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SECOND INTERNATIONAL EVALUATION OF THE BERZELII CENTRA PROGRAMME

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Douglas Reeve, Robert E Johnston, Maty O´Kane, Alison Mc´Kay,
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Laura Lechuga & Teemu Teeri

Preface

In this evaluation report the Swedish Research Council (VR) and the Swedish Governmental Agency for Innovation Systems (VINNOVA) present the second international 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), e.g. 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 (STEM) took over responsibility of the first generation CRCs and finalized that programme. This form of investments has during the resent years been implemented in several financing organisations in Sweden with an aim to achieve concentration of resources in university research to deliver strong industrial impact.

In accordance with instructions given in the research bill 2004, VR and VINNOVA have together initiated the Berzelii Centra programme. A specific characteristic of this programme is the strong connection between scientific excellence and large innovation potential. The emphasis on research in the absolute international frontline give rise to focus areas where industry hesitates to enter into strong collaboration without having well developed or verified knowledge.

At present VR and VINNOVA are financing four Berzelii Centres. These centres have been operating for nearly five years, and have almost finished the so called Phase 2 at the time of the evaluation. They have been evaluated before, in 2009 when they were in Phase 1. The focus of the first evaluation was on organisational issues and the potential for long-term development. This second evaluation is focussed on scientific and potential industrial achievements to date as well as in the near future. The evaluation can also have an impact on the Swedish CRC programmes and assist their progression towards world-leading research programmes.

The recommendations given to the centres are implemented in their respectively Operational Plan for Phase 3. This document together with a signed agreement regulating IPR issues are required prior a formal funding decision is taken by VR and VINNOVA.

On behalf of VR and VINNOVA we want to express our gratitude to all the international evaluators. They 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 February 2013

Mille Millnert
Director General
Vetenskapsrådet
Swedish Research Council

Charlotte Brogren
Director General
VINNOVA
Swedish Governmental Agency for Innovation Systems

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1 Introduction

From Thursday, September 1, 2011, through Wednesday, September 7, 2011, and Thursday, September 20, 2012, through Friday, September 21, 2012, four Berzelii Centres supported by VR and VINNOVA were evaluated. The centres were in the final months of Stage 2, close to mid-term of a planned ten-year programme.

The international evaluation team had generalist and specialist evaluators. The generalist evaluators were Douglas Reeve, Robert E. Johnston, Alison McKay, Mary O'Kane and Anja Skrivervik and participated in all interviews but in different constellations. There were, besides three generalists, two specialists 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,), VR programme staff (Emma Olsson, Maud Quist, Margareta Eliasson, Sten Söderberg) and the VINNOVA programme managers for each Centre (Elisabet Nielsen, Eva Pålsgård, Mats Jarekrans).

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

1 Pre-meeting of evaluators and VR/VINNOVA 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 generalist evaluators.

The evaluation team

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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 Program Level – Overall Impressions

Preamble

The Berzelii Centre program provides a unique opportunity for the four Berzelii centres to use platforms of fundamental, academic and clinical research to drive innovation and so make ever-greater contributions to the growth of the Swedish economy and to Swedish society. Each Berzelii Centre was funded based on the achievements and prospects of a cluster of accomplished researchers operating in a first-rate research environment. The generalists were impressed by the caliber of the science being undertaken and the calibre of researchers, students and facilities at the Berzelii Centres.

Evaluation Methodology

International evaluation teams for each centre consisted of generalists and specialists and were guided by the methodology used for the VINNOVA VINN Excellence Centres. Documentation required from each centre was extensive and the on site evaluation interviews took place over two days. The generalists were satisfied that the evaluation methodology was an efficient and effective means of assessing the progress and prospects of a Berzelii Centre.

Progress of the Berzelii Centres

The first challenge of each Berzelii Centre was to develop a coherent vision, mission and strategy for research that would lead to innovation and translation of technology. The second challenge was to develop the organizational culture, processes and structures that would foster new levels of collaboration inside the academic research community and substantive partnerships with enterprises that would deliver economic results. The Berzelii Centres are funded for a ten-year period with this second evaluation coming after approximately five years of centre operation, the first five years being an induction period to build coherency in science, technology translation capacity and organizational functionality.

So, the question is how have they done so far? The results have been very mixed. One centre has achieved spectacular progress in all dimensions. One centre has done reasonably well. However, two centres have had significant difficulty, over the second evaluation period 2009-12, in achieving coherency in science, technology translation capacity and organizational functionality. Each of these latter two centres were subject to suspension of the evaluation process while the centre took action to respond to the recommendations of the international evaluation team and the guidance of VINNOVA. Happily, we can report that the two centres that have struggled have responded well and are now in a position to advance as expected.

Before considering the root causes and contemplating programmatic recommendations it will be instructive to consider the case of the centre that has achieved, in the evaluators' estimation, "spectacular progress." It is the UPSC Berzelii Centre for Forest

Biotechnology that deserves this special distinction. The report of the evaluation team, to be found further on in this publication, had this to say:

> *"The evaluation team found the Centre to be operating at an extraordinarily high level. In particular the evaluation team wishes to commend the Centre on its achievement of excellence with respect to the following elements:*
>
> - *Path breaking science in forest biotechnology*
> - *Top performance in publication in high impact refereed journals*
> - *Establishment of exceptional forest biotechnology platforms – personnel, methodologies, equipment and building infrastructure*
> - *Establishment of an robust culture of collaboration and inclusion*
> - *Achievement, through dialogue with industry partners, of a paradigm shift in rethinking fundamental research in the context of industry needs*
> - *Establishment of a productive relationship with SweTree Technologies that connects fundamental research with development of intellectual property and biotechnological innovations*
> - *The strategic recruitment of exceptional, international talent (observed at the professorial and graduate student level by the evaluation team)*
> - *Outstanding performance in winning research funding related to the vision and mission of the Centre totalling over 800 MSEK*
> - *The extraordinary financial and strategic support provided by SLU and UmU*
> - *Rapid progress in gender balancing, recruiting women at the junior faculty level*
> - *Production of an outstanding evaluation report, that exceeded our expectations in every respect."*

The evaluation team concludes with the opinion that the Centre "…..is one of the top forest biotechnology research establishments in the world." The achievements of this centre are due to many factors having converged but it must also be said that it is substantially due to exceptional leadership at the centre level, among industry partners, and at the university level. This combined leadership has had the vision, focus, commitment and skill to make this success possible.

When we consider the failure of the other centres to achieve this level of success we should examine the eleven separate accomplishments in the bulleted list above and consider whether or not a centre performed at this level. We should examine the leadership of the centre at the level of centre, partner and university to understand what is required to achieve such success. We must also appreciate that this is not an easy, simple exercise; it is challenging and complex to assemble a high performance team operating at the highest levels of international science in cooperation with technology translating enterprises.

The generalist evaluators are satisfied that each of the four Berzelii Centres is now on a path that will lead to successful innovation and significant benefit to Swedish society.

Recommendations to VINNOVA/VR

Each centre's evaluation team made recommendations for strengthening the centre as reported in the individual centre reports later in this publication. The number of recommendations per centre ranged from 6 to 16, and covered actions, broadly summarized, such as: increase coherence of scientific vision/strategy; increase internal communication; increase number/engagement/cash contribution of partners; improve functions of the management team, improve functions/composition of the Board; increase the frequency of the international scientific advisory board meetings; and improve gender balance. The evaluation team has the expectation that VINNOVA will follow-up with each centre to ensure that proper attention is given to specific recommendations.

Over the last five years, the VINNOVA VINN Excellence Centre Program has been operating in parallel with the Berzelii Program and the nineteen VINN Excellence Centres have been evaluated over the same time period. The reader may find it useful to review the report on that program as many of the challenges of creating partnerships between universities and technology translators are highlighted there. Many of these challenges will be increasingly important to the Berzelii Centres as they progress through the second five years of their funding during which time they must achieve results not only in science but increasingly in technology translation.

The following two sections are excerpted from the report on the VINN Excellence Centres as they are equally applicable to this report.

Centre Operational Plans and Key Performance Indicators

There is an opportunity for the Berzelii Centre Program to increase diligence in preparation of and follow up on Centre Operational Plans. In particular, more careful attention to Key Performance Indicators (KPIs) and KPI targets in the Operational Plan and subsequent follow up and evaluation would be of benefit.

VINNOVA Success Criteria

The success criteria (see Appendix) for the Berzelii Centres and the VINN Excellence Centres are essentially the same. This is not a desirable state of affairs as the implicit emphases of the two types of centres are different. The presence of VR as a major sponsor of the Berzelii Centres ensures that the emphasis on the success criterion "**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" is very strong while the prime success criterion for the VINN Excellence Centres is probably "Promoting sustainable growth by ensuring that **new knowledge and new technological developments generated lead to new products, processes and services**."

Recommendation

- That success criteria for Berzelii Centres, VINN Excellence Centres, and any other specifically funded Centres are clearly differentiated so that it is clear to all stakeholders what the long-term expectations are for each of these types of centres

In Conclusion

The issues of concern for the future success of Berzelii Centres are very similar to those of the VINN Excellence Centres and so these closing paragraphs follow closely those of the VINN Excellence Centre report.

As with the VINN Excellence Centres, the Berzelii Centres, in most cases, have underestimated the importance of attending to the processes of good governance, good management, partner involvement, financial management and IP in order to establish an effective organization for achieving impacts that are more than the sum of the parts long-term. We expect that these early deficiencies have now been addressed and that each of the Berzelii Centres is well positioned for success.

Recommendations

- That VINNOVA/VR institute mechanisms and establish personnel for policing centre response to recommendations and adherence to guidelines on at least an annual basis.
- That VINNOVA requires each centre to have a plan for being self-sustaining after 10 years as a success criterion for Stage 3 evaluations.

Generalist Evaluators

Doug Reeve (Chair), Robert E. Johnston, Alison McKay, Mary O'Kane and Anja Skrivervik

4 Programnivå – Allmänna intryck

Inledning

Programmet Berzelii Centra innebär en unik möjlighet för de fyra Berzelii Centra att använda plattformar för grundläggande, akademisk och klinisk forskning för att främja innovation som kan leda till ytterligare ökande tillväxt av Sveriges ekonomi och samhälle. Varje Berzelii Center finansieras utifrån tidigare framsteg och framtida möjligheter hos framstående forskare samlade och verksamma i en förstklassig forskningsmiljö. Generalistbedömarna imponerades av den forskning som bedrivs vid de fyra Berzelii Centra och av deras forskare, studenter och resurser.

Utvärderingsmetod

De internationella utvärderingsteamen för varje center bestod av generalister och experter. Som vägledning i sin utvärdering använde de samma utvärderingsmetod som för VINNOVAs program VINN Excellence Center. Bedömningsunderlag bestod av omfattande dokumentation samt intervjuer som utfördes hos varje center under två dagar. Generalisterna var övertygade om att utvärderingsmetoden var ett effektivt sätt att bedöma framsteg och möjligheter för varje Berzelii Center.

Framsteg vid de fyra Berzelii Centra

Den första utmaningen för de fyra Berzelii Centra var att utveckla en sammanhängande vision, uppdrag och forskningsstrategi som skulle leda till innovation och teknikgenomförande. Den andra utmaningen var att utveckla en organisationskultur med processer och strukturer som skulle främja nya samarbetsnivåer inom det akademiska forskningssamfundet samt leda till viktiga partnerskap med företag och därmed ge ekonomiska resultat på sikt. Ett Berzelii Center finansieras under en tioårsperiod, och denna andra internationella utvärdering görs när centret varit verksamt i ungefär fem år. De första fem åren är en introduktionsperiod under vilken centret ska bygga upp en samstämmighet när det gäller forskning, tekniköverföringskapacitet och organisatorisk funktion.

Hur har de då lyckats så här långt? Resultaten är mycket varierande. Ett center har gjort fantastiska framsteg på samtliga områden. Ett center har lyckats någorlunda bra. Två centra har dock haft betydande svårigheter under den andra utvärderingsperioden mellan 2009 och 2012 med att uppnå koherens inom forskning, tekniköverföringskapacitet och organisatorisk funktion. Bägge dessa centra fick göra uppehåll i utvärderingsprocessen för att genomföra förbättringar i linje med det internationella utvärderingsteamets rekommendationer och VINNOVAs riktlinjer. Vi är glada att kunna meddela att förbättringarna har gett betydande resultat, vilket gör att dessa centra nu kan fortsätta som planerat.

Innan vi går in på orsakerna och redovisar rekommendationer för själva programmet är det lämpligt att se närmare på centret som enligt utvärderarnas bedömning har gjort

”enastående framsteg”. Det är UPSC Berzelii Center för Skogsbioteknik som detta utlåtande är riktat till. I utvärderingsteamets rapport som finns att läsa längre fram i denna publikation säger man så här:

> *”Utvärderingsteamet fann att centrets verksamhet ligger på en utomordentligt hög nivå. Utvärderingsteamet vill särskilt lovorda centret för dess förträfflighet när det gäller följande:*
>
> - *Banbrytande forskning inom skogsbioteknik*
> - *Mycket tillfredsställande publiceringar i referentgranskade tidskrifter med stor genomslagskraft*
> - *Upprättande av utmärkta plattformar inom skogsbioteknik – personal, metoder, utrustning och byggnadsinfrastruktur*
> - *Upprättande av en tydlig kultur av samarbete och inkludering*
> - *Åstadkommande – genom dialog med industripartners – av ett paradigmskifte när det gäller nytänkande inom grundläggande forskning inom behoven på området*
> - *Upprättande av ett produktivt förhållande med SweTree Technologies som förenar grundläggande forskning med utveckling av immateriella rättigheter och biotekniska innovationer*
> - *Strategisk rekrytering av utmärkta, internationella förmågor (noterat på både lärar- och forskarnivå)*
> - *Forskningsfinansiering relaterad till centrets vision och uppdrag på över 800 MSEK*
> - *Det utmärkta ekonomiska och strategiska stödet från SLU och UmU*
> - *Snabba framsteg för bättre könsbalans genom rekrytering av kvinnor på junior faculty-nivå*
> - *Framtagande av en utmärkt rapport inför utvärderingen som överträffade våra förväntningar på alla sätt”*

Utvärderingsteamet sammanfattar med att centret ”är ett av de främsta forskningscentren inom skogsbioteknik i världen.” Centrets framgång har många bidragande orsaker, men det bör understrykas att den viktigaste orsaken är ett fantastiskt ledarskap på centernivå, bland industripartners och på universitetsnivå. Detta kombinerade ledarskap har haft den vision, det fokus, det engagemang och de kunskaper som krävts för att göra framgången möjlig.

När vi utvärderar de andra centrens misslyckande med att uppnå framgång på denna nivå bör vi utvärdera vart och ett av de elva framstegen i punktlistan ovan och fundera på om ett center har lyckats eller inte lyckats nå upp till denna nivå. Vi bör utvärdera centrets ledarskap på centernivå, partnernivå och universitetsnivå för att förstå vad som krävs för att uppnå sådan framgång. Vi måste också komma ihåg att detta inte är en enkel uppgift – det är svårt och komplext att ta fram ett högpresterande team som är verksamt på högsta internationella forskningsnivå i samarbete med tekniköverförande företag.

Generalistutvärderarna är övertygade om att alla fyra Berzelii Centra nu är på rätt väg mot framgångsrik innovation och betydande fördelar för det svenska samhället.

Rekommendationer till VINNOVA/Vetenskapsrådet

Varje centers utvärderingsteam gav rekommendationer i syfte att stärka centret. Dessa finns att läsa i varje centers rapport senare i denna publikation. Antalet rekommendationer per center varierade från 6 till 16 och tog upp åtgärder som i korthet kan sammanfattas enligt följande: öka samstämmigheten inom vetenskaplig vision/strategi, öka den interna kommunikationen, öka antalet partners eller deras engagemang/ kapitalinsats, förbättra ledningsgruppens funktioner, förbättra styrelsens funktioner/ sammansättning, anordna internationella vetenskapliga och rådgivande styrelsemöten oftare samt förbättra könsbalansen. Utvärderingsteamet förväntar sig att VINNOVA gör en uppföljning med varje center för att säkerställa att rätt fokus läggs på varje centers specifika rekommendationer.

De senaste fem åren har VINNOVA programmet VINN Excellence Center varit verksamt parallellt med programmet Berzelii Centra och de nitton VINN Excellence-centren har utvärderats under samma tidsperiod. Läsaren av denna rapport hänvisas till rapporten från det programmet eftersom många av utmaningarna med att skapa partnerskap mellan universitet och tekniköverförare tas upp där. Många av dessa utmaningar kommer att bli allt viktigare för de fyra Berzelii Centra under de resterande fem åren av deras finansiering eftersom de under denna period måste uppnå resultat, inte bara inom forskning utan också i ökande grad inom tekniköverföring.

Följande två stycken är utdrag från VINN Excellence Center-rapporten och tillämpliga även på denna rapport.

Verksamhetsplaner och prestationsnyckeltal för centren

Det finns en möjlighet för programmet Berzelii Centra att öka fokus på framtagande och uppföljning av centrens verksamhetsplaner. I synnerhet skulle ett ökat fokus på prestationsnyckeltal och prestationsnyckeltalmål i verksamhetsplanerna och senare uppföljning och utvärdering vara av stort värde.

VINNOVAs framgångskriterier

Framgångskriterierna (se bilaga) för Berzelii Centra och VINN Excellence Center är i princip desamma. Detta är olyckligt eftersom de olika centertyperna har olika underförstådda fokus. Det faktum att Vetenskapsrådet är en huvudsponsor av Berzelii Centra gör att stor tonvikt läggs vid framgångskriteriet ”**Att leda internationell forskning** på olika områden i samarbete med privat och offentlig sektor, universitet och högskolor, forskningsinstitut och andra organisationer som bedriver forskning”, medan det viktigaste framgångskriteriet för VINN Excellence Center förmodligen är ”Att främja hållbar tillväxt genom att säkerställa att **ny kunskap och ny teknikutveckling leder till nya produkter, processer och tjänster**.”

Rekommendation

- Att framgångskriterierna för Berzelii Centra, VINN Excellence Center och andra centra som finansieras för specifika ändamål är tillräckligt tydliga så att det är klart för alla intressenter vilka långsiktiga förväntningar som ställs på de olika center-typerna.

Slutsats

De viktigaste punkterna för att Berzelii Centra ska lyckas i framtiden liknar punkterna för VINN Excellence Center. Dessa avslutande rader liknar därför slutsatsen i VINN Excellence Center-rapporten.

Precis som VINN Excellence Center har Berzelii Centra i de flesta fall underskattat vikten av att anamma en bra ledning och styrning och av att delaktiggöra partners. De har också underskattat vikten av ekonomisk styrning och immateriella rättigheter för att etablera en effektiv organisation med långsiktig genomslagskraft som inte bara är summan av delarna. Vi tror att dessa brister nu har åtgärdats och att de fyra Berzelii Centra har ett bra utgångsläge för framtiden.

Rekommendationer

- Att VINNOVA/Vetenskapsrådet upprättar mekanismer och utser personal som åtminstone en gång om året kan följa upp hur centret följer rekommendationerna och riktlinjerna.
- Att VINNOVA ställer krav på att varje center som ett framgångskriterium för steg 3 i utvärderingarna har en plan för hur de ska vara självförsörjande efter de tio finansierade åren.

Generalistbedömare

Doug Reeve (ordförande), Robert E. Johnston, Alison McKay, Mary O’Kane och Anja Skrivervik

5 Assessment of individual centres

5.1 The UPSC Berzelii Centre for Forest Biotechnology

The Swedish University of Agricultural Sciences and Umeå University, Umeå

Introduction

On September 1-2, 2011, the Centre Director, Ove Nilsson, the Chair of the Centre Board, Carl Kempe, colleagues of the UPSC Berzelii Centre for Forest Biotechnology, industry partners, and university representatives, had meetings with the international evaluation team in Umeå to evaluate the Centre's performance so far in Stage 2 (January 1, 2009 – December 31, 2011). The scientific experts of the evaluation team, Teemu Teeri and Isabel Allona, addressed matters concerning research strategy, projects, and progress. The generalist evaluators, Doug Reeve (Chair), Robert Johnston, and Mary O'Kane, together with the experts, in a subsequent meeting, addressed matters such as organization and management, finance, interaction between industry partners and the university, and educational activities. We thank all members of the Centre and the VINNOVA/VR team for their efforts in providing information and facilities for the evaluation.

5.1.1 Long-term Vision, Mission and Strategy

The long-term vision of the Centre is to develop the research environment at UPSC into one of the world's most innovative milieu with the mission of assisting Swedish forest industries in identifying new opportunities in biotechnology. UPSC has a well recognised reputation of scientific excellence, on which the strategy builds by encouraging collaboration between individual research groups and dialogue with the industry. The Berzelii Centre funding arrangements have allowed an efficient execution of this strategy. Critical areas where development of expertise was needed have been identified and filled with successful recruitments. Very importantly, part of the funds were reserved for the Centre Board to direct, making it possible to advance further collaboration and innovation in the form of new projects of different types.

During Stage 2, involvement of the industry in contributing to the scientific goals has increased dramatically. Scientists at the Centre have had courage to tackle questions that have not always been easy to approach, finding their way through solving basic science questions when needed. The industry has increased in its receptiveness to the molecular approach and developed confidence in the science. The execution of the strategy has been efficient and evidently self catalytic.

5.1.2 Scientific Quality and Productivity Part 1

Research Area, Competence Profile, People, Facilities, Critical Size

The evaluation team considers that the research performed in **The UPSC Berzelii Centre for Forest Biotechnology** has achieved spectacular results during the Stage 2 of the program. The centre works with three important biological systems, Arabidopsis, Poplar and Spruce, and it is very successful in all of them. Moreover, the work done in other species such as sugar beet is of very high quality. Their main work has been done in model angiosperm species, working in three main areas (each with its own task force): tree growth and productivity (arabidopsis and poplar), wood development and wood quality (poplar) and seasonal and age control of perennial growth and development (poplar and sugar beet). This divisional organisation has proved to be very useful for the centre. A year ago they began a spruce genome project (20,000 MBp) and they are about to finish the first draft at the end of this year; they are also beginning transcriptome and association mapping spruce projects.

One of the strengths of the Centre is the up-to-date technical platforms including proteomics, metabolomics, transgene facility, chemometrics, wood and fiber analysis, microscopy, NIR, FT-IR, NMR, biobank and bioinformatics. There is also a new platform in spruce somatic embryogenesis and transformation platform. While sensitive to the risk of the Centre relying on external suppliers for essential analyses and/or computational requirements, the evaluation team strongly endorses the Centre's decision to close the DNA sequencing and array platforms, given the rapid changes in the technology that makes only very specialised centres for such processing feasible. Decisions about what to manage in-house and what to outsource will continue to be complex. For example, concern was expressed during the evaluation sessions about the problem of not having permanent funding for high level personnel to support specialised technology platforms. Training of new people in these difficult techniques is expensive and time consuming. It is also important to be able to update frequently the highly specialised equipment that the platforms need to produce accurate results.

The Centre has 27 research groups at the Swedish University of Agricultural Science and Umeå University, involving 61 graduate students and 75 post-doctoral researchers that work together with 7 industrial partners. This makes for more than a critical size environment with a variety of expertise from plant biology to bioinformatics, through chemometrics, tree somatic embryogenesis transformation and genomics with the attendant challenges of managing high throughput on a diversity of platforms in a timely manner with very expensive state-of-the-art infrastructure.

Recommendation

1 That the Centre, the Board and the Universities, working with VINNOVA/VR and appropriate government agencies and industry, establish a long range strategy to ensure the ongoing excellence of the platform technologies essential to the Centre's continuing primacy, with respect to both equipment and high level supporting personnel.

International Comparators with other Centres and Collaborations

The Centre has reached a very strong research capacity in forest biotechnology and its scientific production positions is among the leading plant science centres in Europe. In making this comparison one also needs to take into account the fact that the Centre works with forest species that are specially difficult and slow to work with. The research groups have an extensive network of collaborators all around the world and travel very often to international congresses and for invited presentations outside Sweden.

5.1.3 Scientific Quality and Productivity Part 2

Critiques of Research Programs and Projects - Science, Methodology and Technological Outcomes

Research at the Centre is organised into Task Forces, which bring together research groups working on related subjects and promote their collaboration. Individual projects follow the long-term strengths and interests of each PI, but on top of this the Centre has built a mechanism to explore interesting new openings in the form of different types of projects that the groups develop and then apply for funding from the Board.

Forest biotechnology at the Berzelii Centre is comprised of a broad spectrum of disciplines of plant science, from genetics and genomics to metabolomics, physiology and development. Their methodology is up-to-date and in many respects at the leading edge. Examples of technological outcomes that may have broad applications are encapsulation methods for somatic embryogenesis and assembly of very large genomes.

Processes for Idea Generation

Collaboration between groups is advanced by frequent meetings that promote developing and identifying ideas that combine different approaches in plant sciences. A very positive outcome is that the students felt that their contribution to this kind of discussion is valued. Omics approaches carried out in the Berzelii Centre result in massive descriptive data for plant biology, which functions as a hypothesis/idea engine if exploited in a clever way. New ideas are refined and developed into project proposals, which are evaluated and ranked by the Board and then the most promising get carried out with the help of strategic funds of the Centre. This kind of continuous project building and evaluation during the Centre's lifetime is unique. Even though these projects are small in size, they allow immediate testing of whether new ideas might work and effectively promote continuous generation and cultivation of new ideas.

Overall Conclusion - Scientific Quality and Productivity

Scientific quality of the research done at the Berzelii Centre is outstanding. This is demonstrated by the analysis of scientific output using bibliometric methods, connectedness, the number of inventions entering the application pipeline etc. Productivity measured as scientific articles published per scientist matches the most successful plant science centres. Productivity includes also giving basic and advanced level teaching for university students and industry partners, communication with the industries and the

public, and raising competitive funding for research. The UPSC Berzelii Centre for Forest Biotechology shows impressive success in all of these areas.

5.1.4 Centre Partners

Existing Partner Group Profile and Prospective Partner Complement

The evaluation team is more than satisfied that the current mix of industry partners in the Centre is appropriate including: Bergvik Skog; Holmen Skog; Stora Enso; Sveaskog; SweTree Technologies; and Syngenta Seeds. The Swedish Forest Industries Federation is also listed as a partner. The evaluation team notes that the current availability and use made of external services is also appropriate. This is reinforced by the extensive range of linkages and cooperative projects existing with collaborators in leading groups around the world.

Following meaningful discussions at the interview the team was satisfied that the current industry partner complement was appropriate and that there was no urgent need for significant expansion. Nevertheless the team welcomes the potential new involvement of Skogforsk and encourages the Centre to seek other partners when opportunities arise. Partner representatives agreed at the interview that there was no impediment to adding further industry partners, even foreign partners, and even if such partners wish to enter directly, i.e. side-stepping the existing participation mechanism via SweTree Technologies.

Processes for Needs Identification and Articulation

The steering committee which includes senior representatives of the five major forest industry partners, together with the task force leaders, identify key issues through visits and meetings involving forest industry personnel, and through the workshops arranged by the forest industries research federation. The participation of SweTree Technologies as a full partner that can act as a conduit to a wider range of forest industry markets is obviously an excellent additional mechanism for obtaining meaningful input of industry needs.

Partner Participation in Innovation and Technology Translation

Industry partners who are full partners in the Centre express great satisfaction with the innovation and technology translation already occurring. It is a credit to the Centre that they have so quickly recognised that their excellent basic science research skills can flourish with industry involvement, producing breakthrough results that impress the scientific community at the same time as responding directly to industry needs.

Commercialization Successes and Benefits to Society

SweTree Technology's role in the care of IP and in commercialization is extremely effective. Forest industry partners are obviously very pleased with the arrangement and with continued close interaction and communication, take-up of industrially significant developments with great benefit to the Swedish economy should be rapid and straightforward, with seamless IP management. Already the rate of patenting of valuable results

has increased and there have so far been 10 patents filed. An example of the potential is the commercial success of arGrow, an invention of the researchers of the Centre that predates the Berzelii Centre.

5.1.5 Organization and Management of the Centre

The Board's Role

The Board consists of representatives of the four forest products companies that are members of the Centre, SweTree, SLU and UmU. The Board meets four or five times per year. It is evident that the Board is very much engaged with the work of the Centre particularly with respect to needs identification and development of forest biotechnology capability within the companies. However, at the generalist evaluation interview only the Chair, the CEO of SweTree and two Board representatives of the universities were present. The Board members from Stora Enso, Bergvik Skog, Holmen Skog or Sveaskog were not present nor did they send representatives or any messages. The evaluation team expected all members of the Board to be present or represented; it is particularly important to hear directly from the industry as the Centre approaches Stage 3 when the critical transition to greater industry participation is expected and significantly increased support from industry must be committed.

Recommendation

2 That all members of the Board be expected to attend the generalist interview of the stage evaluations

Management Team Structure, Processes and Performance

The Centre is a very large and extremely complex unit that has been exceptionally successful in winning resources, building infrastructure, recruiting talent, and producing important research results. The Centre Director and the Executive Group are to be commended for the smooth functioning of the Centre. It is also noted that the report to the evaluation team was very well done; it was thorough, clear, concise, readable and informative.

In one area of management some improvement seems to be required. It would appear that internal communication to the many researchers in the Centre has not kept pace with events and growth of the Centre.

Recommendation

3 That the Centre undertake to improve internal communication among UPSC researchers, for instance by holding, at least annually, UPSC Research Days where all UPSC researchers and partner representatives are invited to attend

International Scientific Advisory Board's Role

The International Scientific Advisory Board (ISAB) has met only once in Stage 2 so far. They will meet in the Fall to review progress to date and plans for Stage 3. It is recognised that such meetings require time and effort but they are important for ongoing benchmarking and strategic review.

Recommendation

4 That the ISAB be consulted more frequently, at least annually in Umeå, and wherever possible, by using the state-of-the-art virtual communication tools

Relationship to the University and to University Units

The Centre is well integrated as a unit operating out of both SLU and UmU. There is evidently highly beneficial cooperation at all levels, from professors to graduate students and highly effective joint use of space and facilities. The Centre leadership and leadership of the universities are to be commended for this.

Financial Management

The Centre receives 5 MSEK cash per year from both VINNOVA and VR for a total of 30 MSEK over the 3 years of Stage 2. Cash from the universities totals 27 MSEK (23.7 from SLU and 3.3 from UmU) and cash from the companies totals 5.1 MSEK. The universities also provide very substantial in kind, principally in the form of salaries totalling a projected 120.5 MSEK for Stage 2. The companies (not including SweTree) provide in kind through the contributions of personnel amounting to the very modest sum of 1.3 MSEK.

SweTree has provided plant material and data, as in kind contribution, valued at 17.1 MSEK. As recommended in the previous evaluation, the process of establishing the value of this contribution has been reviewed by an independent third party. (It is noted that this in kind income is erroneously reported as an expense for materials in the financial tables.) SweTree also provides over 3 MSEK as in kind contribution from personnel.

5.1.6 Training Personnel of High Competence

Recruiting and Developing People of International Competence and Experience

UPSC has a consistent track record of recruiting and attracting high calibre people of international competence and experience. The Centre's researchers interact effectively with industry to formulate and then tackle challenging research problems, with the results leading to an impressive array of high-impact publications and an increasing number of patents and novel forest-industry processes.

The Centre attracts excellent PhD students and postdoctoral researchers from all over Sweden and from around the world. These junior researchers clearly enjoy and are benefitting from the courseware offered in the PhD program as well as from the encouragement they receive to pursue innovative research ideas through exchanges with researchers throughout the Centre. Indirect but effective training for the students is also provided by mandating that they each present annually at an international conference and by the mechanism whereby they have to prepare an application for support to attend this conference, thereby learning about preparing funding applications in a competitive environment.

The fact that the Centre is not formally tracking its junior researchers when they leave is a missed opportunity to understand what is likely to be one of prime legacies of the Centre as those it trains go on to make their marks in industry and in research laboratories around the world. Tracking this legacy is important in order to identify possible excellent potential employees for the Centre's industry partners and in order for the Centre to underpin arguments for future funding.

Recommendation

5 That the Centre track its postgraduate and postdoctoral alumni

Mobility of Personnel between University and Industry

In Stage 2 the Centre has focused effectively on Centre-industry communication, experimenting with a variety of familiarisation mechanisms going in both directions. One of the most exciting proposed near-term initiatives is the industrial PhD which is likely to produce a step change in industry capability to absorb and capitalise on the rapid present and future technological developments in forest biotechnology.

Gender Perspective

The Centre's determination to address gender imbalance throughout its research hierarchy has been particularly successful and it is to be congratulated on the innovative processes it adopted to achieve this; processes that might be usefully copied by other disciplines that have been characterised by long-term gender imbalance.

However the impact of this attention to gender imbalance is undermined by the current gender composition of the Board, the International Scientific Advisory Committee, and the Task Force Leadership Group, all of which have low female representation. Consistent direct and indirect messaging on gender matters is imperative if the gains achieved are to be maintained.

Recommendation

6 That the Centre move towards gender balance in its senior-level councils - the Board, the ISAB and the Task Force Leadership Group

Contributions to University Education

As indicated above, the PhD students are provided with a superb range of courseware ranging from training in using cutting-edge biotechnology platforms through to courses on commercialisation and on finding employment. The range of courses is being expanded and formalised for the introduction of the industrial PhD program, providing the Centre and its owner-universities with the possibility of commercial returns from this well-structured educational material.

5.1.7 Post Script

The evaluation team found the Centre to be operating at an extraordinarily high level. In particular the evaluation team wishes to commend the Centre on its achievement of excellence with respect to the following elements:

- Path breaking science in forest biotechnology
- Top performance in publication in high impact refereed journals
- Establishment of exceptional forest biotechnology platforms – personnel, methodologies, equipment and building infrastructure
- Establishment of an robust culture of collaboration and inclusion
- Achievement, through dialogue with industry partners, of a paradigm shift in rethinking fundamental research in the context of industry needs
- Establishment of a productive relationship with SweTree Technologies that connects fundamental research with development of intellectual property and biotechnological innovations
- The strategic recruitment of exceptional, international talent (observed at the professorial and graduate student level by the evaluation team)
- Outstanding performance in winning research funding related to the vision and mission of the Centre totalling over 800 MSEK
- The extraordinary financial and strategic support provided by SLU and UmU
- Rapid progress in gender balancing, recruiting women at the junior faculty level
- Production of an outstanding evaluation report, that exceeded our expectations in every respect

Finally, the evaluation team wishes to note the exceptional leadership provided by the Director, Ove Nilsson. It is evident that his vision, values, vitality, competence, and principle-based decision making have played a central role in the continuing success of the Centre. We also recognise that a Centre like the UPSC Berzelii Centre is the result of the work, the passion, the dedication and the gifts of many. Congratulations on your exceptional achievements.

Recommendations to Strengthen the Centre

In summary, our recommendations are:

1 That the Centre, the Board and the Universities, working with VINNOVA/VR and appropriate government agencies and industry, establish a long range strategy to ensure the ongoing excellence of the platform technologies essential to the Centre's continuing primacy, with respect to both equipment and high level supporting personnel

2 The all members of the Board be expected to attend the generalist interview of the stage evaluations

3 That the Centre undertake to improve internal communication among UPSC researchers, for instance by holding, at least annually, UPSC Research Days where all UPSC researchers and partner representatives are invited to attend

4 That the ISAB be consulted more frequently, at least annually in Umeå, and wherever possible, by using the state-of-the-art virtual communication tools.

5 That the Centre track its postgraduate and postdoctoral alumni

6 That the Centre move towards gender balance in its senior-level councils - the Board, the ISAB and the Task Force Leadership Group

Recommendations to VINNOVA/VR

In conclusion:

- The evaluation team is of the opinion that the Centre is one of the top forest biotechnology research establishments in the world. With the expectation that the recommendations made in the report above are addressed, the evaluation team recommends continued VINNOVA/VR support.

UPSC has been a success by any measure. Outstanding strategic-basic research capability has been harnessed most productively to solve industry-significant, challenging research problems and the results have led to outstanding numbers of high-impact publications and patents as well as delighted industry partners. Such a capability is rare and could be profitably supported for an extended time to maximise significant national benefit and international impact.

- That VINNOVA/VR explore ways in which the UPSC Berzelii Centre may be granted an extension of the funding period beyond 10 years in recognition of the long induction period in this field, the exceptional quality of the research, the advances already made in orientation of research to industry needs, and the strategic importance of the forest industry to the Swedish economy

5.2 The Berzelii Centre EXSELENT on Porous Materials

Stockholm University, Stockholm

Introduction

On September 5-6, 2011, the Centre Director, Xiaodong Zou, colleagues of the Berzelii Centre EXSELENT on Porous Materials, industry partners, and university representtatives, had meetings with the international evaluation team in Stockholm to evaluate the Centre's performance in Stage 2 (January 1, 2009 – December 31, 2011). The scientific experts of the evaluation team, Ann Chippindale and Russell Morris, addressed matters concerning research strategy, projects, and progress. The generalist evaluators, Doug Reeve (Chair), Robert Johnston, and Mary O'Kane, together with the experts, in a subsequent meeting, addressed matters such as organization and management, finance, interaction between industry partners and the university, and educational activities. The evaluators also met with selected PhD students from the Centre. We thank all members of the Centre and the VINNOVA/VR team for their efforts in providing information and facilities for the evaluation.

5.2.1 Long-term Vision, Mission and Strategy

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 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 many different activities.

The stated vision of the Centre is to:

> *"- Establish EXSELENT as an internationally leading centre on porous materials*
>
> *- Establish a dynamic research environment that is attractive to industry and motivating for the academic researchers*
>
> *- Establish EXSELENT as a sustainable centre that will continue after the ten years of Berzelii funding."*

During Stage 2, the major focuses have been 1) carrying out research at a high international level, 2) establishing research projects with existing industrial partners,

3) attracting new industry partners and starting new projects with industry involvement within the research focus areas defined, and 4) establishing the Centre agreement.

The overall strategy has been to build on an established strength in porous materials characterisation and develop new research areas that '*build an interdisciplinary research environment having both high scientific level and being attractive for industry.'*

5.2.2 Scientific Quality and Productivity Part 1

Research Area, Competence Profile, People, Facilities, Critical Size

In Stage 2, four research areas involving porous materials have been identified both for fundamental study and for their potential interest to industry: Catalysis, Gas Separation, Biomaterials and New Porous Materials and Characterization. Although Gas separation as a research area represents a new addition to the portfolio, it exploits results obtained previously in Stage 1. The fourth research area has been included on the recommenddation of the Scientific Advisory Board with the justification that the development of new techniques for the characterisation of structurally complex materials is not only attractive to industrial partners, but also underpins the fundamental science in the other three research areas.

A strong research environment exists within the Centre. The Centre has expanded since Stage 1 and currently comprises 70 active researchers. There is clear evidence of a continuing high level of scientific competence, some of which is undoubtedly world leading. This is demonstrated by publications in general science and chemistry journals of the highest quality (*e.g.Nature, Nature Chemistry, JACS, Angew. Chem.* etc), together with the award of a number of prestigious prizes and grants to Centre researchers. The encouragement of young researchers is taken seriously with several acting as project leaders in Stage 2. There is significant competition for graduate training places and the chosen graduate students benefit from training within the Centre. They also benefit from the opportunity for funded visits to other laboratories as well as exposure to new ideas from the many academic and industrial visitors, although after consultation with the PhD students the latter is an area that could be improved.

Facilities and research equipment to support the work undertaken are excellent and several new instruments, some of which are state-of-the-art, have been recently installed. That these instruments have been funded by external sources under peer review shows the confidence referees have in the researchers within the Centre to deliver first-class results.

When questioned, it became clear that enthusiasm for the Centre and its culture has clearly grown amongst its senior members since the last evaluation. It was agreed that the existence of the Centre has promoted and enhanced collaboration between colleagues within the University, focusing ideas and common goals. In Stage 3, the move towards applications and commercial impact involving more industrial collaborators is essential.

A note of caution: as a number of senior researchers are approaching retirement, early and careful planning for their replacements is essential to ensure that the high standard of research currently undertaken is continued. There are also perceived gaps in skills in areas such as biological materials, engineering and heterogeneous catalysis, which may need careful attention in the future as the Centre continues to develop.

Recommendation

1 That the Centre identifies present and anticipated scientific personnel needs, including making possible new appointments in areas where there are gaps in skills coverage.

International Comparators with other Centres and Collaborations

It is very difficult to make a real and meaningful comparison with other centres of excellence around the world, as by its very nature, a world-leading grouping will be distinct from its comparitors. This is true for this Centre. However, one can make at least a general comparison with other centres of its kind around the world, based on publication and citation data available on the ISI Web of Knowledge and other similar databases.

In the Web of Science database, there are, as of 5th September 2011, 101 papers listed as having EXSELENT as an affiliation/address or as a source of funding. The number given in the presentations to the specialist evaluators is 122, which means that a significant proportion of papers claimed by the Centre did not reference the Centre in any form (or some may not have been published to date). We suggest that proper reference to the funding, preferably by listing the Centre affiliation in the author address section of papers, be strongly encouraged as a way of increasing awareness of the Centre brand in the scientific literature. The results showed that the 101 papers listed had an *h*-index of 12, with one paper cited 64 times. This is broadly comparable with other world-leading institutions and outperformed several others. This is by no means a robust benchmarking process, but does indicate that the Centre is well established and that their papers are well read and well cited. However, we suggest that a proper benchmarking procedure be carried out in an attempt to quantify the impact of the scientific publications. The Centre should always be conscious of the need to improve the quality of its scientific outputs, and one measure of this (but by no means the only measure) is to monitor the databases for citation numbers etc.

While academic output was well documented, one striking omission from the report and the presentations was the lack of data regarding the number of patent filings and other indicators of commercial impact. These must also be important factors in judging the success of a needs-driven research project such as this one, and should be included for the next report.

There are a number of significant collaborations listed in the Stage 2 report to the evaluators, although perhaps their importance to the Centre was not emphasised as much as it might have been. However, in general this aspect looks to be well covered in

the Centre and we are sure that the academic collaborations add significant value to the projects as a whole.

5.2.3 Scientific Quality and Productivity Part 2

Critiques of Research Programs and Projects - Science, Methodology and Technological Outcomes

There are currently four themes of research in EXSELENT

- New Porous Materials and Characterisation
- Catalysis
- Gas Separation
- Biomaterials

These research themes can be broadly separated into three; the biomaterials theme which is clearly based on needs-driven research, the gas separation and catalysis themes, in which there is some needs-driven work but this is underpinned by a significant amount of basic research, and the new porous materials and characterisation theme, which is primarily basic research.

There is evidence of scientific excellence in all themes to varying degrees. In terms of porous materials research, theme 1 is very much the most well developed, and the group has a very strong reputation worldwide in this area. This is clear in the quality of papers produced, with recent publications in *Nature, Nature Materials* and *Nature Chemistry*. In total 56 papers arose from this theme, which is a significant proportion of the total output of the Centre. The structural characterisation of several new and complicated zeolitic materials is a particular highlight of the Centre's work to date. The real challenge in this area is to develop the exciting basic science so that it has impact outside academia. There are clearly possibilities for this and the work with Calidris and Cambrex offer two different aspects of how the skills and expertise (as well as the excellent facilities) could be used to the advantage of the Swedish economy. This is the most obvious area where the development of multilateral consortia can be introduced.

The catalysis theme is supported by several members of academic staff and is also an area of identifiable scientific excellence, with papers in several of the leading chemistry journals (*Journal of the American Chemical Society, Chemistry – A European Journal* etc). There is a focus on immobilization of catalysts in mesocellular foams, the development of MOF catalysts and heterogeneous organocatalysts. The latter two look particularly exciting in terms of impact on basic research, and there are also some very interesting and potentially very important ideas concerning multifunctional catalysts encapsulated inside large cavities that offer great advances in enantioselective catalysis. However, perhaps a little more focus on heterogeneous catalysis would be beneficial. There is obvious potential in this area to offer value to industrial partners and the work with AstraZeneca, Cambrex and OrganoClick offers a glimpse that such work can contribute significantly. However, the challenge in this area is to identify potential industrial partners with problems that are tractable using the approaches being developed by the

Centre. We are sure that such problems exist and the goal of identifying potential partners, particularly in multilateral projects, is crucial for the continued success of this theme, and for the demonstration of real added value provided by the funding.

The gas separation theme concentrates on developing new materials for the capture of carbon dioxide, developing materials that are highly selective for CO_2 over N_2 adsorption in post-combustion applications and combining the researcher skills in materials engineering, powder processing and modeling to provide what looks like a very exciting area of science, with the potential for great impact. However, while this is an area of great topicality, there is also great competition from other research groups worldwide, and the opportunities for making progress in the commercial arena are complex. The combination of materials engineering and powder processing skills offers many advantages over other academic research groups currently active, and this should be exploited to its maximum degree to differentiate this Centre from others around the world. The Centre has only one current industrial partner in this area (Biokol AB), but there are discussions ongoing with several other companies, and we sincerely hope that a number of these early discussions lead to the addition of several new industrial members. To make real commercial impact in such a popular area, the Centre must identify a good route into the market, with perhaps the choice of an application in a smaller volume but higher value area as the optimum strategy.

The final area of biomaterials is the most needs-driven theme, with a very strong connection to one particular industrial partner, Nobel Biocare. There is a good synergy displayed in this theme between an improved understanding of the processes (with a link to the electron diffraction in the characterisation theme) and the goal of improved materials. The research aimed at developing new mesoporous surfaces and transparent nanoceramics, combined with the recent addition of better processes through laser sintering and associated techniques, offers a very attractive package of expertise. This is being exploited very well through the link with Nobel Biocare, but the expansion of the theme to include orthopaedic implants, and the extension of work into ‘transient porous’ materials that is proposed for Stages 3 and 4 are very welcome, and will extend the reach of the research being carried out in the Centre. There is perhaps a (recognised) gap in the skills in the Centre when it comes to a real understanding of the processes involved at the biology/materials interface, but this could possibly be bridged with better connectivity between the Centre and YKI. This should be explored more fully.

Processes for Idea Generation

The processes for idea generation in the Centre and how they are subsequently implemented seem relatively robust. There is, however, significant scope for improvement in two areas:

- The identification of the requirements of industrial partners is still an area that needs some work. The EXSELENT brand seems to be well disseminated at conferences and through academic literature, and by extension, those companies that send representatives to the major conferences in the field are most likely well aware of the potential benefits of partnering with the Centre. However, we feel that this is

only likely to be a small percentage of the companies who might benefit from an interaction with EXSELENT. Stage 3 of this project is where industrial contact must be maximised, and there is an urgent need to bring the EXSELENT brand to the attention of as many companies as possible. The very fragmented nature of the industries that may have an interest in porous materials makes this quite a challenge, and is why significant effort must be expended in this area.

- The connectivity between the various themes is somewhat difficult to assess. It is not clear that 'bottom up' ideas generation between the themes (as opposed to within the themes) is well established. We would like to see a really robust framework in the Centre that gives all the members of the Centre the opportunity to engage with the ideas generation process, irrespective of which theme they contribute to.

Overall Conclusion - Scientific Quality and Productivity

Overall, it should be reiterated that there is significant evidence of excellence in terms of the science generated by the Centre, and there is much to recommend the wide range of approaches that have been developed. The major challenges facing the Centre are primarily focused on identifying the right problems. However, there is a significant challenge in balancing the goal for developing 'needs-driven' research, developing the academic impact of the Centre, and ensuring a portfolio that includes both bilateral and multilateral projects. This is not always a balance that is easy to achieve and the key is the development of a culture that values both academic excellence and an entrepreneurial spirit. In the light of this we make the following recommendations:

Recommendations

2 That the Centre encourages development of a culture that links basic research directed towards problems, that if solved would lead to major breakthroughs with industries associated with the Centre.

3 That the Centre hire a technologically savvy operative whose task will be to work with internal partners to identify projects of commercial importance, to increase the branding and visibility of the Centre in the commercial realm, and to identify and approach potential new partners.

4 That the Centre record and report commercial outputs such as: patent applications, commercial reports to industry, specialized training etc.

5 That the Centre enhances connections with cognate groups world-wide

6 That the Centre set targets for refereed publication in international journals such as: number of citations, number of publications at various levels of impact factor; number of publications co-authored with industry partners etc.

5.2.4 Centre Partners

Existing Partner Group Profile and Prospective Partner Complement

At the end of Stage 2 the Centre has six industry partners: AstraZeneca AB, Nobel Biocare AB, Biokol Lilliestråle & Co KB, Calidris, Cambrex Karlskoga AB and OrganoClick AB. The principal public partner is Stockholm University (SU), and SU

Holding (a subsidiary of SU) is also listed as a partner. In addition the research institute YKI is a significant contributor through a contractual agreement with SU.

The principal linkages with the Centre, for both current industry partners and those being proposed as new members, appear to be based on bi-lateral interests. There is a clear indication of increasing impact of industry and societal needs on the Centre research through these linkages. However the Centre does not appear to have the capacity or systems to benefit from the added value that can be obtained from multilateral projects.

Recommendation

7 That the Centre develop ways to interact with clusters of industry partners in pre-competitive multi-lateral research projects

The Centre Stage 2 Report listed a considerable number of collaborators including many international groups. The Swedish collaborators listed were at Lund, Lulea and Uppsala. The Centre should be open to form new full-partner arrangements with any significant research groups or centres in closely related fields of research. The evaluation team was surprised that there was no discussion of the possibility of linkages with other VINNOVA or VR "Centres".

Processes for Needs Identification and Articulation

In general the needs identification and articulation with current industry partners works well because, for the most part, the relationships are bi-lateral. This rather restricts the ability of the Centre to identify "big-picture", "road block" problems that are common across a wider range of industries. These major research problems should not be omitted from consideration as they are precisely the problems that, if solved, will attract great interest from current and new partners alike, offer increased citations for Centre publications, and greatly enhance collaboration with an even wider set of research groups.

Partner Participation in Innovation and Technology Translation

The Centre appears to be performing well in this aspect. The large number of industry people on the Board, all with major innovation roles in their companies, is of significant assistance, particularly in technology transfer. It is very important to continue this performance. The evaluation team noted the opinion of at least one of the industry representatives at the evaluation interview, that "they will only increase participation if results are good."

Commercialization Successes and Benefits to Society

The Centre appears to be on the right path, particularly at this stage of the Centre development. For Stage 3, the Centre should develop measurable targets in this regard, and should be asked to report on them at the end of the stage.

5.2.5 Organization and Management of the Centre

The Board's Role

The Board presently consists of representatives of four of the company partners (AstraZeneca, Nobel Biocare, Cambrex Karlskoga, and Biokol Lilliestråle), representtatives of SU and SU Holding, the President of YKI, and Professor Bruce Lyne of KTH (Chair). The evaluation team appreciates the attendance of all Board members at the evaluation and their contribution to the discussion. The Board is very much engaged with the Centre and particularly supportive of the Centre's efforts to bring in more industry partners.

Management Team Structure, Processes and Performance

The Management Team consists of the Director (also an Area Manager), Vice Director, Administrator and the three other Area Managers. The team appears to function quite well, in most respects. However there are four matters would benefit from more attention, namely: development of industry partnerships; improvements in internal communications; editing of the evaluation report to reduce repetition, inconsistencies and minor editorial problems; and improving the processes for IP protection through patenting.

Recommendations

8 That the Centre increase the input to the Management team from those within the Centre who have experience in university-industry partnerships, possibly by appointment of a Deputy Director responsible for industry partnerships

9 That the Centre Management Team urgently improve the internal communication and exchange processes involving all participants, industry, students, and academics to benefit from the transfer of information but also to build on the sense of community of the Centre

10 That the Centre, in concert with SU, SU Holding and the Board, increase the clarity and functionality of the methodology, responsibilities for, and financing of, processing innovations through patenting

International Scientific Advisory Board's Role

The International Scientific Advisory Board (ISAB) is well constituted with top-level chemists and materials scientists from a diverse range of institutions. The Centre plans to have meetings of the ISAB annually except in 2011 when the Centre evaluation takes place.

Relationship to the University and to University Units

The Centre is an important and much appreciated part of the Division of Chemistry and of the Department of Materials and Environmental Chemistry.

Financial Management

The Centre receives 5 MSEK cash per year from both VINNOVA and VR for a total of 30 MSEK over the 3 years of Stage 2. Cash from the University is 0.5 MSEK in 2010 and 2011 for a total of 1 MSEK and in kind contribution is 38 MSEK for Stage 2. The

companies provide cash of 3.5 MSEK total in Stage 2 (range per company 0.15 MSEK to 1.8 MSEK). The companies provide 9.3 MSEK in kind (range per company 0.12 MSEK to 6.7 MSEK). YKI provides 3 MSEK in kind in Stage 2. The Centre is on a path to increase the number of industry partners and so increase revenue from companies. During the evaluation interview it was noted that company in kind reporting was not comprehensive and that budget estimates of in kind were frequently on the low side of the actual values.

The evaluation team questioned the expenditure of 5 MSEK (budget) on "Materials and running costs." These costs are reported to be for lab materials, chemicals, consumables, bench fees, copying and printing. "Other" expenditures of 4 MSEK are for instrument fees and maintaining of equipment.

In Table 12 the Centre reported research grants related to the Centre totalling 76 MSEK.

5.2.6 Training Personnel of High Competence

Recruiting and Developing People of International Competence and Experience

The Centre has built well on existing core expertise at Stockholm University in porous materials chemistry, with recruitment of, and good establishment support for, several new junior researchers and PhD students both from Sweden and from other countries, most notably China. Tracking the large number of: 1) junior researchers (8); and 2) Post-docs and PhD students (67) from the Centre after they leave will be key to understanding one of the most important likely long-term legacies of this Centre – the impact of the people it trains.

Recommendation

11 That the Centre track its postgraduate and postdoctoral alumni

Mobility of Personnel between University and Industry

At present there is limited mobility between the Centre and industry. Some industry partners in the Centre have had employees work in the Centre for periods of time. One PhD student has used facilities at Nobel Biocare and another is undertaking a PhD while employed by YKI. But the mobility which so fruitfully characterises the Centre's interchanges with its scientific collaboration network, mobility which has led to an impressive number of high-quality co-publications, is not yet reflected in the Centre's mobility patterns with industry. The evaluation team suggests that the Centre make productive Centre-industry mobility a feature of its next Stage. This mobility will become easier when greater trust and familiarity has been established with industry groups and can be enhanced by mechanisms such as Centre Days for industry where firms which might be potential partners and clients for Centre expertise are invited to hear presentations from leading researchers on latest scientific developments.

Gender Perspective

The Centre acknowledges the need to redress gender imbalance which in this Centre reflects the gender imbalance in many leading Chemistry laboratories where, despite

high percentages of female students, there are very few female research leaders. The Centre has encouraged female researchers to apply to join the Centre and has done this with some promising early results. It has also appointed an excellent and gender-balanced Scientific Advisory Board. Nevertheless more is needed both in terms of targets and in terms of symbolic actions to address this matter.

Recommendation

12 That the Centre establish targets for moving closer to gender balance at all levels and aspects of its operations over the next two Stages. Furthermore it is recommended that the Centre re-examine the criteria by which it appoints its Board so that it can move quickly to gender balance this most prominent and influential of its committees.

Contributions to University Education

The contributions to university education from the Centre appear to be satisfactory. The evaluation team heard from the graduate students about the courses they can undertake. Those who had taken the course on innovation and commercial activity organised by the Board Chair clearly found it beneficial. Other students cited specialised courses in Chemistry that allowed them to come up to speed in specialist areas needed for their thesis work. The students also clearly had support and encouragement to attend and present at conferences.

Recommendations to Strengthen the Centre

In summary, our recommendations are:

1 That the Centre identifies present and anticipated scientific personnel needs, including making possible new appointments in areas where there are gaps in skills coverage.

2 That the Centre encourages development of a culture that links basic research directed towards problems, that if solved would lead to major breakthroughs with industries associated with the Centre.

3 That the Centre hire a technologically savvy operative whose task will be to work with internal partners to identify projects of commercial importance, to increase the branding and visibility of the Centre in the commercial realm, and to identify and approach potential new partners.

4 That the Centre record and report commercial outputs such as: patent applications, commercial reports to industry, specialized training etc.

5 That the Centre enhances connections with cognate groups world-wide

6 That the Centre set targets for refereed publication in international journals such as: number of citations, number of publications at various levels of impact factor; number of publications co-authored with industry partners etc.

7 That the Centre develop ways to interact with clusters of industry partners in pre-competitive multi-lateral research projects

8 That the Centre increase the input to the Management team from those within the Centre who have experience in university-industry partnerships, possibly by appointment of a Deputy Director responsible for industry partnerships

9 That the Centre Management Team urgently improve the internal communication and exchange processes involving all participants, industry, students, and academics to benefit from the transfer of information but also to build on the sense of community of the Centre

10 That the Centre, in concert with SU, SU Holding and the Board, increase the clarity and functionality of the methodology, responsibilities for, and financing of, processing innovations through patenting

11 That the Centre track its postgraduate and postdoctoral alumni

12 That the Centre establish targets for moving closer to gender balance at all levels and aspects of its operations over the next two Stages. Furthermore it is recommended that the Centre re-examine the criteria by which it appoints its Board so that it can move quickly to gender balance this most prominent and influential of its committees.

Recommendation to VINNOVA/VR

In conclusion:

- The evaluation team is of the opinion that the Centre continues to do excellent basic research and is making progress towards research that more fully addresses industry and societal needs. With the expectation that the recommendations made in the report above are addressed, the evaluation team recommends continued VINNOVA/VR support.

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

Karolinska Institutet, Stockholm

Introduction

On September 6-7, 2011, the Centre Director, Hans Forssberg, colleagues of the Stockholm Brain Institute (SBI), external partners, and university representatives, had meetings with the international evaluation team in Stockholm. The scientific experts of the evaluation team, Giovanni Cioni and Jüri Allik, addressed matters concerning research strategy, projects, and progress. The generalist evaluators, Doug Reeve (Chair), Robert Johnston (RJ), and Mary O'Kane, together with the experts, in a subsequent meeting, addressed matters such as organization and management, finance, interaction between industry partners and the university, and educational activities. There were a number of issues about which the evaluation team was not satisfied. The evaluation teams put a number of questions to the Centre which in turn provided responses. A further evaluation meeting was held on March 8, 2012 (RJ not in attendance). We thank all members of the Centre and the VINNOVA/VR team for their efforts in providing information and facilities for the evaluation.

5.3.1 Berzelii Centre Success Criteria

The Centre meets some of the success criteria for Berzelii Centres but has yet to achieve the level expected for others. In the section that follows, the success criteria are in italics.

Research programmes are set up and carried out in collaboration between the various participants in order to solve key issues

From the material submitted it was not clear that this most fundamental success criterion for Berzelii Centres had been met. It is true that some research programs were carried out in collaboration between the various participants but it was unclear what were the Centre's *key issues* that were being solved. At second interview the Centre indicated that its purpose was to address "cognitive autonomy" and that research projects were all in this field. However much needs to be done by the Centre with its partners acting collectively to articulate key issues and build a coherent narrative about the program of activities to address these issues as the Centre moves into Stage 3.

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

The Centre meets this criterion. It has performed exceptional and innovative research and has built up unique world-class research platforms.

Ensuring that new science based knowledge generated leads to new products, processes and services

One of the strengths of the Berzelii Centre program design is that by insisting that a centre focus on agreed key issues, end-user partners (private and public) can plan from

the start how to take advantage of the new knowledge generated in addressing these key issues to design and implement new products, processes and services. While some SBI partners are developing some very exciting new products and services, this appears to have been done in Stage 2 mainly in a bilateral way rather than these partners being able to draw on the full richness of the Centre's expertise being brought to bear in a concentrated and planned way.

An equality opportunity environment with active promotions for an equal balance of gender

While more could be done, on balance, the Centre has meets this criterion.

The majority of work is conducted at a university to achieve a critical size and interaction between research, post-graduate education and graduate education

The Centre meets this criterion.

Long-term implementation with comprehensive evaluations prior to new agreement periods to secure long-term effects and international excellence

The process of the current evaluation addresses this matter but more formal frequent board-driven internal evaluation is needed.

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 long-term financing of the Centre is not ideal at present. The Centre explained at interview the challenges especially regarding securing funding from big pharma at a time when the industry is downsizing its neurological research activities. Also the university partners' contribution is lower than expected. These issues need to be addressed for the Centre to excel.

The activities are overseen by 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

The board has recently been refreshed but needs further restructuring to ensure a proactive culture to drive focus on and results from needs-driven research.

Established in innovation environments with effective innovation operations so that strong research and innovation milieus can be created (Centres of Excellence in Research and Innovation)

This area needs attention but adding Karolinska Institutet Innovation AB (KIAB) to the board is a step in the right direction. Being clear about key issues and adding new committed end-user partners is also likely to help with this.

A gender perspective in the research programme

The Centre has meets this criterion.

Recommendations

1 That the Centre with its partners acting collectively articulates the key issues within the field of cognitive autonomy that the Centre will focus on and build a coherent narrative about the program of activities to address these key issues in Stage 3.

2 That the Centre with its partners acting collectively plans from early in Stage 3 for optimal effectiveness in ensuring that new science-based knowledge generated leads to new products, processes and services. This will require close attention to knowledge-transfer mechanisms and capabilities.

5.3.2 Long-term Vision, Mission and Strategy

SBI and Centre Vision, Mission and Strategy are briefly indicated in the documents provided. Although during the interviews with the Director and the main investigators, both in September and in March, and in the supplementary material provided in February, their strategic approach to cognitive neurosciences was more clearly illustrated, more explicit formulation of the goal and mission would be beneficial to the Centre's progress. In particular the position of the Centre in the international panorama of cutting edge research in neuroscience should more precisely formulated. The Centre has also to position itself through its vision and mission in the long term perspective. Promotion of "cognitive autonomy" from any kind of potential disability hampering the personal quality of life, that was reported during the last interview as major goal of the Centre, should be more clearly indicated in the documents.

Recommendation

3 That the Centre makes more clear its vision in the field of cognitive autonomy, and translates its original mission into the new perspective appropriate to phase 3.

5.3.3 Scientific Quality and Productivity Part 1

Research Area, Competence Profile, People, Facilities, Critical Size

Within the field of cognitive neuroscience the Centre has developed competence in the following major 4 areas: neuroimaging platforms, computational modeling, translational behavioural research and longitudinal databases. In all these areas it has achieved international prominence and excellent scientific results. The Centre has developed outstanding research facilities which are used with remarkable competence by brilliant experts. The Centre has been able to use resources to create a critical mass of researchers and lay foundations for sustainable development of the Centre.

In particular, translational behavioural research and longitudinal database development are very strong and innovative in cognitive neuroscience, as examples of research strategy and technological achievement (animal imaging for functional studies, and longitudinal multivariable data collection in large populations). Even in these areas, new achievements are advisable and the Centre has plans to increase its effort to integrate the results of its innovative research platforms with the results of other cognate, cutting-edge neuroscience technologies, such as genomics and photon microscopy. Moreover, the Centre needs to increase its connection to clinicians and clinical researchers who can

aid the Centre in deeper understanding of the needs for clinical neuroscience research. As a reply to our comments in September, more clinicians have been added to the new board of the Centre.

Recommendation

4 That the Centre increase its connection to clinical researchers, clinicians and representatives of the public and private partners, both in the new board and for other discussions and planning sessions.

International Comparators with other Centres and Collaborations

The Centre is well integrated in the network of international collaborations.

5.3.4 Scientific Quality and Productivity Part 2

Critiques of Research Programs and Projects - Science, Methodology and Technological Outcomes

The output of basic research is outstanding. More practical output in the form of patents and other commercial products is less impressive at the moment.

Processes for Idea Generation

In addition to the above points we recommended in the first interview that the Centre develop more effective tools and platforms for discussing scientific ideas and for integrating the suggestions provided from various different contributions, increasing the communication and collaboration among the different expertise which should be a key goal and feature of the Centre. Projects and plans to promote these aspects are reported in the supplementary material provided in February.

Overall Conclusion - Scientific Quality and Productivity

Although the overall averaged quality and quantity of scientific productivity of the Centre is outstanding, the Centre has the potential to achieve a much more prominent position in the world hierarchy of scientific excellence.

The documentation of the publications, that was not well organized in the first evaluation report, has been updated, more clearly assigning authorship to particular researchers, with indications of their value according the international scientific standards.

Moreover, following a recommendation of the evaluation team, indexes to monitor scientific outputs annually through comprehensive bibliometrics and tracking of the alumni and staff members of the Centre are more clearly stated in the most recent version of the documents. However, the present reports are the collection of all publications by researchers affiliated to the Centre, irrespective of their effective link to the Centre’s mission, products and facilities.

Recommendation

5 That the annual report indicates separately the publications directly related to the input provided by the Centre and those studies more connected to the translational aspects that are the main focus and interest of Centre activity in phase 3.

5.3.5 Centre Partners

Existing Partner Group Profile and Prospective Partner Complement

The Stage 2 partner group consists of the three universities (Karolinska Institutet (KI), The Royal Institute of Technology (KTH), and Stockholm University), KI Innovations, large and small companies, and public sector health providers. Regrettably, information about the partners in the second evaluation report is often incomplete and inconsistent, so it is difficult to get a clear picture of the precise engagement of public and private partners. The overall impression is that the degree of engagement of company partners is very mixed, for example, from the highly successful CROMed installation to the withdrawal of IBM from partnership. In general the picture is not impressive. It is understood that there are many different types of organizations with a wide range of modes of interacting with the Centre, a rich opportunity that has not been seized. There is no credible data in the financial tables to provide a realistic picture of the extent of in kind contribution of partners.

Recommendations

6 That the Centre prepares a clear, consistent record of partners engagement for annual reporting and for future evaluations.

7 That the Centre increases its focus on building the level of engagement with existing and new partners.

Processes for Needs Identification and Articulation

It seems that at the time projects were established in Stage 2 there was limited involvement of partners in needs identification. The evaluation team recognizes that the Centre has been making greater effort in recent times and encourages deepening partner involvement.

5.3.6 Organization and Management of the Centre

The Board's Role

We would expect a Berzelii Centre Board to be a staunch advocate for the Centre with the Universities and partners for winning resources and gaining advantage for the Centre. The Board would be central in formulating the Centre’s key issues and in strategic decision-making. The Board would be an agent for strong leadership and good management of the Centre. The Board would be a unifying force in creating a Berzelii Centre culture.

It is our impression that the Board has not lived up to these expectations. Two of the three University representatives (from The Royal Institute of Technology (KTH) and Stockholm University (SU)), while they may be experienced and accomplished

scientists, are not from the senior ranks of university management. The participation by industry is in serious need of attention in order that industry partner engagement reach the levels expected for Stage 3 of a Berzelii Centre. Greater involvement of industry partners is certainly warranted. As discussed below, there are shortcomings in Centre Management that the Board should have taken steps to eliminate. The evaluators frequently returned to the notion of the "project hotel" in observing the lack of centralizing themes and culture – another symptom of lack of appropriate guidance from the Board.

Recommendations

8 That the Board Chair be replaced with someone with experience more appropriate to the new demands of Stage 3

9 That the university representatives at KTH and SU be replaced with individuals from the senior levels of university management

10 That the number of industry and public partners on the Board be increased with both large and small units being represented.

Management Team Structure, Processes and Performance

The Management Team consists of the Director, the Scientific Coordinator, the Director of the SBI Research School and the Secretary, Department of Clinical Neuroscience and is responsible for operating the Science Council, Infrastructure, Research Program, and Research Training. According to the evaluation report financial tables, the Director is paid 10% of his time for his leadership of the Centre. The Director of the School is paid for 20% of his time which most likely would be entirely devoted to Research Training, a modest part of the mandate of the Centre that should be taken care of by the School. The Scientific Coordinator is listed at 10% of time but according to the second interview that should read as 60%. The Secretary is listed at 50%. This structure and level of commitment is, in our view, inadequate to accomplish the central role of Berzelii Centre management. The Director should be in the range 50-100% and there should be at least one Deputy Director. Depending on the circumstances there might reasonably be Associate Directors for such matters as Infrastructure and Partner Relations. Dedicated individuals to act as secretary/administrator/financial administrator in the range of 1-2 full time equivalent are essential. The poor quality of the evaluation report including the financial reporting (see below) is one symptom of the lack of managerial attention and administrative assistance.

Recommendations

11 That the Centre Director position be established at a minimum of 50% of full time

12 That the Centre Director be replaced with someone whose capabilities would be more appropriate to the more organizationally demanding requirements of Stage 3

13 That the Management Team be enlarged and reorganized to incorporate functions such as Deputy and Associate Directors in support of the Director

14 That the roles of secretary/administrator/financial administrator be reviewed and adequate resources be provided.

The Report to the Evaluation Team

Particularly with respect to organizational issues, the evaluation report was not up to the standard expected. Some examples follow:

- The summary for the layperson was poorly written and did not convey the appropriate information – the important mission of the Centre and its exciting progress.
- The executive summary repeated most of the layperson report and did not report on the scientific results of the work.
- The section on partners was missing vital information.
- The section on financial management conveyed little information about Centre finances.
- Other subsections of the report failed to address the subject at hand.
- The tables summarizing partners left out public partners altogether.
- The table of Board members included someone from IBM – IBM has never signed the partnership agreement and has not contributed cash or in kind since Year 1 of Phase 2.
- A list of Science Council Members was to be provided and was not.

International Scientific Advisory Board

It is required that Berzelii Centres host an International Scientific Advisory Board (ISAB) on a regular basis, preferable annually. The SBI ISAB met once in the three years of Stage 2 in May 2010.

Recommendation

15 That the ISAB meet annually in Stage 3.

Financial Management

VINNOVA/VR contributed 30 million SEK over the three years of Stage 2. Cash from industry and other partners totalled a very modest 640,000 SEK. The universities put in no cash. In kind from the universities was estimated at 10.6 million SEK and from partners at 9.7 million SEK. It would benefit the evaluators if the individual contributions of the three university partners were reported.

In kind contributions were estimated for budget purposes before the beginning of Stage 2, namely in 2008. The financial tables report exactly the same numbers for in kind outcome for the universities and for each company for each of the three years of Stage 2. Clearly this is most unlikely. The conclusion we must draw is that the Centre was not keeping track. According to the terms of Berzelli Centres, during Stage 2, university partners were supposed to contribute 5 million SEK per year *in cash or in kind* for a total of 15 million SEK. The reported contribution falls short. This is assumed to be a matter of proper bookkeeping rather than failure of the universities to appropriately support the activities of the Centre so we leave it to VINNOVA/VR to settle. Other data required in the financial tables was not provided.

Recommendation

16 That in future the university accounting authorities and VINNOVA scrutinize and approve the financial reports of the Centre on an annual basis.

Recommendations to Strengthen the Centre

In summary, our recommendations are:

1 That the Centre with its partners acting collectively articulates the key issues within the field of cognitive autonomy that the Centre will focus on and build a coherent narrative about the program of activities to address these key issues in Stage 3.

2 That the Centre with its partners acting collectively plans from early in Stage 3 for optimal effectiveness in ensuring that new science-based knowledge generated leads to new products, processes and services. This will require close attention to knowledge-transfer mechanisms and capabilities.

3 That the Centre makes more clear its vision in the field of cognitive autonomy, and translates its original mission into the new perspective appropriate to phase 3.

4 That the Centre increase its connection to clinical researchers, clinicians and representatives of the public and private partners, both in the new board and for other discussions and planning sessions.

5 That the annual report indicates separately the publications directly related to the input provided by the Centre and those studies more connected to the translational aspects that are the main focus and interest of Centre activity in phase 3.

6 That the Centre prepares a clear, consistent record of partners engagement for annual reporting and for future evaluations.

7 That the Centre increases its focus on building the level of engagement with existing and new partners.

8 That the Board Chair be replaced with someone with experience more appropriate to the new demands of Stage 3.

9 That the university representatives be replaced with individuals from the senior levels of university management.

10 That the number of industry and public partners on the Board be increased with both large and small units being represented.

11 That the Centre Director position be established at a minimum of 50% of full time

12 That the Centre Director be replaced with someone whose capabilities would be more appropriate to the more organizationally demanding requirements of Stage 3.

13 That the Management Team be enlarged and reorganized to incorporate functions such as Deputy and Associate Directors in support of the Director.

14 That the roles of secretary/administrator/financial administrator be reviewed and adequate resources be provided.

15 That the ISAB meet annually in Stage 3.

16 That in future the university accounting authorities and VINNOVA scrutinize and approve the financial reports of the Centre on an annual basis.

Recommendation to VINNOVA/VR

In conclusion:

- The evaluation team is of the opinion that the Centre is making some progress in its development as a distinctive Berzelii Centre. While the scientific work is of exceptional quality, the Centre faces a number of organizational challenges on its path to success as a Berzelii Centre. These challenges are articulated in the report above. With the expectation that the recommendations made in the report above are addressed, the evaluation team recommends continued VINNOVA/VR support.

Doug Reeve (Chair)

Jüri Allik

Giovanni Cioni

Mary O'Kane

5.4 The Uppsala Berzelii Technology Centre for Neurodiagnostics

Uppsala University, Uppsala

Introduction

On 20-21 September 2012, the Chair of the Centre Board, Lars-Erik Nyström, the Centre Director, Fredrik Nikolajeff, colleagues of the Uppsala Berzelii Technology Centre for Neurodiagnostics, PhD students, external partners, and university representtatives had meetings with the international evaluation team in Uppsala to evaluate the Centre's performance in Stage 2. The scientific expert of the evaluation team, Laura Lechuga, assisted by generalist Mary O'Kane addressed matters concerning research strategy, projects and progress. The generalist evaluators, Mary O'Kane (Chair), Alison McKay and Anja Skrivervik, together with the expert evaluator, in a subsequent meeting, addressed matters such as organisation and management, finance, interaction between industry partners and the university, and educational activities. The generalist part of this evaluation built on the extra generalist evaluation of the Centre that had taken place in September 2011 and which had noted satisfactory progress on the Centre at that stage. We thank all members of the Centre and the VINNOVA/VR team for their efforts in providing information and facilities for the evaluation.

This evaluation was unusual in having only one expert evaluator on the team due to the late decision by VINNOVA/VR to remove the intended other expert due to conflict of interest issues.

5.4.1 Long-term Vision, Mission and Strategy

The Centre has a laudable and clear Vision reflecting its aspirations in two areas of major societal need – Alzheimer's disease and chronic pain.

The Mission, as recently refined, is:

> *to identify and validate diagnostic and prognostic biomarkers for neurodegenerative diseases, achieved by uniting clinical research, innovative method development and healthcare industry expertise.*

This provides a context within which the Centre will be well placed to make a major contribution towards delivering its Vision. The delivery of effective diagnoses and treatments for the target medical conditions will require an answer to the major research question, "Which sets of biomarkers and detection techniques can together indicate the presence of target medical conditions to required levels of accuracy and reliability, and at affordable unit cost?"

To date the Centre's Strategy to deliver on its Mission appears to be one of:

a bringing into the Centre leading clinicians, researchers from a range of disciplines who are skilled in developing and refining biomarker detection systems, and

representatives of biomedical and technological companies with an interest in commercialising biomarkers and assays for the target medical conditions

b developing a shared understanding of the problems each group sees as important and then

c carrying out an agreed range of projects, revised annually, within the space covered by the Centre. These projects reflect the special expertise and background of the researchers in the Centre.

The evaluation team acknowledges that this strategy has served the useful purpose of building a shared appreciation of the technical strengths within the Centre and the technical challenges involved in biomarker development. This was required during the setup stage of the Centre but, if it aspires (as it must as a Berzelii Centre) to have scientific impact of the highest order and to be rated as a major success in international terms, it needs to adopt a strategy which provides overall scientific cohesion between the target medical conditions specified in the Vision, and the biomarkers and detection techniques being researched. Thus the Centre needs to agree on a candidate set of biomarkers for its target medical conditions, adopt agreed functional requirements for biomarker detection techniques *and* work on these in a focussed and determined manner.

Recommendation

1 That the Centre revises its scientific strategy to ensure coherence between the research activity and the Centre's Vision.

5.4.2 Scientific Quality and Productivity

In general the scientific results are of quality. In the chronic pain thematic area results are encouraging and exciting research outcomes are likely in the coming years provided that the necessary technological platforms are in place. For the Alzheimer's disease thematic area the research related to protofibrills detection and potential other biomarkers that could help in future therapeutics is especially strong. In the Exploratory research area, some excellent developments have been achieved, thanks to pushing the limits for the PLA technique and refinements of the Mass Spectrometry method.

The microdialysis improvement appears promising but a full demonstration of its capabilities is still needed. However the novel technologies, such as the label-free IR spectroscopy and the single-molecule electrical biosensor, are in too early a stage of development to clearly show any future potential for the scientific objectives of the target medical conditions. The track record of publications is good. Publications in general are of high quality and many are in highly ranked journals. However, some publications listed in the report and, therefore, attributed to the Berzelii Centre are not directly related to the thematic areas of the Centre. Productivity in terms of patents is also excellent.

Research Area, Competence Profile, People, Facilities, Critical Size

Success Criterion: Research programs are set up and carried out in collaboration between the various participants in order to solve key issues

The research programs are clearly defined and effective collaborations are in place between the participants in order to achieve results. This is more evident in some projects than others. However, as indicated above, the scientific strategy as a whole needs revision and that will influence the selection of future research projects. It will be crucial that the clinical participants become more closely involved in the definition of the technology platforms research projects.

Success Criterion: 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

Some of the research programs are at the forefront of the state of the art but others need to be refined. At this stage the Centre as a whole does not have a leading position at international level. Effective collaboration between academia and industry is evident in several areas and there is a strong drive for future commercialisation of positive results.

Success Criterion: A gender perspective in the research programme

Gender issues are properly handled and taken account of in the research program. The low number of female researchers at senior level cannot be attributed to a lack of interest by the Centre.

International Comparators with other Centres and Collaborations

The Centre has worked with its International Scientific Advisory Board (ISAB) to agree on comparator centres worldwide. This information should be useful in helping refine the details of the Centre's strategy going forward so as not to duplicate top quality work being carried out elsewhere. It should also be useful in determining which national and international centres could be future partners. International partnership is vital to realising a Vision as ambitious as the Centre's.

In addition, the Centre needs to develop international comparators for its individual thematic areas and again use this information to pursue appropriate international and national collaborations. Judicious collaboration through carefully planned joint projects and by exchange of personnel as appropriate can be an efficient and effective way to deliver on an ambitious research agenda.

Recommendations

2 That the Centre develops improved ways of articulating where its sits internationally as a Centre overall and by each thematic area.

3 That the Centre establishes strategic alliances with related laboratories around the world to fulfil its Mission and Vision more effectively.

Critiques of Research Programs and Projects - Science, Methodology and Technological Outcomes

Success Criterion: Ensuring that new science based knowledge generated leads to new products, processes and services

The decision-making mechanism for the selection of projects needs revision to ensure that the proper methodology will be applied according to the clinical needs. The availability of resources (including time and people) should be taken into account before work on new technological developments is approved.

The ISAB has recommended that the Centre increase its expertise in bioinformatics. The evaluation team strongly agrees with this.

Recommendation

4 That the Centre acquires increased capability in bioinformatics.

Processes for Idea Generation

The processes by which the Centre generates ideas and selects and monitors projects were not clear. As a result the overall scientific coherence of the Centre's research was not always apparent.

Overall Conclusion - Scientific Quality and Productivity

Overall, the scientific quality and productivity is good.

5.4.3 Centre Partners

Existing Partner Group Profile and Prospective Partner Complement

There is a good balance of large companies and SMEs. The forthcoming closure of Astra Zeneca's R&D facility in Södertälje is a concern but the Astra Zeneca representative at the evaluation meeting was reassuring about Astra Zeneca's continued participation in the Centre.

Success Criterion: Established innovation environments with effective innovation operations so that strong research and innovation milieus can be created (Centres of Excellence in Research and Innovation)

The Centre provides a vibrant and rich innovation environment which leads to many opportunities for interactions between researchers, research leaders, and clinical and industry partners. This ensures that Centre members are cognisant of both industrial and clinical needs, and available technologies that might be used in developing responses to these needs. Uncertainties surrounding relationships between the Centre and the new Science for Life initiative, an initiative which is still in its development phase, are a potential threat to this Centre and will need to be carefully managed. There is a danger this new initiative could become a distraction for the Centre. To avoid this, Science for Life with the active help of the University should be strongly encouraged to support the Centre in accelerating delivery on its core research program.

Recommendation

5 That the Centre determines ways in which it might take advantage of the Science for Life initiative and then pursues those options vigorously with Science for Life and other agencies as needed.

Processes for Needs Identification and Articulation

The open management style of the Centre and regular meetings between thematic area leaders, PIs, project leaders and industry partners ensure that all Centre members are involved in and aware of the processes for needs identification and articulation. However, these processes are unclear to external parties and this lack of clarity may have a detrimental effect on the inclusion of further partners in Stages 3 and 4; we suggest that these processes be clarified in the Stage 3 plan.

Partner Participation in Innovation and Technology Translation

Partners are involved in innovation and technology translation through participation in the Centre's projects.

Commercialisation Successes and Benefits to Society

The Centre is delivering some promising results but these have not yet been comercialised, in part due to cost and complexity issues. It is encouraging that the Centre is tapping into commercialisation expertise in partner companies such as GE Healthcare.

5.4.4 Organisation and Management of the Centre

The Board's Role

The Board and Management Team were extensively involved in the evaluation process and well represented at the meetings with the evaluation team. As stated in the Interim Evaluation of 2011, "it is clear that the Board and Management Team are functioning very well ... The Board Chair has shown real leadership".

The Board has implemented an effective structure for quality control. As well as its ISAB, it has established a three-person Steering Group of academic/industry experts from Swedish organisations to provide assessments to the Board on project progress and associated budget issues. This Steering Group has been an important feature of the Centre's success to date and, as such, needs to be highlighted in communications about the Centre such as its website.

The Board Chair and the Director presented a clear picture of the challenges facing the Centre for Stage 3. One of the most pressing is the need for cash particularly to recruit new PhD students.

Success Criterion: The activities are overseen by 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

The Centre meets this criterion particularly well.

Success Criterion: Did the Board ensure that the Centre implemented recommendations of previous evaluations prior to secure long-term effects and international excellence?

The Board has been diligent in ensuring recommendations of previous evaluations have been addressed to good effect.

Recommendation

6 That the Centre Board secure significantly increased cash contributions for Stage 3.

Management Team Structure, Processes and Performance

The Management Team is appropriately structured with unusually good processes for encouraging effective discussion among the different themes and projects of the Centre.

The International Scientific Advisory Board (ISAB)

The ISAB met most recently in May 2012 and has been providing considerable guidance to the Centre in the lead up to this evaluation.

In keeping with the identified need for the Centre to increase its emphasis on bioinformatics, the ISAB could profitably be augmented with an expert in this field.

Recommendation

7 That the Centre considers adding an expert in bioinformatics to the ISAB.

Relationship to the University and to University Units

Success Criterion: The majority of work is conducted at a university to achieve a critical size and interaction between research, post-graduate education and graduate education

The Centre is located at a world-class university.

The Rector met with the evaluation team and indicated the University's strong and ongoing support for the Centre. Despite this the Centre has had difficulty securing cash from the Medical Faculty. The evaluation team was told that the Medical Faculty has indicated that it will be willing to provide cash support when the structure of the relationship between the Science for Life initiative and the Centre has been resolved, a matter discussed above which needs urgent resolution.

Recommendation

8 That the University increase its cash support to enable the Centre to recruit more PhD students for Stages 3 and 4.

Communication and Promotion

The Centre is addressing communication issues well at the national level but could profitably consider ways to increase its international visibility as it transitions to Stage 3.

Financial Management

The financial reporting was clear and all questions posed at the evaluation meeting were answered well. The Centre's innovative use of its limited financial resources is laudable.

Success Criterion: 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

It was disappointing to see that none of the industrial partners have yet made any cash contributions to the Centre and the University and hospital cash contributions have been in the form of a co-funded post between the hospital and the Faculty of Medicine rather than free cash that could be spent at the Centre's discretion.

5.4.5 Training Personnel of High Competence

Recruiting and Developing People of International Competence and Experience

The Centre is structured in such a way that senior scientists serve in the Board and as theme leaders, while the projects themselves are led by postdocs and junior researchers.

The evaluators commend the Centre policy of recruiting promising junior scientists as project leaders. This has been a key factor in enabling an easily accessible transdisciplinary daily working environment where all Centre stakeholders interact in a fruitful way. Moreover, this way of structuring the research allows these junior researchers to mature by building up valuable scientific, education and management expertise. This new generation of highly qualified researchers is one of the very valuable outcomes of the Centre. The Centre should actively promote the career developments of its researchers.

Recommendation

9 That the Centre actively promotes the career development of its researchers, including project leaders and PhD students.

Mobility of Personnel between University and Industry

The interaction between the stakeholders of the Centre has been achieved more by regular meetings and discussions than by mobility. This is commended by the evaluation team as these interactions are fruitful. However, the Centre would benefit from more international mobility, both in and outbound. Sending young researchers abroad helps them in their career building, both by enabling them to acquire new expertise and by enlarging their networks. Hosting researchers from other teams would significantly enlarge the international visibility of the Centre by promoting its unique transdisciplinary working environment.

Contributions to University Education

The Centre's main contribution to education is the training it provides to its PhD students. It has also fostered a platform technology course proposed by two project leaders.

Gender Perspectives and training for senior roles in research

Success Criterion: An equality opportunity environment with active promotions for an equal balance of gender

The Centre clearly promotes an equal opportunity environment, and the genders are well balanced at the junior scientist level and in the Board. There is however an imbalance at the senior faculty level which is difficult for the Centre to change. The Centre could take opportunities provided by international mobility schemes to invite female senior scientists for short, medium or long stays at the Centre. This would both mitigate the gender imbalance at senior faculty level and increase the international visibility of the Centre.

5.4.6 Recommendations to Strengthen the Centre

In summary, our recommendations are:

1 That the Centre revises its scientific strategy to ensure coherence between the research activity and the Centre's Vision.

2 That the Centre develops improved ways of articulating where its sits internationally as a Centre overall and by each thematic area.

3 That the Centre establishes strategic alliances with related laboratories around the world to fulfil its Mission and Vision more effectively.

4 That the Centre acquires increased capability in bioinformatics.

5 That the Centre determines ways in which it might take advantage of the Science for Life initiative and then pursues those options vigorously with Science for Life and other agencies as needed.

6 That the Centre Board secure significantly increased cash contributions for Stage 3.

7 That the Centre considers adding an expert in bioinformatics to the ISAB.

8 That the University increase its cash support to enable the Centre to recruit more PhD students for Stages 3 and 4.

9 That the Centre actively promotes the career development of its researchers, including project leaders and PhD students.

5.4.7 Recommendations to VINNOVA/VR

The Centre has responded energetically and constructively to recommendations of recent evaluations. It is now travelling well and has the potential, if given appropriate support, to be very successful example of a Berzelii Centre. Releasing the funding previously withheld would now be appropriate.

Recommendations

- That VINNOVA/VR release the funding that was withheld from the Centre.
- That VINNOVA/VR develop a formal policy governing partnership arrangements between the new Strategic Initiatives and the Berzelii Centres.

5.4.8 Conclusion

The evaluation team is of the opinion that the Centre is a growing and actively improving example of a Berzelii Centre with a very promising future. With the expectation that the above recommendations are addressed, the evaluation team recommends continued funding.

Mary O'Kane (Chair)

Laura Lechuga

Alison McKay

Anja Skrivervik

Appendix A: Guidelines

Background

The Programme background

This document constitutes the guidelines for the evaluation of four Centres with financing through the Berzelii Centres programme. The programme aim is 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 society. The programme is also a link in the governmental effort to develop university-industry interaction.

The overall objective of the programme is to promote sustainable growth in Sweden. This means that the programme should create new, internationally competitive concentrations of highly qualified scientists with the task of conducting long term 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 Berzelii Centres programme deals with early stage industrial research closely related to basic research. The research activities involve increasing 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 potentially be utilised and further developed, e.g. by the set-up and development of new high-tech and/or research-based companies.

The Berzelii Centres programme requires a substantial engagement from industrial and/or public partners, especially after phase two. The financial conditions over the potential 10 year period for 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%).

VR as well as VINNOVA are both running other research programmes. For more information please visit the homepage for each organisation i.e. www.vr.se and www.VINNOVA.se.

Main goals of the evaluation

The main intentions of the evaluation are to give input:

- to the development of each of the Centres
- to the model contract negotiations
- to decisions for all parties about Stage 3
- to other specific actions needed for next phase

Evaluation background

The Berzelii Centres programme is 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, research institutes and/or public services together with a university constitute the parties of a Centre. The parties contribute jointly to the Centre's research programme, financially or in the form of active work. 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 expected financial level in Stage 3 and 4. The reason for this relatively long start up phase is that the Berzelii Centres Programme is aimed towards areas where the industry hesitates to enter into active collaboration due to e.g. need of well verified new science based 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	Research Council (VR)	VINNOVA	University	Industrial and Public Partners
1	1 2	5 MSEK 5 MSEK	2 MSEK 4 MSEK	> 8 MSEK	Ca ½-1 MSEK (recommendation)
2	3 4 5	15 MSEK	15 MSEK	> 15 MSEK	2-4 MSEK 2-4 MSEK 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 (available during Stage 3-4):			4 MSEK		

In order to fulfil the main purpose of the evaluation (to give an input to the negotiations, decisions about Stage 3, 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 2. Three Centres will be evaluated in Sept 2011 and one Centre both in Sept 2011 and in Aug/Sept 2012, see Appendix 1 and 2.

The evaluation team

Each Centre will be evaluated by a team of international experts. Two scientific experts in the team will have the competence and the task to evaluate the Centre from a scientific point of view, except for the Uppsala Berzelii centre evaluation in September 2011. 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. 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 at least 4 suitable scientific experts (2 male and 2 female). All of these experts have clear declarations of no existing conflicts of interest with the corresponding Centre. From that list VR and VINNOVA will decide on whom to invite. The interim evaluation of Uppsala Berzelii centre will only be for half a day and the centre will only be evaluated by the “generalist” team at this occasion. The Uppsala Berzelii centre will have a full evaluation fall 2012.

The task of the evaluators

This second evaluation of the Centres will be carried out during the fifth year of the centre’s operation. For Uppsala Berzelii the evaluation in September 2011 is only an interim evaluation that mainly will focus on status of recommendations from evaluation of Stage 1. The Uppsala Berzelii Centre will have a full evaluation fall 2012.

Its primary purpose is to evaluate the output from the centres, in the form of scientific and potential industrial results.

Thus, the evaluation will focus on scientific and potential industrial achievements to date and that could be produced within a year.

The evaluators will also form an opinion concerning the approach and measures taken so far by individual Centres to judge the potential for their long-term development. This includes both the major results that the centre wishes to achieve and see in Stage 3 and 4, but also vision beyond Stage 4. Evaluators may offer suggestions for remedial action to enhance the prospects for long-term Centre success.

As a basis for the evaluations of the Berzelii Centres VR/VINNOVA has formulated a number of success criteria (see Appendix 3). Centres are asked to prepare reports (prior to the evaluation) according to the guidelines in Appendix 4. For Uppsala Berzelii Centre see Appendix 5.

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:

- Research Area, Competence Profile and Critical Size
- Centre Partners (from the point of view of research contribution)
- Research Program and results

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

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

- Impact on partners
- Financial Report for Stage 2

- Organisation and Management of the Centre.
- Personnel of High Competence

and

- 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 the Berzelii Centre programme.

Organisation of the evaluation

The composition of the evaluation team is decided by VR/VINNOVA. 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 Centre to VINNOVA[1]
- the operational plan of Stage 2[2] , and
- the evaluation report of Stage 1[3]
- the last report from the International Scientific Advisory Board

These documents will be distributed by VR/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 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 final interview is performed (Day 2).

The four Berzelii Centres will be evaluated during September 2011, and one centre will also be evaluated in the fall of 2012, see Appendix 1.

The report of the evaluation team is due approximately 2 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,

[1] For Uppsala Berzelii Centre see Appendix 5. For the other three centres see Appendix 4.
[2] If the operational plan has been upgraded during Stage 2 this new version should be distributed to VINNOVA not later than July 18th 2011.
[3] Reeve, Douglas. et.al. First Evaluation of the Berzelii Centra Programme and its centres EXSELENT, UCFB, UPPSALA BERZELII, SBI BERZELII. VINNOVA Report VR 2009:03

- representatives from the industrial and/or public partners,
- university staff incl. representatives from the Vice-Chancellor´s office,
- research leaders and/or program directors/principal investigators active within the Centre, and
- doctoral students

VR/VINNOVA staff will be present at the site visits. The staff will act as administrators and will not take active part in the evaluation, but may add information during work sessions.

Each evaluation will take place over two days and will be divided into two sessions:

Scientific Expert Evaluation Session (Day 1, usually 0900 – 1500): the scientific experts meet parties from the Centres. The Centre should prepare a 20- minute introductory presentation of the overall scientific strategy and output, and approximately 70 minutes of presentation of key scientific work, subdivided as the Centre sees fit, leaving ample time for questions and discussion. The session will be chaired by one of the experts who will have responsibility for guiding the pace and direction of the interview.

Generalist Evaluation Session (Day 2, usually 0900 - 1200): the "generalist" experts together with the scientific experts meet parties from the Centre. At the beginning of Day 2, the evaluation team **(without the presence of the VR/VINNOVA representatives or the parties of the Centre)** will meet during roughly 1 hour with up to 10 PhD students in the Centre. For Uppsala Berzelii, see Appendix 1 and 5. For the "Generalist" Evaluation Session, the Centre should prepare a presentation on the overall centre vision, mission, organization and operation of not longer than 20 minutes, leaving ample time for questions and discussion. This should include a short summary of the Day 1 presentation with emphasis on research output. The session will be chaired by one of the generalists who will have responsibility for guiding the pace and direction of the interview. See detailed schedule in Appendix 1.

Centre arrangements in connection to the evaluation

The Centres are asked to propose at least four scientific experts for the evaluation and send the suggestions to VINNOVA not later than March 31, 2011. It is important that the Centres can guarantee no conflict of interest with the proposed experts.

The basic documentation, the Centre report (including the financial 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. For Uppsala Berzelii the template for evaluation in September, see Appendix 5.

The Centre report should be submitted electronically (pdf-files) to VINNOVA and be available at VINNOVA no later than July 18th 2011.

Financial reporting from each centre shall be submitted to VINNOVA no later than July 4th 2011, except for Uppsala Berzelii Centres evaluation in September 2011. The centre must be prepared to have dialog with VINNOVA concerning potential clarify-cation and provide, if necessary, additional information to the financial report during two weeks after this submission. Final financial report should be sent to VINNOVA no later than July 18th 2011.

In addition to the Centre report, the Centre will provide to VINNOVA the operational plan for Stage 2 and the last report of the International Scientific Advisory Board. These documents, along with the evaluation report of Stage 1, will be provided to the evalu-ation team by VINNOVA. If the operational plan has been upgraded during Stage 2 the centre is responsible to send this as pdf-files to VINNOVA no later July 18th 2011.

Furthermore the Centres should:

- book locations for the interview sessions (Day 1 and Day 2)[4]
- book a location for the evaluation team to meet that is close to the evaluation location for 2 hours after each day's evaluation.
- invite Centre representatives to the interview sessions
- inform VINNOVA of the address of the location
- arrange lunch for the evaluation team and the administrative (VR/VINNOVA) staff (chamber separee) during Day 1 and if necessary Day 2. Inform VINNOVA about the arrangements.
- provide paper copies of presentations at the start of evaluation interviews
- provide name cards for the table for all participants during the interviews
- arrange that the evaluation team can meet with up to 10 PhD students during Day 2 before the second evaluation session, preferably in the evaluation location, or close to this location.[5]
- provide access to password-protected parts of centre web sites where project plans and reports should be available.

Finally the Centre leader should confidentially review, with respect to facts, the first draft of the evaluation report from the evaluation team and deliver suggestions for revision to VINNOVA within a week of receiving the draft report.

Report of the evaluation team

The work of the evaluation teams shall result in a report on the Berzelii Centres evaluated during autumn 2011. Each centre evaluation report should be the consensus view of the evaluation team. The evaluation team shall be unanimous in its recommendations.

[4] For Uppsala Berzelii only one day, see schedule Appendix 1.
[5] Not for Uppsala Berzelii evaluation in September 2011.

Each report will have a section dealing with each Centre as outlined above. Another section should deal with comments on the concept of the Berzelii Centres programme, including discussions of structural and organisational problems.

Following the submission of the final report from the evaluators, VR/VINNOVA will request a discussion with each Centre, represented by at least the Chairman of the Board and the Director, regarding the recommendations received from the evaluation team. This discussion should be completed before contracts are signed to ensure that the recommendations be implemented prior to and during Stage 3. The focus should be in terms of present and potential output, financial support and of more structural matters. In the discussion priorities of actions should be included.

Handling and distribution of the evaluation report

The report from the evaluation team will be presented to VR/VINNOVA. The report 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.

Remuneration to the evaluators

VINNOVA will pay for all costs for evaluation team members including travel, accommodation etc. According to VINNOVA´s standards for international evaluations, remuneration of € 1200/day is paid to each member on the evaluation team for the evaluation of a specific Centre.

Appendix 1: Time schedule for evaluations

August 31 – Sept 2, UPSC in Umeå

Wednesday August 31, 2011

20:00 - 22:00 Introductory meeting for the UPSC Evaluation Team (Generalists and Experts) in Umeå

Thursday September 1, 2011

09:00 - 12:00 UPSC Scientific Expert Evaluation Session at Umeå University

12:00 - 13:00 Lunch

13.00 - 13:15 Preparation for the next session

13:15 - 15:00 UPSC Scientific Expert Evaluation Session at Umeå University

15:10 - 17:00 Meeting between UPSC Scientific and Generalist Evaluators

17:00 - 22:00 UPSC Scientific report writing

Friday September 2, 2011

09:00 - 09.50 Meeting with up to 10 UPSC PhD students at Umeå University

10:00 - 12:00 Generalist Evaluation Session at Umeå University

12:15 - 22:00 Work session for the evaluation team including transportation to Stockholm, lunch, UPSC report writing and dinner

September 4 – September 6, Exselent in Stockholm

Sunday September 4, 2011

20:00 - 22:00 Introductory meeting for the Exselent Evaluation Team (Generalists and Experts)

Monday September 5, 2011

09:00 - 12:00 Exselent Scientific Expert Evaluation Session at Stockholm University

12:00 - 13:00 Lunch

13.00 - 13:15 Preparation for the next session

13:15 - 15:00 Exselent Scientific Expert Evaluation Session at Stockholm University

15:10 - 17:00 Meeting between Exselent Scientific and Generalist Evaluators

17:00 - 22:00 Exselent Scientific report writing and dinner

Tuesday September 6, 2011

09:00 - 09.50 Meeting with up to 10 Exselent PhD students at Stockholm University

10:00 - 12:00 Generalist Evaluation Session at Stockholm University

12:15 - 15:00 Work session for the evaluation team, lunch and Exselent report writing

17:00 - 22:00 Work session for the evaluation team including Exselent report writing and dinner

September 5 – September 7, SBI in Stockholm

Monday September 5, 2011

20:00 - 22:00 Introductory meeting for the SBI Evaluation Team (Generalists and Experts)

Tuesday September 6, 2011

09:00 - 12:00 SBI Scientific Expert Evaluation Session at Karolinska Institutet

12:00 - 13:00 Lunch

13.00 - 13:15 Preparation for the next session

13:15 - 15:00 SBI Scientific Expert Evaluation Session at Karolinska Institutet

15:10 - 17:00 Meeting between SBI Scientific and Generalist Evaluators

17:00 - 22:00 SBI Scientific report writing and dinner

Wednesday September 7, 2011

09:00 - 09.50 Meeting with up to 10 SBI PhD students at Karolinska Institutet

10:00 - 12:00 Generalist Evaluation Session at Karolinska Institutet

12:15 – 22:00 Work session for the evaluation team, lunch, SBI report writing and dinner

September 7 – September 8, Uppsala Berzelii in Uppsala

(extra Generalist evaluation)

Thursday September 8, 2011

Stockholm

08:00 - 10:00 Introductory meeting for the Uppsala Berzelii Evaluation Team (Generalists)

Uppsala

13:00 - 15:00 Uppsala Berzelii Generalist Evaluation Session at Uppsala University

15:00 - 15:30 Meeting between Generalists and VR/ VINNOVA representatives

15:30 - 16:00 Meeting with the Centre management and Uppsala University representative (if necessary)

16:00 - 17:00 Travel to Stockholm, work session for Generalist Evaluators and Generalist report writing, dinner

Fall 2012, Uppsala Berzelii in Uppsala

(complete evaluation)

Wednesday September 19, 2012

20:00 - 22:00 Introductory meeting for the Uppsala Berzelii Evaluation Team (Generalists and experts)

Thursday September 20, 2012

09:00 - 12:00 Uppsala Berzelii Scientific Expert Evaluation Session at Uppsala University

12:00 - 13:00 Lunch

13.00 - 13:15 Preparation for the next session

13:15 - 15:00 Uppsala Berzelii Scientific Expert Evaluation Session at Uppsala University

15:10 - 17:00 Meeting between Uppsala Berzelii Scientific and Generalist Evaluators,

17:00 - 22:00 Uppsala Berzelii Scientific report writing and dinner

Friday September 21, 2012

09:00 - 09.50 Meeting with up to 10 Uppsala Berzelii PhD students at Uppsala University

10:00 - 12:00 Generalist Evaluation Session at Uppsala University

12:15 - 22:00 Work session for the evaluation team, lunch and Uppsala Berzelii report Writing

Appendix 2: Delivery dates for reporting

Financial report to VINNOVA from centres	August 1, 2012
Evaluation report to VINNOVA from centres	August 20, 2012
Final version of financial report to VINNOVA from centres	August 20, 2012
Operational plan Stage 2 to VINNOVA (if revised)	August 20, 2012
Last report from the International Scientific Advisory Board	August 20, 2012
Evaluation report to centres from VINNOVA	2 weeks after evaluation
Fact finding review by centres of evaluation report	within 1 week after that
Discussions of recommendations in evaluation report	Oct – Nov 2012 (before signed center agreement)
Signed agreement and Operational plan Stage 3 to VINNOVA	Dec 31, 2012

Note: Agreement must be accepted by VINNOVA before the signing process is started. The operational plan for Stage 3 must be accepted by VINNOVA prior to being submitted to VINNOVA

Appendix 3: Success Criteria for Berzelii Centres Programme

In brief, a successful Berzelii Centre is characterised by the following:

- Research programmes are set up and carried out in active collaboration between the various participants in order to solve key issues.
- 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.
- Ensuring that new science based knowledge generated lead to new products, processes and services.
- An equality opportunity environment with active promotions for an equal balance of gender.
- The majority of work is conducted at a university 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 overseen by 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.
- Established in innovation environments with effective innovation operations so that strong research and innovation milieus can be created (Centres of Excellence in Research and Innovation).
- A gender perspective in the research programme.

Appendix 4: Instructions and template for Centre Reports to the Evaluation Team

Each of the Centres to be evaluated has to 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 11. It is recommended that other sections of the report refer to and emphasize these basic facts in order to put them in the relevant context. The Centre Report should be co-authored by all members of the management team of the centre, e.g. they are all signatories of the report, and the report should be approved by the board prior to release (to VINNOVA).

The number of pages below is maximum!

0.0 Title page bearing the signatures of the co-authors and, indicating approval, the signature of the chair of the board

0. Summary (max 1 page), Popular version for non-specialist audience

- Progress and prospects of the Centre, important qualitative and quantitative scientific based results for Swedish society, highlights, breakthroughs, etc.

0. 1 Summary (2 pages),

- Progress and prospects of the Centre, important qualitative and quantitative scientific based results for Swedish society, highlights, breakthroughs, etc.
- Provide a summary of how results have been utilized by scientific society and by partners.

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, see Appendix 3.

2. Research Area, Competence Profile and Critical Size (4 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 program.
- 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 (4 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).
    - How many years they have been active partners of the Centre
- Concerning the overall strategy and considering the Centre as a whole:
    - describe and give examples for the potential way in which key issues could be identified by partners to stimulate needs-driven research for the next coming phases.
    - describe and give examples for the potential mechanisms for translation of science based knowledge to innovation and into new products, processes, and services.
    - Give examples of measures taken or that will be taken to achieve strong links and integration between academia and companies/public services, and among companies/public services.

4. Research Program and results (15 pages)

- Provide an overview of the research program and its major results.
- Provide brief descriptions of the research projects, led by either academic or industrial partners. In addition to basic science and methodology, describe the need the research addresses, the question to be answered and the industrial 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.).
- Changes in research direction

5. Impact on partners (2 pages)

- Provide an overview of how results (if already available) have been utilized by partners to establish new products, processes and services.
- Provide brief descriptions of the current plans for implementation of results.
- Provide a description of how the partners anticipate to use and implement the results from the Centre.

6. Financial Report for Stage 2 (2 pages)

- Discuss any concerns regarding financing matters.
- Describe existing sources of non-Centre funds supporting related research.
- Describe the nature of in kind contributions, both personnel, equipment, testing, etc. It is important to be as complete as possible in reporting of in kind contributions so that the evaluators can see the true magnitude and understand the nature of the in kind contributions.

7. Organisation and Management of the Centre (3 pages)

- Describe the role, relationship and activities of the organizational units in the Centre, e.g Board of Directors, Management team, International Scientific Advisory Board or other.
- Comment on the scientific/industrial leadership of the Centre.
- Describe and give examples for the development processes of the Centre, e.g. result implementation in industry/public sector, project selection, project review, project termination etc. Describe how often these different processes are employed in the Centre activities.
- What steps are taken to stimulate innovation processes from ideas/results to products and services? Give examples and indicate how often these processes have been employed during the last stage.
- Describe the status and role of the Centre vis-à-vis the:
    - partners
    - university organisational units.
    - central administration.
    - the faculty.
    - other centres.
- Comment on things that work well and things that don't. Give examples.
- Describe the communication procedures to Centre participants and partners?
- Describe measures and give examples taken to provide equality of opportunity, particularly but not only, from a gender perspective.

8. Personnel of High Competence (2 pages)

- Describe and give examples for measures taken to stimulate mutual personal mobility between the industrial/public services partners and academic milieus.
- Describe and give examples for 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 scientific/industrial 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?
- What measures have been taken to improve equal opportunities and gender balance?

9. Plans for Development (5 pages)

- Describe the plan for development of the Centre over the next three years (Stage 3) in relation to the long-term objectives. Concentrate on scientific results and implementation of results in industry/public sector.

10. 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.

11. Facts about the Centre

a *CV* in summary of the Centre Director (2 pages)

b *Centre Partners*
TABLE 1: List Centre Partners (Companies/public sector units), the name, position, and location of the key contact

c *Board of Directors*
TABLE 2: List the name, position, company, and location of the members of the Board of Directors

d *Management Team*
TABLE 3: List the name, position in the University, role on the team for the persons in the Management Team

e *International Scientific Advisory Board (ISAB)*
TABLE 4: List the name, position, university/company, location for the members of the ISAB. List the dates of all ISAB meetings in Stage 2.

f *Research Program*
TABLE 5: Research Projects and Staff (for each project: project title, project leader, staff and student names, start/end date, and person-years by year (include company and public sector personnel also)).

g *Publication and Presentation Activity*
TABLE 6: Publications: Categorise the publications under the numbered headings, in the following order:

1 Peer-reviewed articles
2 Peer-reviewed conference contributions (the results of which are not presented in other publications)
3 Review articles, book chapters, books
4 Patents (give date and registration)
5 Open access computer programs that you have developed
6 Popular science articles/presentations

Not: Include only articles (or equivalent) that have been published or accepted for publication. Include work funded by VR and 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 VR and VINNOVA. Also include other closely related work funded by other means, indicating that other funding was used by an asterisk*.

i *Financial Reports* (use the templates in Appendix 6 (in the attached Excel file "Financial Report for Stage 2"))
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.
(Provide access to password-protected parts of centre web sites where project plans and reports should be available.)

Appendix 5: Only relevant for Uppsala Berzelii Centre (Interim evaluation fall 2011)

The main purpose of the interim evaluation is to secure that all the recommendations from evaluation of Stage 1 are in progress and to evaluate the status of each recommendations as well as the decision from VR/VINNOVA "FÖRLÄNGNINGSBESLUT, Vetenskapsrådet dnr 349-2005-8874, VINNOVA dnr 2005-02735".

VR/VINNOVA wants to have max 20 page report that responds on the status on each individual recommendation in the evaluation report[6] and status of the requirements in VR/VINNOVA decision "FÖRLÄNGNINGSBESLUT". This report will be sent to the evaluation team (only generalists).

The Centre should:

- book location for the interview session
- book a location for the evaluation team to meet that is close to the evaluation location for 1 hour after the evaluation
- invite Centre representatives to the interview sessions
- inform VINNOVA of the address of the location
- provide paper copies of presentations at the start of evaluation interview
- provide name cards for the table for all participants during the interview

[6] Reeve, Douglas. et.el. First Evaluation of the Berzelii Centres Programme and its centres EXSELENT, UCFB, UPPSALA BERZELII, SBI BERZELII. VINNOVA report VR 2009:03. PP 37-47.

Appendix 6, Templates for the Financial Statements of Stage 2 (will be sent to the Centre as MS Excel)

Berzelii Centre — Fyll i denna ruta endast på denna sida. övriga fylls i automatiskt!

Dnr:
Year 3: 200x-xx-xx - - 200x-xx-xx
Year 4: 200x-xx-xx - - 200x-xx-xx
Year 5: 200x-xx-xx - - 200x-xx-xx
Date outcome year 5: 2011-xx-xx

Please indicate the actual time of year 5 that cover the outcom, budget figures should cover Stage 2!

Table T8: Overall resources available (cash and in kind) Include all contributions that supports Centre activities

This table should present the overall resources available (cash as well as in-kind) for center activities, one row for each financial source.

Affiliation	Year 3						Year 4						Year 5						Summary Stage 2					
	Budget (k SEK)			Outcome (k SEK)			Budget (k SEK)			Outcome (k SEK)			Budget (k SEK)			Outcome (k SEK)			Budget (k SEK)			Outcome (k SEK)		
	Cash	In kind	Total	Cash	In kind	Total	Cash	In kind	Total	Cash	In kind	Total	Cash	In kind	Total	Cash	In kind	Total	Cash	In kind	Total	Cash	In kind	Total
VINNOVA																								
VR																								
University																								
Industrial & Public Partners																								
Partner A																								
Partner B																								
Part....																								
Sum																								

Berzelii Centre	
Dnr:	
Year 3:	200x-xx-xx - - 200x-xx-xx
Year 4:	200x-xx-xx - - 200x-xx-xx
Year 5:	200x-xx-xx - - 200x-xx-xx
Date outcome year 5:	2011-xx-xx

Table 9: Overall Expenditures

List all expenses for the centre at an aggregated level.

	Year 3						Year 4					
	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												

	Year 5						Summary Stage 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												

Berzelii Centre	
Dnr:	
Year 3:	200x-xx-xx - - 200x-xx-xx
Year 4:	200x-xx-xx - - 200x-xx-xx
Year 5:	200x-xx-xx - - 200x-xx-xx
Date outcome year 5:	2011-xx-xx

Table 10: Research Personnel

Only indicate personel over 5 % FTE

List all personnel working in the centre. Preferably group them in order to use the information in other parts of the report

					Year 3						Year 4						Year 5					
					Budget			Outcome			Budget			Outcome			Budget			Outcome		
Name	Sex	Affiliation (financing source)	Degree, year of degrees, university	Category title, status / position	Degree of activity in the center	Cash contr.	In kind contr.	Degree of activity in the centre	Cash contr.	In kind contr.	Degree of activity in the center	Cash contr.	In kind contr.	Degree of activity in the centre	Cash contr.	In kind contr.	Degree of activity in the center	Cash contr.	In kind contr.	Degree of activity in the center	Cash contr.	In kind contr.
	F / M	University / Partner	Only degree for Partner	Prof / Postdoc / PhD-stud / Manager etc	% of full time	kSEK	kSEK	% of full time	kSEK	kSEK	% of full time	kSEK	kSEK	% of full time	kSEK	kSEK	% of full time	kSEK	kSEK	% of full time	kSEK	kSEK

Berzelii Centre	
Dnr:	
Year 3:	200x-xx-xx - - 200x-xx-xx
Year 4:	200x-xx-xx - - 200x-xx-xx
Year 5:	200x-xx-xx - - 200x-xx-xx
Date outcome year 5:	2011-xx-xx

Table 11: Project expenditures Include all contributions that supports the Centre activities

Follow up that resources have been used for learning activities and communication (5% of VINNOVA funding), list of projects and financial size

	Year 3						Year 4						Year 5						Summary Stage 2					
	Budget (kSEK)			Outcome (kSEK)			Budget (kSEK)			Outcome (kSEK)			Budget (kSEK)			Outcome (kSEK)			Budget (kSEK)			Outcome (kSEK)		
	Cash	In kind	Total	Cash	In kind	Total	Cash	In kind	Total	Cash	In kind	Total	Cash	In kind	Total	Cash	In kind	Total	Cash	In kind	Total	Cash	In kind	Total
Management of center																								
Communication																								
Learning activities																								
Reserved for NEW PROJECTS																								
Projects (subprojects included)																								
Sum																								

Berzelii Centre		
Dnr:		
Year 3:		200x-xx-xx - - 200x-xx-xx
Year 4:		200x-xx-xx - - 200x-xx-xx
Year 5:		200x-xx-xx - - 200x-xx-xx
Date outcome year 5:		2011-xx-xx

Table 12: Related Research Grants

List grants granted, applied for and under preparation - project title, total amount applied for, duration of project, funding source, date of application and any comment you might have

Only indicate grants that are bigger than € 70 000 and explicitly strengthens the center activities without directly financing it.

Project Title	Status	Total amount applied for	Duration of project	Funding source	Date of application	Comments
	Granted / Applied / Under preparation/ Rejected	kSEK				

Appendix B: The Evaluation Team

Generalist Experts

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

Professor Robert E Johnston
Monash University
AUSTRALIA

Professor Mary O'Kane
NSW Chief Scientist & Engineer
AUSTRALIA

Professor Alison Mc´Kay
University of Leeds
ENGLAND

Professor Anja Skrivervik
École polytechnique fédérale de Lausanne (EPFL)
SWITZERLAND

Scientific Experts

UPSC Berzelii Center

Professor Isabel Allona
Universidad Politecnica de Madrid
SPAIN

Professor Teemu Teeri
University of Helsinki
FINLAND

EXSELENT

Professor Russel E. Morris
University of St Andrews
SCOTLAND

Professor Ann Chippindale
University of Readings
ENGLAND

Uppsala Berzelii

Professor Laura Lechuga
Centre for Nanoscience and Nanotechnology
SPAIN

Stockholm Brain Institute Berzelii

Professor Jürik Allik
University of Tartu
ESTONIA

Professor Giovanni Cioni
University of Pisa
ITALY

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 wrote their name on the list, shich means that some people participating at the interviews, are not found below.

UPSC Berzelii: Participants during the Scientific Expert Session 2011-09-01

Centre representatives

Cathrine Belllini	Prof, Vice director	Berzelii Centre UmU
Torgny Näslund	Prof, Task force 1 leader	Berzelii Centre SLU
Ove Nilsson	Director	Berzelii Centre SLU
Björn Sundberg	Prof., Task force 2 leader	Berzelii Centre SLU
Stefan Jansson	Prof, Vice director, Task force 3 leader	Berzelii Centre Umu
Ulrika Egertsdotter	Adj prof, Technical Platform leader	Berzelii Centre SLU

Evaluation team

Teemu Teeri	Evaluator	Univ of Helsinki
Isabel Allena	Evaluator	CBGP-UPM/IMA

VR and VINNOVA staff

Erik Litborn	Programme manager	VINNOVA
Mårten Jansson	Head of life sciences dept	VINNOVA
Maud Quist	Head of evaluation unit	VR
Emma Olsson	Programme manager	VR

UPSC Berzelii: Participants during the PhD student Session 2011-09-02

Centre representatives

Corene Berger	PhD student	SLU/UPSC
Joakim Bygdell	PhD	SLU/UPSC
Pernilla Lindén	PhD student	SLU/UPSC
Stefano Petra	PhD student	UmU/UPSC
Christian Kiefer	PhD student	UmU/UPSC
Melis Kucukoglu	PhD student	SLU/UPSC
Emma Hörnblad	PhD student	SLU/UPSC
Christine Ratke	PhD student	SLU/UPSC
Sacha Escamy	PhD student	UmU/UPSC

Evaluation team

Douglas Reeve	Evaluator	Univ of Toronto
Mary O'Kane	Evaluator	NSW Chief Scientist & Engineer
Robert Johnston	Evaluator	Monash University
Teemu Teeri	Evaluator	Univ of Helsinki
Isabel Allena	Evaluator	CBGP-UPM/IMA

UPSC Berzelii: Participants during the Generalist Expert Session 2011-09-02

Centre representatives

Jan-Erik Hällgren	Member of steering com.	SLU
Mats Johnsson		SweTree Technologies AB
Carl Kempe		Holmen AB
Marianne Sommarin	Member of steering com.	UmU
Lena Gustafson		UmU
Lisa Sennerby-Forse		SLU
Cathrine Bellini	Vice director	UmU
Stefan Jansson	Vice director	UmU
Martin Strand	Scientific secretary	SLU
Ove Nilsson	Director	SLU

Evaluation team

Douglas Reeve	Evaluator	Univ of Toronto
Mary O'Kane	Evaluator	NSW Chief Scientist & Engineer
Robert Johnston	Evaluator	Monash University
Teemu Teeri	Evaluator	Univ of Helsinki
Isabel Allena	Evaluator	CBGP-UPM/IMA

VR and VINNOVA staff

Erik Litborn	Programme manager	VINNOVA
Mårten Jansson	Programme manager	VINNOVA
Jonas Brändström	Chief strategy officer	VINNOVA
Maud Quist	Head of evaluation unit	VR
Emma Olsson	Programme manager	VR

Exselent: Participants during the Scientific Expert Session 2011-09-05

Centre representatives

Karin Häggbom Sandberg	Secretary	SU
Mats Johnsson	Deputy center manager	SU
James Shen	Area manager	SU
Bruce Lyne	Board chairman	KTH
Amber Mace	PhD student	SU
Niklas Hedin		SU

Lennart Bergström	Area manager	SU
Armando Cordova	Project manager	OrganoClick AB
Timofei Privalov	Project leader	SU
Pär Holmberg	Project leader	Cambrex Karlskoga AB
Belen Martin-Matute	Project leader	SU
Jan Bäckvall	Area manager	SU
Xiaodong Zou	Centre director	SU
Sven Hovmöller	Project leader	Calidris AB
Jens Åhman	Industrial partner	AstraZeneca AB
Gunnar Svensson	Head of dept MMK	SU
Junliang Sun	Project leader	SU
Hans Adolfsson	Dean chemistry section	SU
Robert Corkery	Project leader	YKI
Ingrid Hegbom Ekman	Steering board	Cambrex Karlskoga AB

Evaluation team

Russel Morris	Evaluator	Univ of St Andrews
Ann Chippindale	Evaluator	Univ of Reading

VR and VINNOVA staff

Erik Litborn	Programme manager	VINNOVA
Mats Jarekrans	Programme manager	VINNOVA
Anna Oback	Legal officer	VINNOVA
Mårten Jansson	Head of life sciences dept	VINNOVA
Margareta Eliasson	Evaluation unit	VR
Emma Olsson	Programme manager	VR

Exselent: Participants during the PhD student Session 2011-09-06

Centre representatives

Andreas Persson	PhD student	Univ of Stockholm
Madeleine Warner	PhD student	Univ of Stockholm
Agnieszke Bertonsieria	PhD student	Univ of Stockholm
Fabian Carson	PhD student	Univ of Stockholm
Ken Inge	PhD student	Univ of Stockholm
Amber Mace	PhD student	Univ of Stockholm
Asto Ojuva	PhD student	Univ of Stockholm
Mikaela Gustafsson	PhD student	Univ of Stockholm
Tom Willhammar	PhD student	Univ of Stockholm
Christian Mille	PhD student	YKI

Evaluation team

Douglas Reeve	Evaluator	Univ of Toronto
Mary O'Kane	Evaluator	NSW Chief Scientist & Engineer

Robert Johnston	Evaluator	Monash University
Russel Morris	Evaluator	Univ of St Andrews
Ann Chippindale	Evaluator	Univ of Reading

Exselent: Participants during the Generalist Session 2011-09-06

Centre representatives

Karin Häggbom Sandberg	Secretary	Stockholm university
Mats Johnsson	Deputy centre manager	Stockholm university
Bruce Lyne	Chair board	KTH
Xiaodong Zou	Centre manager	Stockholm university
Ulf Eriksson	tf VD	SU Holding
Hans Adolfsson	Board member, dean of Chemistry	Stockholm university
Peter Alberius	Board member	YKI
Jenny Fäldt	Board member	Nobel Biocare AB
Jan E Nyström	Board member	AstraZeneca AB
Ingrid Hegbom Ekman	Board member	Cambrex Karlskoga AB
Malte Lilliestråle	Board member	Biokol & Co KB
James Shen	Area manager	Stockholm university
Jan Bäckvall	Area manager	Stockholm university
Lennart Bergström	Area manager	Stockholm university
Gunnar Svensson	Head of dept MMK	Stockholm university
Kåre Bremer	Rector	Stockholm university
Pär Holmberg	Project leader	Cambrex Karlskoga AB

Evaluation team

Douglas Reeve	Evaluator	Univ of Toronto
Mary O'Kane	Evaluator	NSW Chief Scientist & Engineer
Robert Johnston	Evaluator	Monash University
Russel Morris	Evaluator	Univ of St Andrews
Ann Chippindale	Evaluator	Univ of Reading

VR and VINNOVA staff

Erik Litborn	Programme manager	VINNOVA
Mats Jarekrans	Programme manager	VINNOVA
Anna Oback	Legal officer	VINNOVA
Margareta Eliasson	Evaluation unit	VR
Maud Quist	Head of evaluation unit	VR

SBI: Participants during the Scientific Expert Session 2011-09-06

Centre representatives

Hans Forssberg	Director	SBI/KI
Lars-Göran Nilsson	PI	SBI/SU

Torkel Klingberg	PI	SBI/KI
Anders Lansner	PI computer platform	SBI/KTH
Svante Nyberg	Industry representative	SBI/AstraZeneca AB
Joakim Tedroff	Industry representative	SBI/NeuroSearch AB
Martin Ingvar	PI/Dean of research KI	SBI/KI
Fredrik Ullén	Director of studies	SBI/KI
Balazs Gulyas	Repr PET centre	SBI/KI
Rochellys Diaz Heijtz	Head of translational Behavioral neruroscience Platform	SBI/KI
Ivanka Savic Berglund	PI	SBI/KI
Åsa Hedberg	Scientific coordinator	SBI/KI
Andrea Varrone	Senior researcher KI PET	SBI/KI

Evaluation team

Jüri Allik	Evaluator
Giovanni Cioni	Evaluator

VR and VINNOVA staff

Mattias Lundberg	Programme manager	VINNOVA
Elisabet Nielsen	Programme manager	VINNOVA
Alexander Hantosi	Legal officer	VINNOVA
Mårten Jansson	Head of life sciences dept	VINNOVA
Sten Söderberg	Evaluation unit	VR
Emma Olsson	Programme manager	VR

SBI: Participants during the PhD student Session 2011-09-07

Centre representatives

Veit Kubik	PhD	SU
Mominul Islam	PhD	KI
Sissela Bergman Nutley	Post doc	KI
Alva Appelgren	PhD	KI
Sofia Martinsen	PhD	KI
Örjan de Manzano	Post doc	KI
Stina Söderqvist	PhD	KI
Martin Schain	PhD	KI

Evaluation team

Douglas Reeve	Evaluator	Univ of Toronto
Mary O'Kane	Evaluator	NSW Chief Scientist & Engineer
Robert Johnston	Evaluator	Monash University
Jüri Allik	Evaluator	Univ of Terter
Giovanni Cioni	Evaluator	Univ of Pisa

SBI: Participants during the Generalist Session 2011-09-07

Centre representatives

Fredrik Ullén	Director of studies SBI research school	KI
Joakim Tedroff	Partner	NeuroSearch AB
Anders Lansner	SBI computer platform	SU & KTH
Camilla Modéer	Vetenskap & Allmänhet	SBI Board
Harriet Wallberg Henriksson	President of KI	KI
Hans Forssberg	Director SBI	KI
Åsa Hedberg	Coordinator	SBI/KI

Evaluation team

Douglas Reeve	Evaluator	Univ of Toronto
Mary O'Kane	Evaluator	NSW Chief Scientist & Engineer
Robert Johnston	Evaluator	Monash University
Jüri Allik	Evaluator	Univ of Terter
Giovanni Cioni	Evaluator	Univ of Pisa

VR and VINNOVA staff

Erik Litborn	Programme manager	VINNOVA
Mattias Lundberg	Programme manager	VINNOVA
Elisabet Nielsen	Programme manager	VINNOVA
Alexander Hantosi	Legal officer	VINNOVA
Mårten Jansson	Head of life sciences dept	VINNOVA
Sten Söderberg	Evaluation unit	VR
Emma Olsson	Programme manager	VR

Uppsala Berzelii: Participants during the Interim evaluation 2011-09-08

Centre representatives

Anders Larsson	PI	Academic hospital/UU
Torsten Gordh	Theme leader Pain	Academic hospital
Lars Baltzer	PI	ModPro AB
Magnus Wetterhall	Project leader AD, Pain and Explorative Res.	UU
Håkan Engqvist	Member of board	UU
Anna Carlsson	PhD student Pain	UU
Jonas Bergquist	Theme leader Expl. Res.	UU
Susanne Fabre	Board representative	AstraZeneca AB
Ulf Landegren	Member of Berzelii	UU/Olink
Lars-Erik Nyström	Chair Berzelii Board	GE Health Care AB
Titti Ekegren	Coordinator	UU

Fredrik Nikolajeff	Director	UU

Evaluation team

Douglas Reeve	Evaluator	Univ of Toronto
Mary O'Kane	Evaluator	NSW Chief Scientist & Engineer
Robert Johnston	Evaluator	Monash University

VR and VINNOVA staff

Erik Litborn	Programme manager	VINNOVA
Eva Pålsgård	Programme manager	VINNOVA
Sven Stafström		VR
Emma Olsson	Programme manager	VR

SBI: Participants during the Continued evaluation Generalist Session 2012-03-08

Centre representatives

Anders Lansner	Manager SBI computer platform	SU & KTH
Lars Wieslander	Board member	SU
Joakim Tedroff	Board member	NeuroSearch AB
Fredrik Ullén	Director of studies SBI research school	KI
Lilian Wikström	Board member	KI Innovations
Torkel Kringberg	PI SBI	KI
Clara H Gumpert	Board member	Sthlm County Council
Håkan Nyqvist	Board member	HN Pharma AB
Lars Farde		AstraZeneca AB
Martin Ingvar	PI SBI, Dean of Research	KI
Hans Forssberg	Director SBI	KI
Camilla Modéer	Vetenskap & Allänhet	SBI Board
Harriet Wallberg Henriksson	President of KI	KI
Karin Blomberg	Dept of CNS	Head of Finance/Adm
Åsa Hedberg	Coordinator	SBI/KI

Evaluation team

Douglas Reeve	Evaluator	Univ of Toronto
Mary O'Kane	Evaluator	NSW Chief Scientist & Engineer
Jüri Allik	Evaluator	Univ of Terter
Giovanni Cioni	Evaluator	Univ of Pisa

VR and VINNOVA staff

Erik Litborn	Programme manager	VINNOVA

Elisabet Nielsen	Programme manager	VINNOVA
Alexander Hantosi	Legal officer	VINNOVA
Sten Söderberg	Evaluation unit	VR
Emma Olsson	Programme manager	VR

Uppsala Berzelii: Participants during the Scientific Session 2012-09-20

Centre representatives

Eva Åkesson	Vice Chancellor	Uppsala University
Fredrik Nikolajeff	Centre Director	Uppsala University
Titti Ekengren	Centre Coordinator	Uppsala University
Thomas Müller	Researcher	Uppsala University
Magnus Wetterhall	Researcher	Uppsala University
Anna Carlsson	PhD student	Uppsala University
Kim Kultima	Researcher	Uppsala University
Torsten Gordh	Pain Theme Leader	Uppsala University
Klas Hjort	PI Exploratory Techn	Uppsala University
Lars Hillered	PI Exploratory Techn	Uppsala University
Daniel Ivansson	GEHC representative	GE Health Care
Lars Österlund	Industry representative	Molecular Fingerprint
Frida Ekholm Pettersson	Project Leader	Uppsala University
Anders Larsson	Project Leader Pain	Uppsala University, University Hospital
Lars Lannfelt	Thematic Leader AD	Uppsala University
Kia Höglund	AZ representative, Researcher	AstraZeneca
Thomas Norberg	Project Leader	Uppsala University
Masood Kamali	Project Leader	Uppsala University
Mats Gullberg	Partner representative	Olink AB
Charlotte Ersson	Researcher	UAS
Amelie Eriksson Karlström	Board, Steering Board	KTH
Camilla Russel	PhD student	Uppsala University

Evaluation team

Laura Lechuga	Evaluator	CINZ-CSIC
Mary O'Kane	Evaluator	NSW Chief Scientist & Engineer

VR and VINNOVA staff

Erik Litborn	Programme manager	VINNOVA
Mats Jarekrans	Programme manager	VINNOVA
Sten Söderberg	Evaluation unit	VR
Emma Olsson	Programme manager	VR
Mårten Jansson	Observer	VINNOVA
Elisabet Nielsen	Observer	VINNOVA

Uppsala Berzelii: Participants during the PhD student Session 2012-09-21

Centre representatives

Anna Carlsson	PhD student, project leader	UU Dept of pharmaceutical biosciences
Anne-Li Lind	PhD student	UU Dept of Surgical Sciences, Analytical Chemistry & Immunology, Genetics & Pathology
Harald Lund	PhD student	KI Dept of Clinical Neuroscience (formerly AZ)
Torgny Undin	PhD student	UU Dept of Chemistry BMC
Camilla Russel	PhD student	UU Dept of Immunology, genetics and pathology
Di Wu	PhD student	UU Dept of Immunology, genetics and pathology
Astrid Gumucio	PhD student	UU Dept of public health and caring science
Marcus Sjödin	PhD student	UU Dept of chemistry
Gucci Jijuan Gui	PhD student	UU Dept of Immunology, genetics and pathology
David Malmström	PhD student	UU Dept of chemistry

Evaluation team

Laura Lechuga	Evaluator	CINZ-CSIC
Mary O'Kane	Evaluator	NSW Chief Scientist & Engineer
Anja Skrivervik	Evaluator	EPFL
Alison Mc'Kay	Evaluator	University of Leeds

Uppsala Berzelii: Participants during the Generalist Session 2012-09-21

Centre representatives

Fredrik Nikolajeff	Centre Director	Uppsala University
Titti Ekengren	Centre Coordinator	Uppsala University
Maria Sörby	Site Director	SciLifeLab/UU
Johan Asker	Legal adviser	Legal Affairs division UU
Torsten Gordh	Pain Theme Leader	Uppsala University
Pär Gellerfors	CEO	BioArctic
Lars Lannfelt	Professor	Uppsala University
Andreas Dahlin	Project leader Microdialysis	Uppsala University
Kim Kultima	Bioinformatics	Uppsala University
Anders Larsson	PL Professor	Uppsala University

		Hospital
Lars-Eric Larsson	Dep Director	UU Innovation
Mats Gullberg	CTO	Olink AB
Lars Baltzer	CEO	Modpro AB
Ulf Danielsson	Vice rector	Uppsala University
Lars-Erik Nyström	Chairperson	GE Healthcare Life Sciences
Håkan Engqvist	Dean external affairs, board member	Uppsala University
Camilla Svensson	Board member, steering Group	Karolinska Institutet
Mats Inganäs	Board member	Gyros AB
Brita Winsa	Board member	Akademiska hospital
Hugh Salter	Board member	AstraZeneca AB
Amelie Eriksson Karlström	Board member, steering group	KTH
Bryndis Birnir	Board member	Uppsala University medfac
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