and following this advances the signing of the Collaboration Agreement for the Centre.
- 3 That the Centre take steps to ensure that students and junior researchers are aware of and fully understand their intellectual property rights, most particularly in the context of WoodHeads and SweTree.

### **Partner Complement**

The Centre has 5 partners:

- SweTree Technologies
- Sveaskog;
- Bergvik Skog;
- Holmen Skog
- Swedish Forest Industries Federation.

The excellent science that the academic researchers are conducting has potential applications to a wider range of companies and industries than are currently represented in the Berzelii Centre.

As the Centre moves to Stage 2, marketing the potential benefits of the Berzelii Centre to this wider constituency should be a priority.

The current partner companies are not as yet significantly engaged in collaborative projects. The details of their contributions in cash and in kind to the Centre as a whole were not well documented in the evaluation report. To meet the funder's expectations for the later stages of a Berzelii Centre, this increased engagement from present partners, may well have to be combined with a larger set of active industrial collaborators who would benefit from the exceptional range of expertise and associated research to

which partners will have access. This was flagged as a priority at the evaluation of the Centre proposal.

Recommendation:

- 4 That the Centre take prompt and concerted action to comply with the recommendation of the proposal review to increase the number and range of industry partners who would be actively engaged in collaborating on projects.

#### **4.2.5 Organization and Management of the Centre**

##### **The Board's Role**

The Board/Steering Committee was well represented at the afternoon evaluation meeting. The Board has appropriate representation from the universities and industry partners. The Board has taken a strong interest in Centre development. However, the Evaluation Team would urge the Board/Steering Committee to lend greater efforts to finalizing the strategically important Centre agreements and to increasing industry participation.

##### **Management Team Structure, Processes and Performance**

The Management Team consists of the Centre Director, two Assistant Directors and a scientific secretary. The Team appears to manage the affairs of the Centre competently.

Scientific leadership is provided by the Management Team together with the six leaders of the three outcome-oriented task forces. Guidance is also provided by the International Scientific Advisory Board. This was cited as a completely new way of working that was a result of the Berzelii Centre funding and appears to be very effective.

##### **International Scientific Advisory Board's Role**

The International Scientific Advisory Board has an appropriate membership and appears to be effectively used by the Centre.

##### **Relationship to the University and University Units**

The report is candid about the complex and close linkages the Berzelii Centre has with the Umeå Plant Science Centre (UPSC) describing the Berzelii Centre as a "centre within a centre". Indeed, in the report title the Berzelii Centre is described as the UPSC Centre for Forest Biotechnology (UCFB). The report also makes clear the "non-transparent" way in which the Berzelii Centre is coincident with UPSC; in which funding, personnel, and science are commingled.



There were a number of related shortcomings in the report, particularly in distinguishing the Berzelii Centre from the UPSC. Not only was it not clear what belonged to which centre, the authors seemed to decline to attempt any differentiation. This was unhelpful to the Evaluation Team and demonstrated a lack of appreciation of the importance of establishing boundaries between units and of establishing a distinctive Berzelii Centre culture.

It is proposed that the UCFB move away from its rather awkward centre nomenclature - The Umeå Plant Science Centre (UPSC) Centre for Forest Biotechnology (UCFB). Suggested nomenclature is below:

- Umeå Plant Science Centre
- A Berzelii Centre for Forest Biotechnology

The Centre could be known locally as simply the Berzelii Centre. This is consistent with another similar Berzelii Centre:

- Stockholm Brain Institute
- A Berzelii Centre for Cognitive and Computational Neuroscience

The shift in name is intended to avoid confusion about "a centre within a centre" and duplication of branding effort. It also recognizes that, in some cases a Berzelii Centre is a small part of a much larger overall effort. It does not however eliminate the need for Berzelii Centres to create a distinctive intellectual and cultural identity that is aligned with the success criteria of the Berzelii Centre Programme. The elements of this identity are captured in the overall comments and recommendations text from the generalist evaluators excerpted below:

#### *Berzelii Centre Characteristics*

- rigorous science of the highest international quality,
- a clear and shared intellectual and cultural identity,
- a distinctive Berzelii environment for development of young people,
- a coherent strategy of basic and applied research aligned with the vision and mission of the Centre,
- inter-disciplinarity in research,
- research project leadership in pairs or groups,
- a significant and growing proportion of projects undergoing translation from science to innovation,
- active collaboration with industry,
- multi-lateralism in industry collaborations.

Recommendations:

- 5 That the name used for the Umeå Berzelii Centre be "Umeå Plant Science Centre - A Berzelii Centre for Forest Biotechnology", recognizing that it exists within the Umeå Plant Science Centre.
- 6 That in future reports and presentations the Berzelii Centre articulate the work of the Berzelii Centre as distinct from the UPSC.
- 7 That the Berzelii Centre take steps to establish its intellectual and cultural identity.

### **Communication Strategy and Execution**

The above recommendation concerning identity is, of course directly connected to the need for a communication strategy.

Recommendations:

- 8 That the Berzelii Centre take steps to establish a visual identity and presence: signs, business cards, brochures for industry, identification on posters and slide presentations, etc. and acknowledgement in scientific and other publications.
- 9 That the Berzelii Centre bring the Berzelii Centre website up to date and increase its usefulness as a focal point for Berzelii Centre identity and outreach.

## **4.2.6 Training Personnel of High Competence**

### **Recruiting and Developing People of International Competence and Experience**

The Berzelii Centre - jointly financed by VINNOVA, The Swedish Research Council, SLU, UmU and the industrial partners - has developed a programme targeting the need for competence in the interface between research and commercialization. The research group has been very productive (96 publications listed) and this indicates that the center provides very good conditions for scientific research and documentation. The Centre recruits students from all over the world. The organizational solutions developed seem to promote a supportive, flexible yet goal-oriented work organization. For the students the easy access to senior staff represents is a much valued asset.

### **Mobility of Personnel between University and Industry**

Due to the investments made possible by the Berzelii Centre mobility between university and industry is likely to increase in the coming years. So far there are no actual examples.

## **Gender Perspective**

There is an awareness of the gender challenge in the Centre. A substantial increase in women recruited for leadership positions has improved the numerical gender balance. This came as a consequence of establishing a new group of leaders "...which all happen to be female". The intention is that the members of this group will have good support to prove themselves in order to compete for permanent positions. The recruitment of female researchers is an important goal as there is still a gender imbalance at the senior scientist level. Good female role models at senior levels can have a strong impact on younger recruits.

We suggest that the Centre management pay attention to the VINNOVA Tiger programme and explore the possibilities of adding some study on gender issues. The Tiger programme is aiming at strengthening the understanding of gender influence in the field of research itself, the research organization and the process of innovation.

## **Contributions to University Education**

Contributions of the Centre to university education were acknowledged by the PhD students as well as the speakers from the Centre. The Berzelii Centre is influencing the curriculum in a way that supports university-industry collaboration. The Berzelii Centre mission is opening new fields for the students, new career possibilities, like R&D positions in industry. More instruction would be desirable.

Recommendation:

- 10 That the Centre develop and activate their plans for professional, industry-relevant skill development for their students.

## **4.2.7 Financial Report for Stage 1**

### **Income Sources**

Stage 1 cash income from VINNOVA/VR is 16 MSEK and the universities, SLU and UmU, are reported as contributing totals of 46 and 28 MSEK (cash plus in kind), respectively. This contribution from the universities is impressive; during the meeting it was explained that this substantial funding was the result of strategic decisions by the universities' leadership to fund this outstanding research group.

Industry is reported to have contributed 2.7 MSEK in cash and 7.2 in kind through SweTree. All the in kind is related to proprietary plant material generated by SweTree (this information was not available in the report but was only presented in the afternoon). It was thought important to eliminate any possible questions concerning conflict of interest.

Recommendation:

- 11 That the universities, UmU and SLU, employ their auditors to review and certify the appropriate valuation of the plant material property.

There is no information concerning the level of contributions of the forest companies. It was reported that the companies, namely Sveaskog, Bergvik Skog, and Holmen Skog, make their contributions through SweTree.

Recommendation:

- 12 That more detail be provided as to funding provided to the Centre by partners in SweTree.

The Centre academic team is to be commended for their impressive success in winning funding from other sources in related areas of science, reported to be 146 MSEK in large-scale, long-term grants plus an estimated 20 MSEK per annum.

### **Expenditures**

There seems to be a good balance of expenditures among the projects.

According to the Stage 1 budget, the University received overhead of 6.5 MSEK under the cash column (39% of salaries paid in cash). As a general matter, the details concerning expenditure of Berzelii Centre funds were not clearly reported but tended to get lost in the larger picture.

Recommendation:

- 13 That the Berzelii Centre clarify the specifics of expenditures of VINNOVA/VR funds.

The University is to be paid 3.5 MSEK for "Material, running costs etc.". During the presentation it was explained that this was dispersed to sustain platform technologies. The Centre should take greater care to articulate these costs in future reports.

### **Recommendations to the Centre**

Our recommendations are:

- 1 That a date be set for the joint programme on Forest Biotechnology of the Berzelii Centre and Swedish Forest Industries Federation (planned for the fall of 2008 according to the report but now delayed)
- 2 That the Centre take prompt and concerted action to establish an agreement with SweTree to formalize SweTree's role as a facilitator of translation of science to industrial innovation, and following this advances the signing of the Collaboration Agreement for the Centre.

- 3 That the Centre take steps to ensure that students and junior researchers are aware of and fully understand their intellectual property rights, most particularly in the context of WoodHeads and SweTree.
- 4 That the Centre take prompt and concerted action to comply with the recommendation of the proposal review to increase the number and range of industry partners who would be actively engaged in collaborating on projects.
- 5 That the name used for the Umeå Berzelii Centre be "Umeå Plant Science Centre - A Berzelii Centre for Forest Biotechnology", recognizing that it exists within the Umeå Plant Science Centre.
- 6 That in future reports and presentations the Berzelii Centre articulate the work of the Berzelii Centre as distinct from the UPSC.
- 7 That the Berzelii Centre take steps to establish its intellectual and cultural identity.
- 8 That the Berzelii Centre take steps to establish a visual identity and presence: signs, business cards, brochures for industry, identification on posters and slide presentations, etc. and acknowledgement in scientific and other publications.
- 9 That the Berzelii Centre bring the Berzelii Centre website up to date and increase its usefulness as a focal point for Berzelii Centre identity and outreach.
- 10 That the Centre develop and activate their plans for professional, industry-relevant skill development for their students.
- 11 That the universities, UmU and SLU, employ their auditors to review and certify the appropriate valuation of the plant material property.
- 12 That more detail be provided as to funding provided to the Centre by partners in SweTree.
- 13 That the Berzelii Centre clarify the specifics of expenditures of VINNOVA/VR funds.

Our recommendations to VINNOVA/VR concerning the overall Berzelii Centre Programme are given in the overview section of this report. Among the programme recommendations, those that are particularly pertinent to this Centre are numbers 1, 2, 3 and 4.

Our recommendations arising particularly with respect to the current Berzelii Centres are:

- 1 That VINNOVA/VR encourage Berzelii Centres to undertake development of their own distinctive intellectual and cultural identity, aligned with Berzelii values, structures, and processes and develop means of articulating and communicating this identity to internal and external stakeholders.
- 2 That the report of the Centre to the Evaluation Team be co-authored by the Centre Director and the Management Team, that all be signatories

to the report, and that the report should be approved by the Board of Directors prior to submission.

- 3 That VINNOVA/VR review the financial statements of all Centres to ensure compliance with all financial rules and completeness and to identify any issues of concern to the Evaluation Team in advance of the evaluation meeting.
- 4 That Berzelii Centre staff be encouraged to establish contact with the VINNOVA Tiger Programme for gender issues in research organizations in order to enhance gender related practices.

Umeå September 2, 2008



Professor Douglas Reeve



Professor Anne Anderson



Professor Björg Aase Sörensen



Professor Chung- Jui Tsai



Professor Teemu Teeri

## 4.3 Evaluation of the Uppsala Berzelii Centre at Uppsala University

### 4.3.1 Introduction

On Wednesday, September 3, in the morning, the Centre Director, Fredrik Nikolajeff and colleagues of the Uppsala Berzelii Centre, briefed the Scientific Experts of the Evaluation Team, Gitte Moos Knudsen and Yong Chen, on the infrastructure, core facilities, scientific progress and range of projects. Representatives of the Board of Directors (including the Board Chair, Lars-Erik Nyström) were present. The meeting in the afternoon was also attended by the Generalist Evaluators, Doug Reeve, Anne Anderson and Björg Aase Sörensen. The afternoon discussion covered organization and management, finance, interaction between industry and university, intellectual property, vision and strategy. We thank the all members of the Centre and the VINNOVA/VR team for their efforts in setting up instructive and efficient presentations and facilities for the evaluation.

### 4.3.2 Research Vision, Strategy and Competence Profile

The **overall aim** of the centre is to identify biomarkers for use in neurorelated diseases including, but not constrained to, Alzheimer's, Parkinson's, Amyotrophic Lateral Sclerosis (ALS) or chronic pain. The *perspective* of the research is to a) improve disease classification (diagnosis) and stratification and b) identify at-risk subjects, early in, or even before, clinical symptoms appear. Successful achievements within either perspective would ultimately enable a superior "personalized medicine" approach, permit preventive interventions, and would also assist in stratification and/or evaluation of design and outcomes of future clinical drug trials. From an industrial point of view, strengthening Swedish small-medium enterprises (SME's), particularly small biotech-companies, but also larger pharmaceutical companies, would be important, and could potentially aid to create new jobs in Sweden.

The long-term prospects of the centre are potentially of major both clinical and industrial interest, and would help to increase quality of life of the population.

### **Sustainable Growth of the Economy through New Products, Processes and Services**

Within the relatively short time-span of the centre, no direct sustainable growth of the economy through new products, processes and services can reasonably be expected.

### **Leading International Collaborative, University-Industry Research**

Several of the partners indicated that the Uppsala area is particularly gifted with SME's and this is seen as an advantage for the centre.

AstraZeneca AB is global pharmaceutical company, and was represented by Bo Franzén from R&D who very actively took part in the discussion.

### **Centre Core Competency - People and Facilities**

In general, the centre partners are excellent scientists and the working environment in the Uppsala area is optimally suited for the purpose. Apart from the need for bioinformatics expertise mentioned below, all relevant competencies are present. Further, the centre has access to the required facilities and 4 additional offices can be made available by the University.

### **4.3.3 Research Programme**

#### **Scientific Leadership - Project Generation, Development and Selection**

The centre has scientific leadership within several aspects of neuro-diagnosis. Their research activities are organized with 19 projects, covering both technological development and diagnosis of various neuro-degenerative diseases. The added values of the centre to the existing research activities of each of the PIs and industrial partners are evident, and should lead to the generation of a new innovation chain with huge potential for both social and economic impacts.

This centre, being still in Stage One, seems to build mostly on collaborations that were established prior to the inauguration of the centre. At this initial stage, the leadership has chosen to allow a range of different research projects to be contained within the centre. Whereas building on existing projects is a natural and sensible way to get started, it should also be emphasized that as the centre moves into its second stage, it will be increasingly important to focus on fewer and more high-impact projects. The Report for Stage One clearly indicates that the centre is well aware of this. This will invariably require important strategic decisions to be made, including cutting off certain research projects or even investigators.

The evaluation team realizes that a prioritization of the current or future projects within the centre will require attention to both the scientific value and the industrial interests, which may not necessarily concur at all times.

Currently, there is no adequate formal organization wherein these important strategic decisions can be made. This will be dealt with in more detail below.



Recommendation:

- 1 That the Centre creates a coherent vision and strategy that will give them guidance to achieve international stature, focus their scientific objectives, confine the range of disorders they investigate and decrease the number of projects.

### **Research Project Critiques - Science, Methodology and Technological Outcomes**

The research activities of the centre are highly interdisciplinary, ranging from nanofabrication technologies, biochemical engineering and contributions from clinicians. The organizational efforts on the cross-disciplinary interaction (e. g., biomarker related activities) and platform creation (e. g., biobank) are certainly pertinent but a more strategic and integrated analysis will help the partners to improve their expectation of outcomes.

In general, two different approaches in the search for proper biomarkers can be done, these include:

- 1) a hypothesis-directed approach where the technological challenges prevail (e. g., identifying different protofibrillar species of beta-amyloid in CSF samples from Alzheimer's patients, project 11)
- 2) a broad screening approach with subsequent confirmation of candidate biomarkers (e. g., identification of disease-relevant SNP's)

From now on these approaches will be referred to as mode 1 and mode 2.

From the report and from the presentations at the site-visit, it is not entirely clear to what extent either approach is being pursued. This is of some relevance, since the need for sample sizes and bioinformatics resources will differ, with particularly mode 2 demanding larger sample sizes (i.e., sample sizes in the order of several thousands). The evaluation panel is not convinced that this need has yet been sufficiently recognized.

The major concern regarding the scientific activities is the extremely large range of projects not only in terms of both the range of disorders that are in focus, but also in terms of the applied technologies. Some of the projects seem more mature because they are hypothesis-driven (mode 1) and thus closer to realization in terms of testing on patient samples. Other projects are highly exploratory and thus more risky, but may also potentially yield novel and important results. It is the impression of the evaluation team that both types of projects both could and should be accommodated within the centre activities.

Three issues are particularly relevant for mode 2 projects, but to some extent also apply for mode 1 projects.

Sufficient access to specimens (blood/plasma, CSF, brain & skin tissue) in a large number will be required. It is highly recommended that the centre immediately perform a complete mapping of the currently available resources of specimens (numbers, diagnoses, origin, type, ethical permission protocols, IPR issues) so that missing areas/specimens can be identified and counteracted. In particular, collaborations (internationally through e.g., EU initiated programmes or at a national level) are encouraged. Some steps have already been taken to ensure such collaborations, but a much more directed and focused initiative is required. There was concern that ethical approvals be in place.

Recommendations:

- 2 That a core facility for the centre is established, to provide sufficient access to specimens (blood/plasma, CSF, brain & skin tissue) in a large number of patients (regardless of the diagnoses).
- 3 That the Centre takes steps to make sure that all regulatory aspects are looked after, in particular to ensure that all ethical approvals are in place.

New methods and tools will be required for high throughput screening with minimum sample consumption. It is evident that the centre has available resources and needs to work in a more efficient manner on this aspect. In particular, project integration on methodologies such as microfluidic chips, micro arrays, mass spectroscopy and surface bio-processing is recommended for immediate application of bio-bank and biomarker research. Generally speaking, more intensive interaction and cooperation are needed to ensure the biological relevance of both system design and material/process development.

Bioinformatics expertise is required in this project to help guide the data analysis design and to help interpret the screening results. Although some available centre resources were mentioned at the morning session, it would be important for the centre to try and identify – and to map accordingly – currently available bioinformatics resources, needs, and potential future collaborators. A strategy to pursue those collaborations should be identified by the board of directors.

Recommendation:

- 4 That available bioinformatics expertise be identified within the Centre and mapped. In parallel, available resources outside the Centre (e. g., the Linnea Centre for Bioinformatics) should be considered. Projects in need of bioinformatics should be identified and any large-scale projects

should consult with bioinformatics specialists prior to the design of the projects.

These are the three most urgent examples of need for infrastructure and core facilities within the Centre, other needs may be identified at a more thorough evaluation by the International Scientific Advisory Board.

### **Relationship to International Groups**

The report lists 24 international collaborators from Europe, Asia, and North America, but the extent and the nature of the collaboration is not stated and did not become evident during the site-visit.

Recently, the UK Brain Bank (Prof. Andrew Lees) was contacted, and they have expressed their willingness to supply the centre with 1500 autopsy brain samples from patients with PD, MSA, and ALS.

The post docs funded by the centre were primarily recruited from the partners, and thus, the international aspects have not been particularly prominent in the staff recruitment stage.

### **Overall View - Productivity, Critical Size and Value-added of the Centre**

Overall, the productivity of the centre is difficult to assess, and any meaningful assessment of this in terms of publications can hardly be expected within just one year. Nevertheless, the productivity of the individual partners, as assessed by the publication list, is excellent.

The centre is coping with many projects and partners, some of whom are not equally active within the centre.

### **4.3.4 Centre Partners**

#### **Partners Needs Identification and Articulation**

Berzelii Centres combine basic and applied science. This evaluation took place at the end of Stage 1, approximately two years into the Centre's development. Given this context the intensity of the engagement with industry is not apparently very great as yet. The rules of the Berzelii programme do not require a Centre agreement be signed by this stage. The lack of such an agreement has however prevented significant collaboration with industry within the Centre to date.

Recommendation:

- 5 That the Centre agreement be completed as a matter of urgency.

The report did not provide much detail on how the industry needs were identified. The report does mention that following comments on their

proposal, clinical needs are fed into the Centre by involving several clinical research groups from Uppsala Hospital, and this seems to be working well. The Centre participated in a VINNOVA event at the site of one of their main industry partners, AstraZeneca, to introduce their expertise to the company. A two-day workshop involving industry, clinicians and Centre researchers has also been held. Notwithstanding all this valuable outreach and engagement activity, it is unclear how industry needs feed into project specification or selection. As the mission of Berzelii Centres is to conduct both basic and applied research, it will be important in Stage 2 to systematize the way industry needs are fed into the scientific programme.

It would have been helpful to the evaluation team if the descriptions of the Stage 1 projects had included more information about their potential interest to partner companies.

As the Centre develops, it should engage partners more actively to identify industry needs. As the Centre moves to Stage 2 and beyond, identifying scientifically interesting projects whose outcomes are valued by more than one industry partner, will be a challenge.

### **Partner Participation in Innovation and Technology Translation**

At this relatively early stage the Centre is interacting with some industry partners, but not yet very actively collaborating with companies in joint projects. Only two of the 19 Stage 1 projects mention an associated company – AstraZeneca and Nova Diamant – the latter not a Centre Partner. The evaluation report mentions that there are ongoing bilateral projects with industry but the lack of a Centre Agreement on intellectual property, means that these cannot be reported as part of the Centre.

The evaluation team was pleased to learn that active collaborative projects are planned for Stage 2 and that some industry partners such as GE envision significant interaction with the Centre, with a figure of four full-time equivalent staff being mentioned as well a cash contribution, once the Centre Agreement has been signed. To meet the funders' requirements for the later stages of a Berzelli Centre, the contributions from industry in cash and in kind will need to be considerably increased.

### **Partner Complement**

The Centre has 5 partners:

- Uppsala University Hospital
- GE Healthcare Biosciences AB
- AstraZeneca AB
- Olink AB
- Gyros AB.

The current partner companies are not as yet significantly engaged in collaborative projects within the Centre. Notwithstanding the planned increased engagement of some of the current partners in Stage 2, the Centre may need additional industry partners with whom to collaborate. The evaluation team learned that when the Centre Agreement is finalized, the intention will be to involve several spin out companies founded by Uppsala researchers.

In Stage 2 when the scientific programme is more focused, the Centre should consider whether it has the appropriate partners companies and may need to expand membership of the Centre.

Recommendation:

- 6 That the Centre take prompt and concerted action to increase the number and range of industry partners and that the Centre take steps to develop further projects with active industry collaborators.

#### **4.3.5 Organization and Management of the Centre**

##### **The Board's Role**

The Centre Board of Directors has representatives of several partners:

- GE Healthcare (Chair Dr. Lars-Erik Nyström);
- AstraZeneca;
- Uppsala University Hospital.

In addition the Board includes Prof Aquilonius of the Swedish Brain Foundation, the Dean of Engineering at Uppsala University as well as external academics from Chalmers University and the Karolinska Institute. The membership of the Board is a little different from other Centres as only some industry partners are represented, but the highest level of the University (Rector/ Vice Rector) is not represented. Also, additional academic members are included.

At the meeting, the evaluation team met the Chair of the Board, who impressed us with his commitment and his understanding of what was needed to drive the Centre forward to the next stage. Only two other members of the Board were present, the Dean of Engineering and a representative from AstraZeneca; this low attendance was disappointing. We would hope that for Stage 2 more senior representation from the University would participate in the Board.

We would anticipate the Board would play an active role in developing the vision and strategy for the future shape of the Centre in Stage 2. We would also assume that the board would be active in driving forward the

collaboration agreement and the subsequent active engagement of industry partners, including, if appropriate, recruiting additional partners.

### **Management Team Structure, Processes and Performance**

The Management Team consists of the Centre Director and the Centre Coordinator. The Evaluation Team was under the impression that this team had made a substantial effort on behalf of the Centre and that they had carried more than their fair share of the leadership and management of the Centre. The report of the Centre, which we assumed was written by the Management Team, was lacking in clarity and completeness in both the text and the data. It was disappointing that it seemed that neither the senior academic leaders nor the Board had taken appropriate interest in, or had taken responsibility for, the report.

Recommendation:

- 7 That in future the report of the Centre to the evaluation team be co-authored by the Centre Management Team and senior research leaders and that all be signatories to the report and that the report should be approved by the Board of Directors prior to submission.

It was evident that wider participation by senior academic leaders was at best inconsistent and was not well organized or systematic. There was much discussion about the deficiencies of the Centre organization, the need for clear structures and processes and the need for commitment of a larger, more senior group than the present Management Team to the overall integrative leadership and management of the Centre. Submission of a revised organization chart was requested (and received the following day). During the afternoon meeting, it was evident that the senior administrators of the University and the Chair of the Board understood the seriousness of the organizational deficiencies of the Centre and expressed commitment to remedial action.

Recommendation:

- 8 That the Centre establish a functional work organization as a matter of urgency.

### **International Scientific Advisory Board's Role**

An effective International Scientific Advisory Board, that meets regularly, preferably annually, is essential to the long-term success of the Centre.

Recommendation:

- 9 That the International Scientific Advisory Board is appointed and meets to critique the reformulated vision and strategy and the work plan for Stage Two.

### **Relationship to the University and University Units**

The Centre attempts to reach across many disciplinary and institutional boundaries within the University and the Hospital. The Centre lists as partners five university departments and four hospital departments. The Evaluation Team suggests that this is too many units to engage effectively and that decreasing the range of units is advisable; this may be achieved through the reformulation of vision and strategy and decreasing the number of projects.

The former Vice-Rector and the Dean of Engineering expressed their support of the Centre during the afternoon meeting. Space has been set aside for Centre offices but these offices are, as yet, unused. It is not clear how these offices will assist the Centre in establishing its identity within the University.

### **Communication Strategy and Execution**

The Centre appears to have made little progress in development of Centre identity or formulation of a communication strategy.

Recommendations:

- 10 That the Centre take steps to establish its intellectual and cultural identity.
- 11 That the Centre take steps to establish a visual identity and presence: signs, business cards, brochures for industry, identification on posters and slide presentations, etc. and acknowledgement in scientific and other publications.
- 12 That the Centre bring the Centre website up to date and increase its usefulness as a focal point for Centre identity and outreach.

### **4.3.6 Training Personnel of High Competence**

#### **Recruiting and Developing People of International Competence and Experience**

PhD students are not directly connected to the Centre. In the coming next phase and with a more concentrated project portfolio it is vital for the Center to develop a PhD programme in its own capacity.

Recommendation:

- 13 That the Centre undertakes to recruit PhD students and identify resources to fund them.

The decision to employ ‘post docs’ for a longer period can be conducive to consolidating a team of young scientists. This may also lead to an accumulation of experience in working across disciplines. As an effect of focusing on the core activities of the Centre its scientific contributions may

even be communicated more efficiently to current and future industrial partners. Since the Berzelii Centre allows for a double mission to be fulfilled, active steps to facilitate competence in relation building and systemic dimensions of innovative work processes should be realized. This is evidently important also to validate and strengthen the idea of the Center and as a foundation for an organizational identity.

### **Contributions to University Education**

Among the success criteria for a Berzelii Centre several pertain to the contribution to university education:

*“Geographical programme where the majority of work is conducted at a university or college to achieve a critical size and interaction between research, post-graduate education and graduate education”.*

So far this is only indirectly achieved in the Uppsala Berzelii Center.

### **Mobility of Personnel between University and Industry**

No data were available as to any systematic mobility between university and industry even though examples were given of staff being instrumental in setting up new businesses. It is underscored that the Centre encourages a free workflow of junior faculty between the participating research groups and public/industrial partners.

### **Gender Perspective**

The Centre has presented their adherence to the advantages of a mixed Centre environment and agrees with the perspective that “diversity pays”. The gender balance among the PhD students, not directly linked to the Berzelii center, was almost at parity. In the more senior positions that is not the case as only twenty percent are female. The Berzelii Centre has taken steps to initiate collaboration with the Centre for Gender Research at Uppsala University. There is a statement that implementing a programme with the Centre for Gender Research will be prioritized at the beginning of Stage 2.

The Tiger programme within the VINNOVA structure could also be a relevant partner in the efforts of integrating gender aspects of innovative processes. International benchmarking should also include considerations gender and diversity achievements.



### **4.3.7 Financial Report for Stage 1**

#### **Income Sources**

Stage 1 cash income from VINNOVA/VR is 16 MSEK. In Stage 1 the University contributes 0.5 MSEK per annum in cash and 0.6 MSEK per annum in kind. The total in kind for Stage 1 from the University was 7.3 MSEK the bulk of which was said to be from other external funding sources. This contribution from the University is un-impressive.

Recommendation:

- That the University provides greater financial support to the Centre.

Industry is reported to have contributed no cash and virtually no in kind in Stage 1. This is discussed in the section above on Centre Partners.

The Hospital is recorded as contributing 3.1 MSEK in kind.

The Centre academic team is to be commended for their impressive success in winning funding from other sources in related areas of science, almost 100 MSEK as reported in Table 12.

#### **Expenditures**

According to the overall expenditures for Stage 1 (to May, 2008), the University received overhead of 2.0 MSEK under the cash column (32% of salaries paid in cash). Expenditures also included 1.3 MSEK for "Material, running costs etc."; greater detail should be provided for this expenditure.

Data on salary expenditures was not provided in the detail requested by VINNOVA/VR. It will be recommended to VINNOVA/VR that in future the financial reporting Centres be reviewed prior to the evaluation to ensure clarity and completeness.

#### **Recommendations to the Centre**

Our recommendations are:

- 1 That the Centre creates a coherent vision and strategy that will give them guidance to achieve international stature, focus their scientific objectives, confine the range of disorders they investigate and decrease the number of projects.
- 2 That a core facility for the centre is established, to provide sufficient access to specimens (blood/plasma, CSF, brain & skin tissue) in a large number of patients (regardless of the diagnoses).
- 3 That the Centre takes steps to make sure that all regulatory aspects are looked after, in particular to ensure that all ethical approvals are in place.

- 4 That available bioinformatics expertise be identified within the Centre and mapped. In parallel, available resources outside the Centre (e. g., the Linnea Centre for Bioinformatics) should be considered. Projects in need of bioinformatics should be identified and any large-scale projects should consult with bioinformatics specialists prior to the design of the projects.
- 5 That the Centre agreement be completed as a matter of urgency.
- 6 That the Centre take prompt and concerted action to increase the number and range of industry partners and that the Centre take steps to develop further projects with active industry collaborators.
- 7 That in future the report of the Centre to the evaluation team be co-authored by the Centre Management Team and senior research leaders and that all be signatories to the report and that the report should be approved by the Board of Directors prior to submission.
- 8 That the Centre establishes a functional work organization as a matter of urgency.
- 9 That the International Scientific Advisory Board is appointed and meets to critique the reformulated vision and strategy and the work plan for Stage Two.
- 10 That the Centre take steps to establish its intellectual and cultural identity.
- 11 That the Centre take steps to establish a visual identity and presence: signs, business cards, brochures for industry, identification on posters and slide presentations, etc. and acknowledgement in scientific and other publications.
- 12 That the Centre bring the Centre website up to date and increase its usefulness as a focal point for Centre identity and outreach.
- 13 That the Centre undertakes to recruit PhD students and identify resources to fund them.

### **Recommendations for VINNOVA/VR**

Our recommendations are:

- That the expectations of Berzelii Centres for organizational structures and processes be clarified.
- That VINNOVA/VR commission a study of the organizational development of Berzelii Centres and facilitate the provision of organizational development expertise to existing and future Berzelii Centres.
- That VINNOVA/VR take steps to ensure that specimens taken from humans and related data (biobanks) be shared and accessible to other funded research teams.

Uppsala September 3, 2008



Professor Douglas Reeve



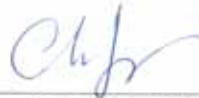
Professor Anne Anderson



Professor Björg Aase Sörensen



Professor Gitte Moos Knudsen



Professor Yong Chen

## **4.4 Evaluation of the SBI Berzelii Centre at Karolinska Institutet**

### **4.4.1 Introduction**

On Thursday, September 4 in the morning, at the Karolinska Institutet (KI), the Centre Director, Hans Forssberg and colleagues of the Centre, briefed the Scientific Experts of the Evaluation Team, Christian Büchel and Andreas Lüthi, on the scientific progress and range of projects.

Representatives of the Board of Directors were also present. The meeting in the afternoon was also attended by the Rector of KI, Harriet Wallberg-Henriksson, and the Chair of the Centre Board, Camilla Modéer, and the Generalist Evaluators, Doug Reeve, Anne Anderson and Björg Aase Sörensen. The afternoon discussion covered organization and management, finance, interaction between industry and university, intellectual property, vision and strategy, student recruitment and educational activities. We thank all members of the Centre and the VINNOVA/VR team for their efforts in setting up instructive and efficient presentations and facilities for the evaluation.

### **4.4.2 Research Vision, Strategy and Competence Profile**

#### **Sustainable Growth of the Economy through New Products, Processes and Services**

The Stockholm Brain Institute (SBI) is cooperating with major industrial partners to (i) explore the neurobiological processes leading to cognitive dysfunctions in Alzheimer's disease (AD), Schizophrenia and Attention-deficit hyperactivity disorder (ADHD) and aims to identify biomarkers to detect and monitor the pathological processes underlying these disorders.

This line of research is conducted in close collaboration with industrial partners in the field of information technology (IBM) and pharmaceutical companies (AstraZeneca, NeuroSearch). The collaboration with the pharmaceutical industry is intended to lead to the development and testing of new drug targets and new drugs to treat major psychiatric disorders. Given that the disorders described above reflect a major socioeconomic burden, a major discovery in this field (i.e. new product) will support a sustainable growth of the economy. In addition improved treatment of these diseases will at the same time lead to economic growth by saving funds in social security, increasing population productivity, and improving quality of life.

In collaboration with IBM the SBI aims at developing new data analysis techniques for PET images and software solutions for the realistic modeling of neuronal circuits. These developments are likely to lead to commercial

products, but at the same time allow the commercial partner (IBM) to utilize the acquired knowledge to design user interfaces, crucial for their current range of products. Cooperation with smaller industrial partners, (e. g. Cogmed) can lead to new services in cognitive training and rehabilitation.

### **Leading International Collaborative, University-Industry Research**

All PIs have longstanding and successful international collaborations with leading institutions.

Through the cooperation with AstraZeneca, SBI is in an internationally leading position in the field of drug discovery and testing. State-of-the-art PET scanning facilities allow early testing of new compounds with regards to basic markers such as brain availability of the compound and more information on local distribution patterns.

An internationally comparable enterprise to the SBI imaging facilities is the GSK Clinical Imaging Centre in London, a joint project between GSK and Imperial College. However, the GSK Clinical Imaging Centre operates with a significantly larger budget (capital investment of £46m and £11m per annum operating budget).

### **Centre Core Competency - People and Facilities**

The research structure of the SBI is based on 11 research groups, each headed by an internationally visible scientist (Principal Investigator). The group reflects an adequate mix of experienced researchers with a longstanding history in their respective field and young, very promising researchers with already outstanding publication records.

In terms of the SBI research goals, the themes of all PIs cover a subfield that is necessary to study individual cognitive processes and their pathology leading to mental disorders. In particular the SBI PIs cover expertise in the field of cognitive neuroscience (Nilsson, Ehrsson), neuroimaging with PET and FMRI (Farde, Ingvar), developmental neuroscience (Forssberg), dopaminergic function in cognition (Grillner, Klingberg), computational models (Lansner, Johnsson) and cognitive neuroscience of emotion (Öhman, Savic-Berglund).

SBI provides up-to-date research equipment for cognitive and clinical neuroscience. This includes the latest generation PET camera (HRRT) and a very active radiochemistry department. Importantly, in cooperation with AstraZeneca, the radiochemistry group has produced numerous novel PET ligands (e.g. a Serotonin 5HT1b receptor ligand) that are currently being investigated.

In addition SBI was recently awarded a grant of 27 million SEK by the Knut and Alice Wallenberg's Foundation to install a high-field MR scanner.

Through a collaboration with IBM, the Center houses a Blue Gene supercomputer that enables the computational neuroscience group to estimate the most complex models and at the same time allow the PET research group to use the latest image reconstruction and filtering algorithms to fully exploit the high spatial resolution of the PET camera.

The ongoing research on the genetic basis of cognitive and emotional processes and related diseases, should be strengthened with expertise in genetics and bioinformatics.

Recommendation:

- 1 That expertise in genetics and bioinformatics be identified so as to provide the Centre with close collaboration in this field.

It has been noted that research on animals is notably underrepresented at SBI. This includes research on questions addressing the basic function of neuronal circuits and its relation to animal behavior, as well as research on animal models of disease incorporating information obtained by genetic studies in humans and gene by environment interactions. Incorporating these aspects into the research portfolio of SBI is considered to be a crucial factor to the success of SBI in reaching its long-term strategic goals.

Recommendation:

- 2 That a substantial increase in expertise in animal neurophysiology and animal models of disease is implemented at the level of two new PI groups.

#### **4.4.3 Research Programme**

##### **Scientific Leadership - Project Generation, Development and Selection**

The leadership structure at SBI is based on a flat hierarchy in which all 11 PIs are involved in decisions about project selection and development. Under the direction of Hans Forssberg, a culture has been established under which younger PIs are also fully integrated. There appears to be a general consensus among the PIs that the chosen leadership structure is appropriate and working well. The review committee fully supports the implemented structures. In particular, the requirement for new projects to be a collaboration of two or more research groups is an excellent instrument creating added value to the Center by fostering scientific interactions between different SBI groups. However, as projects will evolve over the next three years, clear evaluation criteria for continuation of projects and selection of new projects need to be worked out.

## **Research Project Critiques - Science, Methodology and Technological Outcomes**

The current research projects are clearly reflecting the scientific excellence in cognitive neuroscience at SBI. The fact that a large fraction of the projects are combining experimental and computational approaches is considered to be a strong asset with great potential. In general, the scientific questions addressed are very original and of highest relevance. The methodologies and technological platforms are most appropriate. In particular the imaging platforms are cutting edge and go beyond the current state of the art at the international level. It is noted that relatively few projects include work on basic questions of neuronal circuit function and its relation to behavior in animals – while this obviously reflects the current research fields represented at SBI, it would be desirable to strengthen this aspect when selecting new projects in future rounds. Some projects appear to be somewhat outside of the overall goals of the SBI Berzelii Center.

Recommendation:

- 3 That the Centre, in its next round of project selection, rigorously critique proposals so as to ensure a cohesive suite of projects aligned with the vision and strategy of

## **Relationship to International Groups**

The SBI is an internationally highly competitive research center in the field of cognitive neuroscience, representing one of the strongest groups of scientist in this field worldwide. This is also reflected by the fact that SBI researchers are very well integrated at the international level and part of numerous international research networks (e.g. FP7 consortia). It will be of utmost importance to maintain scientific excellence when recruiting young faculty in the coming years.

## **Overall View - Productivity, Critical Size and Value-added of the Centre**

Considering the short period of time since the SBI Berzelii Center has been established, the scientific achievements and structures that have been put in place are very impressive. There is no doubt that a critical mass ensuring scientific productivity and competitiveness has been reached in the field of functional and molecular imaging. Given the mission of SBI in terms of understanding the genetic basis of important diseases such as AD, ADHD and Schizophrenia, it is recommended – as outlined above - to significantly strengthen the expertise in genetics and in animal models.

#### **4.4.4 Centre Partners**

##### **Partners Needs Identification and Articulation**

Berzelii Centres combine basic and applied science. This evaluation took place at the end of Stage 1, approximately one year into the Centre's development. The researchers have begun interacting with their two key industry partners; AstraZeneca and IBM.

The rules of the Berzelii programme do not require a Centre agreement be signed by this stage.

The evaluation report describes how part of the Berzelii budget is reserved for projects of interest to industry or public sector partners. The commercial potential of such projects is assessed by the Industrial Advisory Board. The intention is that the 25% of the funding currently used for these kinds of projects will increase during the later stages of the Centre. The goal is that two thirds of Berzelii funded projects will be industrially relevant by 2010.

Industry partners are also involved in strategic retreats held by the Centre and the two big company partners are also represented on the Board of Directors.

##### **Partner Participation in Innovation and Technology Translation**

At this relatively early stage the Centre is interacting with some industry partners bilaterally, notably AstraZeneca and IBM. AstraZeneca has made significant financial contributions to the PET scanner facility for future collaborative research, and is collaborating on two Stage 1 projects on radioligands and diagnostic markers for Alzheimer's disease. IBM has also invested significantly in the scientific facilities at the SBI in the form of hardware and software associated with the high performance Blue Gene computer. The evaluation team were impressed that a senior IBM representative had traveled from the US to be at the meeting. At the evaluation meeting we learned that IBM are collaborating on image processing the data emerging from the PET scanner. Four other projects outlined in the evaluation report involve partner organizations. Three of these involve CogMed Systems with public sector partners in healthcare and one involves NeuroSearch. Neither of these companies is represented on the Board of Directors nor were they present at the evaluation meeting.

As the Centre moves to Stage 2 and beyond, identifying scientifically interesting projects whose outcomes are valued by more than one industry partner, will be a challenge. Finalizing the Centre agreement will be an important prerequisite for collaborative projects which involve multiple company partners.



## **Partner Complement**

The Centre has industry and public sector partners:

- AstraZeneca
- CogMed; IBM
- NeuroSearch;
- Göteborg University
- Umeå University
- International Neuroinformatics
- KI Innovations.

When the Centre Agreement is finalized, the Centre should review its partner complement and consider expanding its membership. Given the extremely high quality research being undertaken in the Berzelii Centre there should be many other companies who could benefit from membership of the Centre.

Recommendations:

- 4 That the Centre agreement be completed as a matter of urgency.
- 5 That the Centre increase the number and range of industry partners with which they have effective collaboration.

### **4.4.5 Organization and Management of the Centre**

#### **The Board's Role**

The Centre Board of Directors has representatives of the three collaborating universities, the two large company collaborators, AstraZeneca and IBM and two additional members, the Chair Camilla Modéer, from Public and Science, and Cecilia Seidergard. The membership of the Board is a little different from other Centres as only some industry partners are represented, and the highest level of the University (Rector/ Vice Rector) is not represented. The Rector of KI showed her commitment to the Centre by rearranging her diary to attend the evaluation meeting. She spoke about the strategic importance the Institute places on the Centre and its commitment to support it.

As the Centre moves forward, the role of the Board should also develop, for example by driving forward the collaboration agreement and the subsequent active engagement of industry partners, including, if appropriate, recruiting additional partners.

#### **Management Team Structure, Processes and Performance**

The Management Team consists of the Centre Director, a Scientific Coordinator and a Director of Studies. The Team appears to manage the

affairs of the Centre well. The Centre Director has been successful in leading the development of new ways of working with the large SBI team and in creating a distinctive culture for high-level collaborative research and development of PhD students.

Scientific leadership is provided by the Executive Group comprised of the eleven PIs which takes "all strategic decisions regarding research and budget". A new way of working effectively in this group was said to be a result of the Berzelii Centre funding.

An Industrial Advisory Board has been established to assess innovative potential of projects and give advice.

#### **International Scientific Advisory Board's Role**

The International Scientific Advisory Board has an appropriate membership and appears to be effectively used by the Centre.

#### **Relationship to the University and University Units**

The Centre has participants from three universities:

- Karolinska Institutet (KI)
- The Royal Institute of Technology (KTH)
- Stockholm University (SU).

It is apparent that there are active grass roots efforts to strengthen multi-university collaborations and good support from the most senior levels of the universities for the SBI and similar centres.

#### **Communication Strategy and Execution**

The SBI appears to have an effective communication strategy. Identification of Berzelii specific events and activities needs further development.

### **4.4.6 Training Personnel of High Competence**

#### **Recruiting and Developing People of International Competence and Experience**

The SBI, Berzelii Center includes 14 professors and 10 junior professors; a substantial group of personnel with high competence.

Ability and capacity to train people of high competence is a condition sine qua non for any ambitious and change oriented knowledge based organization. The Center has developed a work organization through task and system oriented process optimization. This work organization will be challenged in the coming new phase of the Centre development, but so far seems to function well.

The research programmes/projects set up and carried out with collaboration between the various participants in order to solve key issues are conducive to obtaining both scientific and “translation” purposes. The staff provided the information that it was hard to recruit well qualified researchers from outside, but the recruitment of PhD students was described as very good. The SBI appears to have attracted highly motivated and determined students. The SBI, Berzelii Center, has applied for and been awarded a grant from VINNOVA to set up a research school, and based on interviews with PhD students this is highly appreciated.

### **Mobility of Personnel between University and Industry**

While extended and concrete collaboration is taking place between the personnel from university and industry, actual mobility was not reported. It should be added that one prominent academician has a double appointment, at AstraZeneca and the SBI.

PhD students commented that the university – industry collaboration constitutes new options as far as future employment is concerned.

Recommendation:

- 6 That the Centre undertake to consolidate recruitment of PhD students internationally and identify resources to fund them.

### **Gender Perspective**

The chairman of the board is Camilla Mod er, representing “Public and Science” an organization set up to connect university/research and industry and/or public interest.

The numerical representation of women has changed over recent years. Among the senior staff there is a traditional male overrepresentation, in spite of considerable efforts to recruit female scientists with relevant competence. Swedish law and regulations prohibits special, tailor-made recruitment and a gender-based quota system.

Since the executive group is made up of PIs and there is only one women in this position, the acting management group is strongly male dominated. Among PhD students and new post docs the gender balance has improved with a slight dominance of women.

The gender perspective has relevance also as an epistemological challenge which goes to the core/ the subject matter of the research. Gender perspectives and sex differences in the brain is described as representing the first step in an extensive programme aiming to investigate sex differences in the limbic networks with respect to genetic, hormonal and socio-environmental aspects. A mapping of sex differences in specific functional

and anatomic cerebral connections and top-down as well as bottom-up effects on the limbic networks is the goal for the first four years. But the ultimate goal is to use the information for development of computerized models of brain functions, for development of sex-differentiated training programmes and new pharmacological treatments for neuropsychiatric conditions with well-known sex differences.

The SBI Brezelii Centre should be advised to contact the Tiger programme for support.

Recommendation:

- 7 That the Centre to continue takes action to hire women at the senior level.

### **Contributions to University Education**

The Centre's contribution to university education is considerable. Apart from the initiating of the new research school in the autumn of 2008, and supported by VINN PRO, numerous PhD students are supervised by Centre staff members.

The research school is adding new themes to the curriculum like work processes, innovation systems and management. Students are also active in self-organized activities, and are included in activities arising from the University/industry collaboration.

#### **4.4.7 Financial Report for Stage 1**

##### **Income Sources**

Stage 1 cash income from VINNOVA/VR is 16 MSEK. In Stage 1, the budget calls for the university partners to contribute a total 62 MSEK in kind (71% from KI, 9% from SU and 20% from KTH)

According to the budget, AstraZeneca is reported to have contributed 1.2 MSEK in cash and 24 MSEK in kind in Stage 1. The nature of the in kind contribution is not specified but is believed to be radio-ligand materials related to the PET scanner activity. IBM is reported to have contributed 4.4 MSEK. Four other partners have made more modest contributions totaling 3.6 MSEK mainly in kind.

The Centre academic team has won large scale funding from other sources in related areas of science:

- 43 MSEK funding for a five-year Strategic Research Centre from the Foundation for Strategic Research (SSF)
- 24 MSEK for the Betula Study from VR
- 27 MSEK for a new MR scanner from the KAW Foundation;

- 16 MSEK Learning and Memory in Children from KAW and VR.

Computing a total of related funding is not possible because the information requested in Table 12 was not provided.

### **Expenditures**

Data on expenditures was not provided in the detail requested by VINNOVA/VR. Supplementary information was requested.

Recommendation:

- 8 That the Centre provide VINNOVA/VR with the detailed data as requested by the evaluation and that VINNOVA/VR undertake an independent review of the data at the Centre's cost.

### **Recommendations to the Centre**

Our recommendations are:

- 1 That expertise in genetics and bioinformatics be identified so as to provide the Centre with close collaboration in this field.
- 2 That a substantial increase in expertise in animal neurophysiology and animal models of disease is implemented at the level of two new PI groups.
- 3 That the Centre, in its next round of project selection, rigorously critique proposals so as to ensure a cohesive suite of projects aligned with the vision and strategy of Centre.
- 4 That the Centre agreement be completed as a matter of urgency.
- 5 That the Centre increase the number and range of industry partners with which they have effective collaboration.
- 6 That the Centre undertakes to consolidate recruitment of PhD students internationally and identify resources to fund them.
- 7 That the Centre to continue take action to hire women at the senior level.
- 8 That the Centre provide VINNOVA/VR with the detailed data as requested by the evaluation and that VINNOVA/VR undertake an independent review of the data at the Centre's cost.

Our recommendations to VINNOVA/VR concerning the overall Berzelii Centra Programme are given in the overview section of this report. Among the programme recommendations, those that are particularly pertinent to this Centre are numbers 1 to 4:

- 1 That VINNOVA/VR encourage Berzelii Centres to undertake development of their own distinctive intellectual and cultural identity, aligned with Berzelii values, structures, and processes and develop means of articulating and communicating this identity to internal and external stakeholders.

- 2 That the report of the Centre to the Evaluation Team be co-authored by the Centre Director and the Management Team, that all be signatories to the report, and that the report should be approved by the Board of Directors prior to submission.
- 3 That VINNOVA/VR review the financial statements of all Centres to ensure compliance with all financial rules and completeness and to identify any issues of concern to the Evaluation Team in advance of the evaluation meeting.
- 4 That Berzelii Centre staff be encouraged to establish contact with the VINNOVA Tiger Programme for gender issues in research organizations in order to enhance gender related practices.

Stockholm September 4, 2008



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Professor Douglas Reeve



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Professor Anne Anderson



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Professor Björg Aase Sörensen



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Professor Christian Büchel



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Professor Andreas Lüthi

# **Appendix A: Guidelines for the Evaluation of VINN Excellence Centres and Berzelii Centres**

## **1. Background**

### **1.1. The Programme background**

This document constitutes the guidelines for the evaluation of nineteen Centres with financing through the VINN Excellence Centre (fifteen Centres) and Berzelii Centra (four Centres) programmes. Both programmes aim to create and develop vigorous academic research milieus in which industrial and/or public partners actively participate in order to derive long-term benefits for the society. The programmes are also a link in the governmental effort to develop university-industry interaction.

The overall objective with both programmes is to promote sustainable growth in Sweden. This means that the programmes should create new internationally competitive concentrations of highly qualified experts with the task of conducting problem-oriented and, as a rule, multidisciplinary research and ensuring that the knowledge and technology generated will lead to new products, processes and services. The research activities involve intense collaboration between the participating actors. Hence each of these Centres is a strong research milieu positioned in a strong innovative environment. Ideas outside the core activities of the participating actors can also be utilised and further developed, e.g. by the set-up and development of new high-tech and research-based companies.

Although the overall aim of the programmes is the same, they differ from both a scientific maturity and financial perspective. The Berzelii Centra programme deals with early stage industrial research closely related to basic research while the VINN Excellence Centre programme requires a substantial engagement from the industrial and/or public partners. Regarding the financial conditions a Berzelii Centre typically shows a turnover of 170 MSEK where 100 MSEK is cash contribution from the Swedish Research Council, VR, (50%) and the Swedish Governmental Agency for Innovation Systems, VINNOVA, (50%). For a typical VINN Excellence Centre the turnover is 210 MSEK with a governmental cash contribution of 63 MSEK. The remaining contribution in both programmes

is normally equally shared by the University (50%) and the industrial and/or public partners (50%).

VR as well as VINNOVA are both running other research programmes. For more information please visit the homepage for both organisations i.e.

[www.vr.se](http://www.vr.se) and [www.VINNOVA.se](http://www.VINNOVA.se), respectively.

## 1.2. Evaluation background

Both the VINN Excellence Centre and the Berzelii Centra programmes are intended to run for up to 10 years. The building-up and development of the Centres is based on stepwise funding and a follow-up process. A number of industrial companies and/or public services together with a university or a research institute constitute the parties of a Centre. The parties contribute jointly to the Centre's research programme, financially or in the form of active work. Their collaboration and the financing are manifested in a Model Contract for VINN Excellence Centres before the actual execution of the research programme. The actors in the Berzelii Centres are recommended to sign the Model Contract not later than at the end of Stage 2, see table below.

In a Berzelii Centre, the industrial and public partners contribute jointly to the formulation of the research programme. The partners are recommended to gradually increase their contribution, financially and with active work, during Stage 1 and Stage 2 following recommended levels, in order to reach the fully financial level in Stage 3 and 4. The reason for this relatively long start up phase is that the Berzelii Centra Programme is aimed towards areas where the industry hesitates to enter into active collaboration due to e.g. need of well verified new knowledge or that the present industry consists only of small companies with limited resources.

The typical financial support to each Berzelii Centre is as the following table:

Stage	Year	VR	VINNOVA	University	Industrial and Public Partners
1	1	5 MSEK	2 MSEK	> 8 MSEK	Ca ½-1 MSEK (recommendation)
	2	5 MSEK	4 MSEK		
2	3	15 MSEK	15 MSEK	> 15 MSEK	2-4 MSEK
	4				2-4 MSEK
	5				2-4 MSEK (recommendation)
3	6-8	15 MSEK	15 MSEK	> 15 MSEK	> 15 MSEK
4	9-10	10 MSEK	10 MSEK	>10 MSEK	>10 MSEK
To be used for commercialisation:			4 MSEK		



The start up phase for a VINN Excellence Centre is entirely during Stage 1, which comprises the initial two years. VINNOVA covers up to SEK 7 million of the expenses during stage 1 (as a rule SEK 2,5 million for the first year and SEK 4,5 million for the second year), provided that the industrial and public partners contribute with at least the same amount. After the first stage the VINNOVA annual contribution to a Centre is expected to increase to max. about SEK 7 million per year (SEK 1 million  $\approx$  approx. € 106.000/ \$ 143 000).

In the model contract for stage 1 (Section 10. Evaluation) is stated:

*“With a view to giving the Parties a basis for possible continued activities at the Competence Centre, VINNOVA intends to conduct its first evaluation during the second year. The other Parties undertake to contribute to the evaluation by placing, when so requested, all necessary documents needed for the evaluation at VINNOVAs disposal.”*

This is also valid for the Berzelii Centres.

In order to fulfill the main purpose of the evaluation (to give an input to the negotiations, decisions about stage 2, the development of the Centres, or other specific actions), the evaluation has to be completed in good time (preferably 3 months) before the expiration of stage 1. The nineteen Centres will be evaluated in three groups during the period August 2008- March 2009, see Appendix 1 and 2.

## **2. The evaluation team**

Each Centre will be evaluated by a team of international experts. Two of the experts in the team will have the competence and the task to evaluate the Centre from a scientific point of view. 2-3 persons in the team will have experience from similar programmes for university – industry research collaboration. These “generalist” experts will look at the Centre from a general point of view. This means that the scientific experts will participate in the evaluation of one specific Centre while the “generalist” experts will participate in the evaluation of two or more Centres. Each Centre has suggested up to 5 suitable scientific experts. From that list VINNOVA, together with VR on the Berzelii Centra, has decided on whom to invite.

## **3. The task of the evaluators**

This first evaluation of the Centres will be carried out at an early stage. Its primary purpose is to evaluate the new established organisation of the Centre and the initial activities to establish the research programme in a Centre format. Thus, the evaluation will review progress of scientific and

industrial efforts, recognising it is early to expect conclusive results. The evaluators will form an opinion concerning the approach and measures taken so far by individual Centres to judge the potential for their long-term development towards successful VINN Excellence Centres and Berzelii Centres. Evaluators may offer suggestions for remedial action to enhance the prospects for Centre success.

As a basis for the evaluations of the VINN Excellence and Berzelii Centres, VINNOVA has formulated a number of success criteria (see Appendix 3). Centres are asked to prepare reports according to the guidelines in Appendix 4.

The evaluation team will make the evaluation in the context of the success criteria.

The scientific experts on the evaluation team will review the Centre report sections:

2. Research Area, Competence Profile and Critical Size
3. Centre Partners (from the point of view of research contribution)
4. Research Programme

They will offer their perspective on the research in the context of the Vision, Mission and Strategy and financial aspects with respect to support of research agenda.

The "generalist" experts on the evaluation team will review the Centre report sections:

5. Financial Report for Stage 1
6. Organisation and Management of the Centre.
7. Personnel of High Competence

and

8. Centre Partners (from the point of view of organisational effectiveness)

They will offer their perspective on the Centre organisation in the context of the Vision, Mission and Strategy. They will also comment on the organisation of the report and the site visit.

Although the individual Centres will be the main focus, the evaluators also comment on the concept and organisation of VINN Excellence Centre programme and the Berzelii Centra programme.

During the evaluation, the following important differences for the Berzelii Centres compared with the VINN Excellence Centres must be considered:

- One of the challenges for these Centres is the need for increasing the contribution from industrial and public partners during Stage 1 and Stage 2 of the Berzelii Centres. This includes active involvement (in-kind) and cash contribution as well as number of partners.
- There is no obligation for a Berzelii Centre to formulate a Model Contract before starting the activities. The demand is that the Model Contract must be implemented during Stage 2 at the latest in order to enter Stage 3.

#### **4. Organisation of the evaluation**

The composition of the evaluation team is decided by VINNOVA, together with VR on the Berzelii Centres. The evaluation team itself decides on the distribution of work among its members.

The basic documentation, in principle the Centre report to the evaluation team, from the Centres to VINNOVA, will be distributed by VINNOVA to all members of the evaluation team not later than one month prior to the evaluation. Each evaluation starts with the evaluation team introductory meeting in the evening the day before the evaluation and ends when the evaluation report is completed. The goal is that the first draft of the evaluation report should be finished the same evening as the interview is performed. Normally this means that the evaluation team has to write the first draft of the evaluation report while travelling to the next introductory meeting. This also means that the composition of the evaluation team will differ from day to day since the scientific experts are to evaluate a specific Centre.

The evaluation of the nineteen Centres will be carried out during August 2008- March 2009. During this period interviews will be held during five weeks divided into three groups of interview. Each Centre belongs to one of the three groups, see Appendix 1. Interviews with the Centres in the:

- group 1 will take place August 25 to September 4, 2008
- group 2 will take place November 12 to November 20, 2008
- group 3 will take place March 3 to March 5, 2009.

The evaluation report is due approximately 5 weeks after the interview sessions.

During the site visit the evaluation team is interested in meeting:

- the Centre Director
- the Chairman of the Centre Board of Directors and

- representatives from the industrial and/or public partners
- university staff incl. representatives from the Vice-Chancellor's office
- research leaders and/or programme directors active within the Centre
- doctoral students.

VINNOVA staff will, together with VR staff at the Berzelii Centre, be present at the site visits. The staff will act as administrators and should not take active part in the evaluation, but can add information during work sessions.

Each evaluation session will be divided into two sessions, one where the scientific experts meet parties from the Centres and one session where the "generalist" experts together with the scientific experts meet parties from the Centres. During lunch, i.e. between these two sessions, the evaluation team will also meet with up to 10 PhD students in the Centre. See detailed schedule in Appendix 2.

## **5. Centre arrangements in connection to the evaluation**

The Centres are asked to propose five scientific experts for the evaluation and send the suggestions to VINNOVA not later than February 29, 12:00, 2008. It is important that the Centres can guarantee no conflict of interest with the proposed evaluators.

The basic documentation, in principle the Centre report to the evaluation team, from each of the Centres will be distributed by VINNOVA to the members of the evaluation team not later than 4 weeks prior to the evaluation. The template that should be used is presented in Appendix 4.

The report should be submitted electronically (pdf-files) to VINNOVA and be available at VINNOVA not later than:

- for Centres in group 1, Wednesday June 18, 12:00 a.m. 2008.
- for Centres in group 2, Friday October 12, 12:00 a.m. 2008.
- for Centres in group 3, Friday January 30, 12:00 a.m. 2009.

Furthermore the Centres should:

- book location for the interview sessions
- invite Centre representatives to the interview sessions
- inform VINNOVA on the address to the location
- arrange lunch for the evaluation team and the administrative staff (chamber separate)
- arrange so that the evaluation team can meet with up to 10 PhD students during lunch coffee, preferably in the lunch location.

Finally the Centre leader should confidentially review, with respect to facts, the first draft of the evaluation report and deliver the revision to VINNOVA not later than:

- for Centres in group 1, Friday September 26, 12:00 a.m. 2008.
- for Centres in group 2, Friday December 12, 12:00 a.m. 2008.
- for Centres in group 3, Friday March 20, 12:00 a.m. 2009.

The first draft report will be sent to the Centre leader one week prior to these deadlines.

## **6. Report of the evaluation team**

The work of the evaluation team shall result in one report on the Berzelii Centra programme and one on the VINN Excellence Centre programme. Each report should be written in consensus by the evaluation team and sent to VINNOVA. The evaluation team shall be unanimous in its conclusions.

Preferably, each report should comprise a section (approx. one fifth) with comments on the concept of the Berzelii Centre and VINN Excellence Centre programmes, respectively, including discussions of structural and organisational problems. Another section (approx. four fifth) should deal with each Centre individually as outlined above.

Both VR and VINNOVA appreciate a discussion on priorities of actions to be taken by VR and VINNOVA as well as by each individual Centre, both in terms of financial support and of more structural matters.

### **6.1. Handling and distribution of the evaluation report**

The two reports from the evaluation team will be presented to VINNOVA and the Berzelii Centre report also to VR. Both reports will also be openly circulated to all Centres and, on request, to any other agency or person who have expressed an interest in this type of information. The Swedish scientific community is used to outspoken international evaluation reports.

### **6.2. Remuneration to the evaluators**

VINNOVA will pay for all costs for evaluation team members including travels, accommodations etc. According to VINNOVA's standards for international evaluations, a remuneration of 1200 € is associated to each member in the evaluation team for the evaluation of a specific Centre.

## Appendix 1: Grouping of interviews

Year	Month	Date	Centre	Centre leader	University
<b>GROUP 1</b>					
2008	Aug	25	Faste <sup>1</sup>	Lennart Karlsson	Luleå University of
		26	SUS <sup>1</sup>	Helene Wintzell	KTH
		27	FunMat <sup>1</sup>	Lars Hultman	Linköping University
		28	Chase <sup>1</sup>	Ingmar Karlsson	Chalmers
		29	GigaHertz <sup>1</sup>	Jan Grahn	Chalmers
	Sept	1	EXSELEN <sup>1</sup>	Xiaodong Zou	Stockholm University
		2	UCFB <sup>2</sup>	Ove Nilsson	SLU
		3	Uppsala Berzelii <sup>2</sup>	Fredrik Nikolajeff	Uppsala University
		4	SBI Berzelii <sup>2</sup>	Hans Forsberg	Karoliska Institute
<b>GROUP 2</b>					
2008	Nov	12	Mobile Life <sup>1</sup>	Kristina Höök	Stockholm University
		13	iPack <sup>1</sup>	Li-Rong Zheng	KTH
		14	HERO-M <sup>1</sup>	John Ågren	KTH
		17	ProNova <sup>1</sup>	Per-Åke Nygren	KTH
		18	BIOMATCELL <sup>1</sup>	Peter Thomsen	Göteborg University
		19	Wingquist <sup>1</sup>	Rikard Söderberg	Chalmers
		20	SUMO <sup>1</sup>	Anne-Marie Hermansson	Chalmers
<b>GROUP 3</b>					
2009	Mar	3	BiMaC Innö <sup>1</sup>	Tom Lindström	KTH
		4	WISENE <sup>1</sup>	Per Gunningberg	Uppsala University
		5	AFC <sup>1</sup>	Inger Björck	Lund University

<sup>1</sup> VINN Excellence Centre

<sup>2</sup> Berzelii Centre

## **Appendix 2: Time Schedule**

### **Evaluation group 1**

#### **Sunday August 24, 2008**

20:00- 22:00      Introductory meeting for the Faste Evaluation Team in Luleå

#### **Monday August 25, 2008**

09:00- 11:00      Faste Scientific Expert Evaluation Session

11:00- 12:15      Lunch meeting between Scientific and “Generalist” Experts

12:15- 12:45      Lunch meeting with up to 10 PhD students

12:45- 13:00      Preparation for the next session

13:00- 15:00      “Generalist” Expert Evaluation Session

15:00- 20:00      Work session for the evaluation team including flight transportation to Stockholm

20:00- 22:00      Introductory meeting for the SUS Evaluation Team in Stockholm

#### **Tuesday August 26, 2008**

09:00- 11:00      SUS Scientific Expert Evaluation Session

11:00- 12:15      Lunch meeting between Scientific and “Generalist” Experts

12:15- 12:45      Lunch meeting with up to 10 PhD students

12:45- 13:00      Preparation for the next session

13:00- 15:00      “Generalist” Expert Evaluation Session

15:00- 20:00      Work session for the evaluation team including train transportation to Linköping

20:00- 22:00      Introductory meeting for the FunMat Evaluation Team in Linköping

**Wednesday August 27, 2008**

- 09:00- 11:00 FunMat Scientific Expert Evaluation Session
- 11:00- 12:15 Lunch meeting between Scientific and “Generalist” Experts
- 12:15- 12:45 Lunch meeting with up to 10 PhD students
- 12:45- 13:00 Preparation for the next session
- 13:00- 15:00 “Generalist” Expert Evaluation Session
- 15:00- 20:00 Work session for the evaluation team including train transportation to Gothenburg
- 20:00- 22:00 Introductory meeting for the Chase Evaluation Team in Gothenburg

**Thursday August 28, 2008**

- 09:00- 11:00 Chase Scientific Expert Evaluation Session
- 11:00- 12:15 Lunch meeting between Scientific and “Generalist” Experts
- 12:15- 12:45 Lunch meeting with up to 10 PhD students
- 12:45- 13:00 Preparation for the next session
- 13:00- 15:00 “Generalist” Expert Evaluation Session
- 15:00- 20:00 Work session for the evaluation team
- 20:00- 22:00 Introductory meeting for the GigaHertz Evaluation Team in Gothenburg

**Friday August 29, 2008**

- 09:00- 11:00 GigaHertz Scientific Expert Evaluation Session
- 11:00- 12:15 Lunch meeting between Scientific and “Generalist” Experts
- 12:15- 12:45 Lunch meeting with up to 10 PhD students
- 12:45- 13:00 Preparation for the next session
- 13:00- 15:00 “Generalist” Expert Evaluation Session
- 15:00- 20:00 Work session for the evaluation team incl train transportation to Stockholm



**Sunday August 31, 2008**

20:00- 22:00      Introductory meeting for the EXSELENT Evaluation Team in Stockholm

**Monday September 1, 2008**

09:00- 11:00      EXSELENT Scientific Expert Evaluation Session

11:00- 12:15      Lunch meeting between Scientific and “Generalist” Experts

12:15- 12:45      Lunch meeting with up to 10 PhD students

12:45- 13:00      Preparation for the next session

13:00- 15:00      “Generalist” Expert Evaluation Session

15:00- 20:00      Work session for the evaluation team incl. flight transportation to Umeå

20:00- 22:00      Introductory meeting for the UCFB Evaluation Team in Umeå

**Tuesday September 2, 2008**

09:00- 11:00      UCFB Scientific Expert Evaluation Session

11:00- 12:15      Lunch meeting between Scientific and “Generalist” Experts

12:15- 12:45      Lunch meeting with up to 10 PhD students

12:45- 13:00      Preparation for the next session

13:00- 15:00      “Generalist” Expert Evaluation Session

15:00- 20:00      Work session for the evaluation team incl flight transportation to Uppsala

20:00- 22:00      Introductory meeting for the Uppsala Berzelii Evaluation Team in Uppsala

**Wednesday September 3, 2008**

09:00- 11:00      Uppsala Berzelii Scientific Expert Evaluation Session

11:00- 12:15      Lunch meeting between Scientific and “Generalist” Experts

12:15- 12:45      Lunch meeting with up to 10 PhD students

12:45- 13:00      Preparation for the next session

- 13:00- 15:00 “Generalist” Expert Evaluation Session
- 15:00- 20:00 Work session for the evaluation team incl train transportation to Stockholm
- 20:00- 22:00 Introductory meeting for the SBI Berzelii Evaluation Team in Stockholm

**Thursday September 4, 2008**

- 09:00- 11:00 SBI Berzelii Scientific Expert Evaluation Session
- 11:00- 12:15 Lunch meeting between Scientific and “Generalist” Experts
- 12:15- 12:45 Lunch meeting with up to 10 PhD students
- 12:45- 13:00 Preparation for the next session
- 13:00- 15:00 “Generalist” Expert Evaluation Session
- 15:00- 20:00 Work session for the evaluation team

**Friday September 5, 2008**

- 09:00- 17:00 “Generalist” experts finalising of the evaluation report

## **Evaluation group 2**

### **Tuesday November 11, 2008**

20:00- 22:00      Introductory meeting for the Mobile Life Evaluation Team  
in Stockholm

### **Wednesday November 12, 2008**

09:00- 11:00      Mobile Life Scientific Expert Evaluation Session

11:00- 12:15      Lunch meeting between Scientific and “Generalist”  
Experts

12:15- 12:45      Lunch meeting with up to 10 PhD students

12:45- 13:00      Preparation for the next session

13:00- 15:00      “Generalist” Expert Evaluation Session

15:00- 20:00      Work session for the evaluation team

20:00- 22:00      Introductory meeting for the iPack Evaluation Team in  
Stockholm

### **Thursday November 13, 2008**

09:00- 11:00      iPack Scientific Expert Evaluation Session

11:00- 12:15      Lunch meeting between Scientific and “Generalist”  
Experts

12:15- 12:45      Lunch meeting with up to 10 PhD students

12:45- 13:00      Preparation for the next session

13:00- 15:00      “Generalist” Expert Evaluation Session

15:00- 20:00      Work session for the evaluation team

20:00- 22:00      Introductory meeting for the HERO-M Evaluation Team  
in Stockholm

### **Friday November 14, 2008**

09:00- 11:00      HERO-M Scientific Expert Evaluation Session

11:00- 12:15      Lunch meeting between Scientific and “Generalist”  
Experts

12:15- 12:45      Lunch meeting with up to 10 PhD students

12:45- 13:00      Preparation for the next session

13:00- 15:00 “Generalist” Expert Evaluation Session

15:00- 20:00 Work session for the evaluation team

**Sunday November 16, 2008**

20:00- 22:00 Introductory meeting for the ProNova Evaluation Team in Stockholm

**Monday November 17, 2008**

09:00- 11:00 ProNova Scientific Expert Evaluation Session

11:00- 12:15 Lunch meeting between Scientific and “Generalist” Experts

12:15- 12:45 Lunch meeting with up to 10 PhD students

12:45- 13:00 Preparation for the next session

13:00- 15:00 “Generalist” Expert Evaluation Session

15:00- 20:00 Work session for the evaluation team including train transportation to Gothenburg

20:00- 22:00 Introductory meeting for the BIOMATCELL Evaluation Team in Gothenburg

**Tuesday November 18, 2008**

09:00- 11:00 BIOMATCELL Scientific Expert Evaluation Session

11:00- 12:15 Lunch meeting between Scientific and “Generalist” Experts

12:15- 12:45 Lunch meeting with up to 10 PhD students

12:45- 13:00 Preparation for the next session

13:00- 15:00 “Generalist” Expert Evaluation Session

15:00- 20:00 Work session for the evaluation team

20:00- 22:00 Introductory meeting for the Wingquist Evaluation Team in Gothenburg

**Wednesday November 19, 2008**

09:00- 11:00 Wingquist Scientific Expert Evaluation Session

11:00- 12:15 Lunch meeting between Scientific and “Generalist” Experts

12:15- 12:45 Lunch meeting with up to 10 PhD students

- 12:45- 13:00 Preparation for the next session
- 13:00- 15:00 “Generalist” Expert Evaluation Session
- 15:00- 20:00 Work session for the evaluation team
- 20:00- 22:00 Introductory meeting for the SUMO Evaluation Team in Gothenburg

**Thursday November 20, 2008**

- 09:00- 11:00 SUMO Scientific Expert Evaluation Session
- 11:00- 12:15 Lunch meeting between Scientific and “Generalist” Experts
- 12:15- 12:45 Lunch meeting with up to 10 PhD students
- 12:45- 13:00 Preparation for the next session
- 13:00- 15:00 “Generalist” Expert Evaluation Session
- 15:00- 20:00 Work session for the evaluation team including train transportation to Stockholm

**Friday November 21, 2008**

- 09:00- 17:00 “Generalist” experts finalising of the evaluation report

### **Evaluation group 3**

#### **Monday March 2, 2009**

20:00- 22:00      Introductory meeting for the BiMaC Inno Evaluation Team in Stockholm

#### **Tuesday March 3, 2009**

09:00- 11:00      BiMaC Inno Scientific Expert Evaluation Session

11:00- 12:15      Lunch meeting between Scientific and “Generalist” Experts

12:15- 12:45      Lunch meeting with up to 10 PhD students

12:45- 13:00      Preparation for the next session

13:00- 15:00      “Generalist” Expert Evaluation Session

15:00- 20:00      Work session for the evaluation team including train transportation to Uppsala

20:00- 22:00      Introductory meeting for the WISENET Evaluation Team in Uppsala

#### **Wednesday March 4, 2009**

09:00- 11:00      WISENET Scientific Expert Evaluation Session

11:00- 12:15      Lunch meeting between Scientific and “Generalist” Experts

12:15- 12:45      Lunch meeting with up to 10 PhD students

12:45- 13:00      Preparation for the next session

13:00- 15:00      “Generalist” Expert Evaluation Session

15:00- 20:00      Work session for the evaluation team incl flight transportation to Lund

20:00- 22:00      Introductory meeting for the AFC Evaluation Team in Lund

#### **Thursday March 5, 2009**

09:00- 11:00      AFC Scientific Expert Evaluation Session

11:00- 12:15      Lunch meeting between Scientific and “Generalist” Experts

12:15- 12:45      Lunch meeting with up to 10 PhD students

- 12:45- 13:00      Preparation for the next session
- 13:00- 15:00      “Generalist” Expert Evaluation Session
- 15:00- 20:00      Work session for the evaluation team including train  
transportation to Stockholm
- Friday March 6, 2009**
- 09:00- 17:00      “Generalist” experts finalising of the evaluation report

### **Appendix 3: Success Criteria for VINN Excellence and Berzelii Centres**

In brief, successful VINN Excellence and Berzelii Centres are characterised by the following:

- Promoting sustainable growth by ensuring that new knowledge and new technological developments generated lead to new products, processes and services.
- Leading international research in different fields in collaboration between the private and public sectors, universities and colleges, research institutes and other organisations which conduct research.
- Research programmes are set up and carried out in collaboration between the various participants in order to solve key issues.
- Geographical programmes where the majority of work is conducted at a university or a college to achieve a critical size and interaction between research, post-graduate education and graduate education.
- Long-term implementation with comprehensive evaluations prior to new agreement periods to secure long-term effects and international excellence.
- Long-term collaborative finance from private and public sectors, the university/college and financing governmental agencies, to be able to recruit, develop and keep people with leading international competence.
- The activities are led by a manager and a board where the participants from the public and private sectors hold the majority in order to secure the direction of the Centres towards the requirements of the private and public sectors, i.e. needs-driven research.
- Set up in innovation environments with effective innovation operations so that strong research and innovation milieus can be created (Centres of Excellence in Research and Innovation).

When completing the evaluation it will also be considered:

- The gender perspective in the research programme; and
- Equality aspects and active promotion of an equal balance.



## **Appendix 4: Instructions for Centre Reports to the Evaluation Team**

Each of the Centres to be evaluated will submit a report to VINNOVA, electronically (pdf-files). The reports will be forwarded to the evaluation team by VINNOVA. Guidelines for report contents and length follow. Facts about the Centre are to be compiled in section 10. It is recommended that this data be referred in the text in other relevant sections so as to give context and appropriate emphasis to the data.

### **0. Summary (1 page)**

- Progress and prospects of the Centre, highlights, breakthroughs, etc.

### **1. Long-term Vision, Mission and Strategy (1 page)**

- Provide a ten-year perspective on the Vision, Mission and Strategy of the Centre in the context of the Success Criteria's, see Appendix 3.

### **2. Research Area, Competence Profile and Critical Size (3 pages)**

- Briefly describe the core competency of the Centre's research team both in terms of research competency (e.g. we have strength in molecular biology, metabolomics and large scale computation) and personnel.
- Describe the facilities that the Centre has developed or plans to develop to support the programme.
- Describe the personnel and facilities available to the Centre (through collaboration within or beyond the university) that contribute to establishing competence profile for the research of the Centre.
- State the position of the Centre in relation to internationally leading groups.
- Comment on new types of collaborations since establishing the Centre.
- Describe the value added being a Centre compared to other ways of research collaboration.
- Comment on the Centre with respect to "critical size".

### **3. Centre Partners - Companies and public service partners (3 pages)**

- For each of the partners describe:
  - their corporate profile (number of employees, main products, location of operations etc.).
  - how their business interests are aligned with the Centre research efforts
  - how they interact with the Centre (including planning, personnel and facilities).
- Concerning the overall strategy and considering the Centre as a whole:
  - describe the way in which key issues are identified by partners to stimulate needs-driven research.

- describe the mechanisms for innovation and translation of technology into new products, processes, and services.
- what measures have been taken to achieve strong links and integration between academia and companies/public services, and among companies/public services.

#### **4. Research Programme (5 pages)**

- Provide an overview of the research programme.
- Provide brief descriptions of the research projects (50-75 words each). In addition to basic science and methodology, describe the need, the research addresses, the question to be answered and the technological objectives.
- Provide a summary statement concerning research productivity. (Particulars of research output are to be listed in the Appendices under Publications and Presentations Activity and International Activity.).

#### **5. Financial Report for Stage 1 (2 pages)**

- Discuss any concerns regarding financing matters.
- Describe existing sources of non-Centre funds supporting related research.

#### **6. Organisation and Management of the Centre (3 pages)**

- Describe the role and activities of the:
  - Board of Directors.
  - Centre Director.
  - Management Team
  - International Scientific Advisory Board.
- Comment on the scientific leadership of the Centre.
- Describe the process of:
  - idea generation.
  - idea development.
  - project selection.
  - project planning.
  - project review.
- What steps are taken to stimulate innovation processes from ideas/results to products and services?
- Describe the status and role of the Centre vis-à-vis the:
  - university organisational units.
  - central administration.
  - the Faculty.
  - other Centres.
- Comment on things that work well and things that don't.

- What steps are taken to communicate to Centre participants and partners?
- Describe measures taken to stimulate mutual personal mobility between the industrial/public services partners and academic milieus.
- Describe measures taken to provide equality of opportunity, particularly but not only, from a gender perspective.

#### **7. Personnel of High Competence (1 page)**

- Describe the contribution of the Centre to university education (graduate and undergraduate): e.g. courses taught, seminars given, students supervised other than those already listed under research projects, etc.
- What measures have been taken to recruit, develop and keep people with leading international competence?
- What is the percentage of students associated with the Centre who's first degree is from:
  - another University?
  - outside Sweden?
- What measures have been taken to provide opportunities for students to travel or study abroad?

#### **8. Plans for Development (1 page)**

- Describe the plan for development of the Centre over the next three years (stage 2) in relation to the long-term objectives.

#### **9. Further information (1 page)**

- Please provide information of particular interest to the evaluation team that has not been covered in any other section of the guidelines.

#### **10. Facts about the Centre**

- CV* in summary of the Centre Director
- Centre Partners*  
TABLE 1: List Centre Partners (Companies/public sector units), the name and position of the key contact)
- Board of Directors*  
TABLE 2: List the name, position, company, location of the members of the Board of Directors
- Management Team*  
TABLE 3: List the name, position in the University, role on the team for the persons in the Management Team
- International Scientific Advisory Board*  
TABLE 4: List the name, position, university/company, location for the members of the International Scientific Advisory Board
- Research Programme*  
TABLE 5: Research Projects and Staff (for each project: project title,

project leader, staff and student names, and person-years by year (include company and public sector personnel also)).

g *Publication and Presentation Activity*

TABLE 6: List publications, patents, theses, posters, presentations, invited lectures, etc. Include work funded by VINNOVA. Also include other closely related work funded by other means, indicating that other funding was used by an asterisk\*.

h *International Activity*

TABLE 7: List collaborations with international researchers, visits outside Sweden (conferences, seminars, university visits, etc.), and foreign visitors to the Centre. Include work funded by VINNOVA and VR. Also include other closely related work funded by other means, indicating that other funding was used by an asterisk\*.

i *Financial Reports* (please use the templates in Appendix 5 or in the attached Excel file “Financial Report for Stage 1”)

TABLE 8: Overall resources available

TABLE 9: Overall expenditures

TABLE 10: Research personnel

TABLE 11: Project expenditures

TABLE 12: Related research grants

j *Websites*

Provide relevant websites for the Centre, the University, research partners, research collaborators, etc.



<b>VINN Excellence Centre:</b>	
<b>Berzelii Centre:</b>	
<b>Dnr:</b>	
<b>Year 1:</b>	200x-xx-xx - - 200x-xx-xx
<b>Year 2:</b>	200x-xx-xx - - 200x-xx-xx

### Table 9: Overall Expenditures

List all expenses for the centre at an aggregated level.

	Year 1						Year 2					
	Budget (kSEK)			Outcome (kSEK)			Budget (kSEK)			Outcome (kSEK)		
	Cash	In kind	Total	Cash	In kind	Total	Cash	In kind	Total	Cash	In kind	Total
Salaries (from "Staff sheet")												
External services												
Equipment												
Material, running costs etc.												
Travel												
Other												
Overhead costs												
Sum												

	Summary Stage 1					
	Budget (kSEK)			Outcome (kSEK)		
	Cash	In kind	Total	Cash	In kind	Total
Salaries (from "Staff sheet")						
External services						
Equipment						
Material, running costs etc.						
Travel						
Other						
Overhead costs						
Sum						









# Appendix B: The Evaluation Team

## Generalist Experts

**Professor and Chair Douglas Reeve** (Chairman of the Evaluation Team)  
University of Toronto  
CANADA

**Professor and Dean Anne H. Anderson**  
University of Dundee  
SCOTLAND

**Professor Björg Aase Sörensen**  
Arbejdsforskningsinstituttet  
NORWAY

## Scientific Experts

### EXSELENT

**Professor Russell E. Morris**  
University of St Andrews  
SCOTLAND

**Professor Ann Chippindale**  
University of Reading  
ENGLAND

### UCFB

**Professor Chung-Jui Tsai**  
University of Georgia  
USA

**Professor Teemu Teeri**  
University of Helsinki  
FINLAND

### UPPSALA BERZELII

**Professor Gitte Moos Knudsen**  
Copenhagen University Hospital  
DENMARK

**Professor Yong Chen**  
Ecole Normale Supérieure (Paris) – CNRS  
FRANCE

### SBI BERZELII

**Professor Christian Büchel**  
Universitätsklinikum Hamburg-Eppendorf  
GERMANY

**Professor Andreas Lüthi**  
Friedrich Miescher Institute  
SWITZERLAND

# APPENDIX C:

## List of participants at the interviews

In the beginning of each interview session a list was sent around for the participants to write their name and affiliation. Below is presented the names and affiliations given on these lists. For different reasons all participants did not always write their name on the list, which means that some people participating at the interviews, are not found below.

### EXSELENT: Participants during the morning session

#### Centre Representatives

Jan-Erik Nyström	Director/ Astra Zeneca R&D	Astra Zeneca
Stefan Lundmark	Innovation Director	Perstorp
Jenny Fäldt	Dir. Biological & Clinical Systems	Nobel Biocare
Xiaodong Zou	Professor	Stockholm University
Mats Johnsson	Coordinator for EXSELENT	Stockholm University
Bruce Lyne	Professor KTH/YKI	KTH/YKI
Robert Corkery	Research Director	YKI
Sven Lidin	Dean of Chemistry	Stockholm University
Armando Cordova	Associate Professor	Stockholm University
Karin Häggbom Sandberg	Administratör (secretary)	Stockholm University
Birgitta Eriksson	Head of Faculty Office	Stockholm University
Magnus Sandström	Head of FOOS-chemistry	Stockholm University
Petr Vasiliev	Ph.D. student	Stockholm University
Belen Martin Matute	Assistant Professor	Stockholm University
Yasahiro Sakamoto	Assistant Professor	Stockholm University
Shunar Che	Professor	Stockholm University
Osamu Terasaki	Professor	Stockholm University
Jan Bäckvall	Professor	Stockholm University
James Shen	Professor	Stockholm University
Niklas Hedin	Forskarassistent	Stockholm University
Aatto Laaksonen	Professor	Stockholm University

#### Evaluation Team

Russel Morris	Specialist Evaluator	University of St Andrews
Ann Chippindale	Specialist Evaluator	University of Reading

#### Swedish Research Council staff

Margareta Eliasson	Programme Manager Miljöprogram	Swedish Research Council
Sten Söderberg	Evaluation unit	Swedish Research Council

#### VINNOVA staff

Erik Litborn	Programme Manager	VINNOVA
Mats Jarekrans	Programme Manager	VINNOVA
Mattias Lundberg	Programme Manager	VINNOVA

## EXSELENT: Participants during afternoon session

### Centre Representatives

Lena Ek	MEP Chairman	
Jan-Erik Nyström	Director at Discovery Vice Chairman at the board of Exselent	Astra Zeneca
Stefan Lundmark	Director of Innovation, Board member	Perstorp
Jenny Fäldt	Director Biological & Clinical Systems Board Member	Nobel Biocare
Peter Alberius	Acting President	YKI
Bruce Lyne	Professor KTH/YKI	KTH/YKI
Sven Lidin	Dr of Chemistry	Stockholm University
Birgitta Eriksson	Faculty of Science	Stockholm University
Tasuhiko Sakamoto	Assistant Professor	Stockholm University
Aatto Laaksonen	Professor	Stockholm University
Osamu Terasaki	Professor	Stockholm University
Armando Cordova	Associate Professor	Stockholm University
Petr Vasiliev	Ph.D. student	Stockholm University
Belen Martin-Matute	Associate Professor	Stockholm University
Lennart Bergström	Professor	Stockholm University
Jan-Erik Bäckvall	Professor	Stockholm University
Niklas Hedin	Forskarassistent	Stockholm University
James Shen	Professor	Stockholm University
Magnus Sandström	Head of FOOS-chemistry	Stockholm University
Thomas Arctelius	VD SU Holding AB	Stockholm University
Kåre Bremer	Vice Chancellor	Stockholm University
Xiadong Zou	Professor	Stockholm University
Mats Johnsson	Associate Professor	Stockholm University

### Evaluation Team

Douglas Reeve	Generalist Evaluator	University of Toronto
Björg Aase Sörensen	Generalist Evaluator	AFI-WRI/HIVE
Anne Anderson	Generalist Evaluator	University of Dundee
Russel Morris	Specialist Evaluator	University of St Andrews
Ann Chippindale	Specialist Evaluator	University of Reading

### Swedish Research Council

Sten Söderberg	Senior Analyst, Evaluation Unit	Swedish Research Council
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### VINNOVA staff

Mats Jarekrans	Programme Manager	VINNOVA
Mattias Lundberg	Programme Manager	VINNOVA

## UCFB: Participants during morning session

### Centre Representatives

Stefan Jansson	Bitr. Centre Director	UPSC/UMA/UCFB
Björn Sundberg	Professor	UPSC/SLU
Vaughan Hurry	Professor	UPSC/SLU
Rishikesh Bhalevao	Professor	UPSC/SLU
Torgny Näsholm	Professor	UPSC/SLU
Catherine Bellini	Vice Director of UFBC	SLU/UPSC
Ove Nilsson	Centre Director	UCFB

### Evaluation Team

CT Tsai	Professor	University of Georgia
Teemu Teeri	Professor	University of Helsinki

### Swedish Research Council staff

Margareta Elisasson	Programme Manager	Swedish Research Council
StenSöderberg	Senior Analyst	Swedish Research Council

### VINNOVA staff

Erik Litborn	Programme Manager	VINNOVA
Jonas Brändström	Programme Manager	VINNOVA
Mattias Lundberg	Programme Manager	VINNOVA
Thomas Eriksson	Programme Manager	VINNOVA

## UCFB: Participants during afternoon session

### Centre representatives

Göran Sandberg	Rector	Umeå University
Carl Kempe	Chairman	Board Berzelii Center
Marianne Sommarin	Board member	Umeå University
Erik Normark	Board member	Holmen Skog
Mats Johnson	CEO SweTree	SweTree Techn.
Martin Strand	Scientific secretary	SLU
Ulf Heyman	University Director	SLU
Catherine Bellini	Vice Director of UFBC	UPCS/SLU
Ove Nilsson	Centre Director	UCFB
Stefan Jansson		

### Evaluation Team

Douglas Reeve	Professor	University of Toronto
Anne H Anderson	Vice Principal	University of Dundee
Björg Aase Sörensen	Professor	AFI/HIVE
CJ Tsai	Professor	University of Georgia
Teemu Teeri	Professor	University of Helsinki

### Swedish Research Council staff

Margareta Eliasson	Programme Manager	Swedish Research Council
Sten Söderberg	Senior analyst	Swedish Research Council

### VINNOVA staff

Erik Litborn	Programme Manager	VINNOVA
Jonas Brändström	Programme Manager	VINNOVA
Mattias Lundberg	Programme Manager	VINNOVA
Thomas Eriksson	Programme Manager	VINNOVA

## Uppsala Berzelii: Participants during morning session

### Centre representatives

Fredrik Nikolajeff	Center Director	Uppsala University
Anders Alderborn	Center Coordinator	Uppsala University
Bo Fransén	Associate Principal Scientist	Astra Zeneca R&D
Anders Larsson	Professor PI	Akademiska sjukhuset/Uppsala University
Karin Caldwell	Professor PI	Uppsala University
Masood Kamali	Researcher (PL)	Uppsala University
Jonas Bergquist	Professor PI	Uppsala University
Thomas Norberg	Project Manager	Uppsala University
Ulf Landegren	Professor PI	Uppsala University
Lars Lannfelt	Professor, PI	Uppsala University
Torsten Gordh	Professor (adj) PI	Uppsala University Hospital &U.U.
Uwe Rossbad	Ph.D. student	Uppsala University
Lotta Tegler	Ph.D. student	Uppsala University
Dag Sehlin	Ph.D. student	Uppsala University
Marcus Sjödin	Ph.D. student	Uppsala University

### Evaluation Team

Gitte M. Knudsen	Professor evaluator	Copenhagen University, Denmark
Yong Chen	Professor PI	ENS Paris

### Swedish Research Council staff

Margareta Eliasson	Programme Manager	Swedish Research Council
Sten Söderberg	Programme Manager	Swedish Research Council

### VINNOVA staff

Erik Litborn	Programme Manager	VINNOVA
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## Uppsala Berzelii: Participants during afternoon session

### Centre representatives

Lars Erik Nyström	Chair	GE Healthcare
Fredrik Nikolajeff	Centre Director	Uppsala University
Anders Alderborn	Center Coordinator	Uppsala University
Frida Ekholm Pettersson	Project leader	Uppsala University
Karin Fromell	Project leader	Uppsala University
Magnus Wetterhall	Project leader	Uppsala University
Bo Franzén	Associate Principal Scientist	Astra Zeneca R&D
Simon Fredriksson	Chief Scientific Officer	Olink Bioscience

### Evaluation Team

Douglas Reeve	Professor & Chair	University of Toronto
Anne H Andersson	Professor	University of Dundee
Gitte M. Knudsen	Professor	Rigshospitalet & Copenhagen University
Yong Chen	Professor	Ecole Normale Supérieur
Björg Aase Sörensen	Professor	AFI/WRI, HIVE

### Swedish Research Council staff

Margareta Eliasson	Programme Manager	Swedish Research Council
Sten Söderberg	Senior Analyst	Swedish Research Council

### VINNOVA staff

Erik Litborn	Programme Manager	VINNOVA
Eva Pålsgård	Handläggare	VINNOVA



## SBI Berzelii: Participants during morning session

### Centre representatives

Hans Forssberg	Director	SBI
Karl Tryggvason	Dean of Research	Karolinska Inst
Håkan Nyquist	Director	Astra Zeneca
Lars Farde	Professor, Chief Scientist	Astra Zeneca, KI
Michael Hehenberger	Solutions Executive, R&D	IBM Healthcare & Life Science
Torkel Klingberg	Professor	SBI
Sten Grillner	Professor	SBI
Anders Lansner	Professor	SBI
Martin Ingvar	Professor	SBI
Arne Öhman	Professor	SBI
Åsa Hedberg	Scientific Coordinator	SBI
Ivanca Savic-Berglund		

### Evaluation Team

Christian Büchel	Reviewer	UKE Hamburg
Andreas Lüthi	Senior Scientist Professor	FMI, Basel

### Swedish Research Council staff

Margareta Eliasson	Programme Manager	Swedish Research Council
Sten Söderberg	Senior Analyst	Swedish Research Council

### VINNOVA staff

Erik Litborn	Programme Manager	VINNOVA
Katarina Nordquist	Head Biotech/Life Science Dept.	VINNOVA
Thomas Eriksson	Programme Manager	VINNOVA

## **SBI Berzelii: Participants during afternoon session**

### **Centre Representatives**

Camilla Mod�er	Chair SBI Board	Vetenskap & Allm�nhet
Harriet Wallberg	Rektor	KI
Hans Forssberg	Director SBI	KI
H�kan Nyquist	Director	Astra Zeneca
Tommy Accoja	Client Executive	IBM
Anders Lansner	Professor SBI	KTH & Stockholm University
Lars-G�ran Nilsson	PI SBI	Stockholm University
Gert Svensson	PPC	KTH
Martin Ingvar	Professor SBI	KI
�sa Hedberg	Scientific Coordinator	SBI

### **Evaluation Team**

Douglas Reeve	Professor & Chair	University of Toronto
Anne Anderson	Professor & vice Principal	University of Dundee
Bj�rg Aase S�rensen	Professor	HIVE/AFI
Christian B�chel	Scientific Reviewer	Hamburg University
Andreas L�thi	Scientific Reviewer	FMI, Basel

### **Swedish Research Council staff**

Margareta Eliasson	Programme Manager	Swedish Research Council
Sten S�derberg	Senior	Swedish Research Council

### **VINNOVA staff**

Erik Litborn	Programme Manager	VINNOVA
Katarina Nordquist	Head Biotech/Life Science dept	VINNOVA
Mattias Lundberg	Programme Manager	VINNOVA
Thomas Eriksson	Programme Manager	VINNOVA

# VINNOVA's publications

February 2009

See [www.VINNOVA.se](http://www.VINNOVA.se) for more information

## VINNOVA Analysis

### VA 2009:

- 01 Svenska tekniker 1620 - 1920

### VA 2008:

- 01 VINNOVAs Focus on Impact - A Joint Approach for Impact Logic Assessment, Monitoring, Evaluation and Impact Analysis
- 02 Svenskt deltagande i EU:s sjätte ramprogram för forskning och teknisk utveckling. *Only available as PDF*
- 03 Nanotechnology in Sweden - an Innovation System Approach to an Emerging Area. *For Swedish version see VA 2007:01*
- 04 The GSM Story - Effects of Research on Swedish Mobile Telephone Developments. *For brief version in Swedish or English see VA 2008:07 or VA 2008:06*
- 05 Effektanalys av "offentlig sädffinansiering" 1994 - 2004
- 06 Summary - The GSM Story - Effects of Research on Swedish Mobile Telephone Developments. *Brief version of VA 2008:04, for brief version in Swedish see VA 2008:07.*
- 07 Sammanfattning - Historien om GSM - Effekter av forskning i svensk mobiltelefoniutveckling. *Brief version of VA 2008:04, for brief version in English see VA 2008:06*
- 08 Statlig och offentlig FoU-finansiering i Norden
- 09 Why is Danish life science thriving? A case study of the life science industry in Denmark
- 10 National and regional cluster profiles - Companies in biotechnology, pharmaceuticals and medical technology in Denmark in comparison with Sweden
- 11 Impacts of EU Framework Programmes in Sweden
- 12 A benchmarking study of the Swedish and British life science innovation systems. Comparison of policies and funding. *Only available as PDF*
- 13 Looking over the Shoulders of Giants - A study of the geography of big pharma R&D and manufacturing operations. *Only available as PDF*
- 14 Utvärdering av MERA-programmet

## VINNOVA Forum

### VFI 2007:

- 01 Universitetet i kunskapsekonomin (*Innovation policy in Focus*)
- 02 Tillväxtgenvägen - affärsinnovation i svenska tjänsteföretag (*Innovation policy in Focus*)

## VINNOVA Information

### VI 2009:

- 01 Forska&Väx - Program som främjar forskning, utveckling och innovation hos små och medelstora företag

### VI 2008:

- 01 Upptäck det innovativa Sverige.
- 02 Forskningsprogrammet Framtidens personresor - Projektbeskrivningar
- 03 Passenger Transport in the Future - Project Descriptions
- 04 Vehicle ICT - Project Descriptions
- 06 Årsredovisning 2007
- 07 Innovationer och ledande forskning - VINNOVA 2007. *For English version see VI 2008:08*
- 08 Innovations and leading research - VINNOVA 2007. *For Swedish version see VI 2008:07*
- 09 Forskning och innovation för hållbar tillväxt
- 10 Swedish Competence Research Centres - within the Transport Sector and funded by VINNOVA
- 11 E-tjänster i offentlig verksamhet. *For English version see VI 2007:18*
- 12 VINN Excellence Center - Investing in competitive research milieus
- 13 Relationships between R&D Investments, Innovation and Economic Growth - A Conference Summary
- 14 Arbetslivsutveckling för global konkurrenskraft
- 15 Innovationspolitik och tillväxt - En seminarierapport från Svenskt Näringsliv, IF Metall och VINNOVA
- 16 Den kompetenta arbetsplatsen - Forskning om kompetens i arbetsplatsens relationer. Programkatalog
- 17 Nya möjligheter för små och medelstora företag - Rapport från VINNOVAs seminarium för småföretag 3 september 2008

- 18 "No wrong door" alla ingångar leder dig rätt! - Erbjudande från nationella aktörer till små och medelstora företag
- 19 Forskning om kvinnors företagande - Presentation av projekten
- 20 MERA-programmet - Projektkatalog 2008
- 21 The MERA-program - Project Catalogue 2008
- 22 VINNVÄXT - A programme to get Sweden moving! Regional growth through dynamic innovation systems
- 23 Research on Women's Entrepreneurship - A presentation of the ten projects funded by the programme
- 24 Mobilitet, mobil kommunikation och bredband - Branschforskningsprogram för IT & telekom
- 25 The Future in clean Transport - Stockholm 2009

## VINNOVA Policy

### VP 2009:

- 01 TRANSAMS uppföljning av "Nationell strategi för transportrelaterad FUD" åren 2005 - 2007. Två uppföljningar - en för 2005 och en för 2006 - 2007. *Only available as PDF*

### VP 2008:

- 01 Forskning och innovation för hållbar tillväxt - VINNOVAs förslag till forsknings- & innovationsstrategi 2009-2012
- 02 Offentlig upphandling som drivkraft för innovation och förnyelse. *Only available as PDF. For English version see VP 2007:03*

## VINNOVA Report

### VR 2009:

- 01 Affärsutveckling inom träauktur och möbler - hur skapas effektivare värdekedjor? *Only available as PDF*
- 03 First Evaluation of the Berzelii Centra Programme and its centres EXSELENT, UCFB, Uppsala Berzelii & SBI Berzelii

### VR 2008:

- 01 Mot bättre vetande - nya vägar till kunskap på arbetsplatsen
- 02 Managing Open Innovation - Present

- Findings and Future Directions
- 03 Framtiden är öppen! Om problem och möjligheter med öppen källkod och öppet innehåll
- 04 First Evaluation of the Institute Excellence Centres Programme
- 05 Utvärdering av det Nationella Flygtekniska forskningsprogrammet - NFFP. Evaluation of the Swedish National Aeronautics Research Programme - NFFP
- 06 Utvärdering av Vehicle - Information and Communication Technology programmet - V-ICT
- 07 Kartläggning av ett halvt sekels jämställdhetsinsatser i Sverige
- 08 Politiken, offentlig verksamhet - en av tre parter i samverkan
- 09 Forsknings- och innovationspolitik i USA - Näringslivets fem roller
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VINNOVA's mission is to promote sustainable growth  
by funding needs-driven research  
and developing effective innovation systems

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VERKET FÖR INNOVATIONSSYSTEM – SWEDISH GOVERNMENTAL AGENCY FOR INNOVATION SYSTEMS

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