**BEING BOLD**

**TASK FORCE UPDATE**

Starting this January three new Bagadilico task forces have been given the green light. The money goes to projects that are simply “too promising” to remain on the waiting list. The task force funding model is designed to be a flexible instrument that can support research springing from collaborative ideas within the Bagadilico family. The three projects approved for 2013 certainly fit the bill.

Malin Parmar is one Bagadilico scientist who, together with colleagues, received funding for a project that will hopefully add further weight to the ongoing cell therapy programs at Lund University.

The strong development in producing neurons ready for transplantation has been widely documented, from directed differentiation of human embryonic stem cells to the direct conversion from skin cell to brain cell. However, tools for measuring the transplanted cells ability to connect to the synaptic circuitry in the host brain has been unsatisfactory. The new task force aims to use the unique qualities of the rabies virus to analyze the level of connectivity achieved after transplantation. Being able to accurately evaluate the efficiency of the grafting process is key for moving cell therapy closer to the clinic.

Another task force will use cutting-edge technologies to measure dopamine firing patterns in the early stages of a genetic PD mouse model. The model is believed to display a more accurate portrayal of PD pathology than other models where toxins are used to mimic advanced stages of the disease. The downside is that the characteristics of the disease are mildly expressed and therefore hard to measure.

- In this project we will develop a new combination of two techniques to control and measure chemical signalling in the living animal. To control the release of the neurotransmitter dopamine we use a modern technique called optogenetics. By exposing the cells in the brain to laser light we can control the release of dopamine. The dopamine neurotransmission is then measured by another technique called amperometry. Combined, these two techniques allow us to study the changes in dopamine signalling and will hopefully help us determine what goes wrong when the mutated protein is present, says Martin Lundblad.

If successful, the project may shed new light on the first changes in PD pathology and could therefore pave the way for new therapeutic targets.

The third task force is focused on the development of a new biomarker for PD. Read more about it in a feature article in this newsletter.

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**NEWS IN BRIEF**

**ALPHA-SYNUCLEIN BLOCKS NEUROPROTECTIVE EFFORT**

In a report published in the December issue of *Science Translational Medicine*, Bagadilico scientists reveal that a promising neurotrophic factor, GDNF, is unable to protect nigral dopamine neurons in one type of Parkinson’s animal model. The model, programmed for alpha-synuclein–induced neurodegeneration, showed that the intracellular response to GDNF is blocked in dopamine neurons where alpha-synuclein has been overexpressed.

The study also reports that this blockade was accompanied by reduced expression of the transcription factor Nurrl. By then overexpressing Nurrl in the affected cells, first author Mickael Decressac and senior author Anders Björklund reversed the blockade of the GDNF response providing near-complete protection of nigral dopamine neurons against alpha-synuclein toxicity.

**Click Here to read the study**

**ATOMIZED BODY**

On February 15th Bagadilico’s Cultural Science Research Team invites to a book release and a seminar aimed at highlighting the often overlooked interconnectedness between society, culture and biomedicine. In the book ‘The Atomized Body’ the authors examine the relations between culture, society and bioscientific research in an effort to show how our bodies’ singularized atoms indeed still are socially and culturally embedded. In today’s medicine, the biosciences are entangled with state power, commercialism, and cultural ideas and expectations, as well as with the hopes and fears of individuals. Therefore, biomedicine and biotechnology also reshape our perceptions of selfhood and life.

Speakers at the event will be the editors of the book as well as Torkel Klingberg, René Rosfort and Elin Bommenel. Keynote speaker Torkel Klingberg has received international acclaim for his research on the development and plasticity of working memory.

**To register, email Jens.Persson@med.lu.se. For further details, Click Here**

**APPLY FOR “CREATIVE ENVIRONMENTS” FUNDING**

One of the goals of the Faculty of Medicine’s strategic plan is to stimulate and support the translational research through more integration between basic research, clinical research and health science research. Furthermore, the Faculty also aims to support young researchers. The faculty has decided to support “creative environments” to assist young researchers to establish themselves at the faculty. In each “creative environment” there will be financial support of 50% for a coordinator.

Funding has been set aside for 3-4 coordinator positions out of which one will be in the area of Parkinson’s disease due to a donation. Given the faculties different conditions for different areas (basic, clinical and health science research) the appropriate form of financing/employing the coordinator for the Creative environments will be judged from environment to environment.

Researchers and research teams are invited to submit their applications to set up “Creative Environments” by February 11th at the latest.

Applications are to be sent, in English, to Anna.Arstam@med.lu.se
Most people would probably say they could spot a Parkinson patient from a distance. Easily. The truth is that a lot of the time even experienced neurologists struggle to diagnose patients with advanced Parkinson's-like symptoms. The complexity of the disease, and the individuality with which it is manifested in different patients, often lead to less-than-perfect medication, sometimes with troubling side effects. Also, the not knowing will leave most patients with a restless feeling of uncertainty. Efforts to find a biological footprint of the disease, one that can be tested through a simple sample, still elude scientists to this day. Bagadilico scientists Oskar Hansson, Johan Jakobsson and Maria Björkqvist have teamed up to investigate a potentially revelatory biomarker, a tiny non-coding molecule called microRNA.

The human genome contains around 1000 microRNAs, strands of cellular material that play a key role in regulating gene expression and cellular metabolism. The sought after qualities in a biomarker - survival in spite of temperature changes and durability while stored long-term - is precisely what has made microRNA such a promising candidate. A pilot project with encouraging results, looking at microRNA in cerebrospinal fluid, has prompted the launch of a new Bagadilico task force kicking off this month.

Taking a Chance
The nature of the project is exploratory in the sense that the idea was first born only in the past year. The risk-friendly funding model provided by Bagadilico has made it easier to bring a promising idea with exciting merits to fruition in a very short time span. Without the targeted money from Bagadilico the involved scientists all agree this idea might never have made it to the laboratory bench, at least not for quite some time.
Johan Jakobsson explains.

- It’s truly a great opportunity for us. The experiment is quite expensive and would most likely not have been done without this support. The Bagadilico framework has also helped create a natural platform for this collaboration, because this is truly a translational collaboration.

The translational chain stretches from the expertise on the basic analytical methods performed by Johan Jakobsson’s group to Maria Björkqvist’s team’s skills in measuring microRNA in plasma. Finally, Oskar Hansson provides patient material and information on the actual needs of patients informed by the clinical reality. Johan Jakobsson’s team of scientists are the real microRNA aficionados within the project. The group has been working with the miniscule molecule for over five years and will be mainly responsible for the experiments that will detect, measure and analyze levels of microRNA in relation to microRNA function.

Recent technological developments have made it possible to quantify the levels of thousands of RNA species in a single sample in an unbiased fashion. This development has made it cheaper and considerably more time efficient to perform experiments of this nature. Without the state-of-the-art PCR-technology in place the project would simply not have been possible to pursue. It certainly wasn’t a decade ago, says Oskar Hansson.

- The fast progress in new technologies makes this research particularly exciting right now. If you would have tried to do this a few years ago it would have cost you your whole research grant only to look at some samples, but now you can do it at a reasonable cost. These methods allow us to reliably study the full expression of microRNAs in cerebrospinal fluids (CSF), which is easier than characterizing the full CSF proteome. We can now get a picture of how most micro-RNAs are expressed in CSF from different individuals with different diseases. Because of this, we believe that studying microRNA levels holds a greater potential in terms of finding something new, versus proteomic approaches.

The samples for analysis will be taken from the CSF of Parkinson’s and Huntington’s patients. Today, no biomarkers exist for these diseases in the CSF. The patient cohort is already identified and if the screenings indicate well-defined disease related microRNA processes, as the group believes, the road to the clinic may not be that long.

- Of course this project is in its embryonic phase but hopefully, and I believe so, we will know in a year’s time the real promise of microRNA as a potential CSF biomarker. If this is the case we would be one step closer towards bigger studies, says Maria Björkqvist.
What are the key benefits of Bagadilico for scientists involved in our research environment?

- BAGADILICO brings about many types of benefits. From a practical viewpoint, it has created, and supports, a number of technical platforms. From an intellectual/educational viewpoint, we are exposed to a large number of scientific topics and approaches, ranging from stem cell biology to the societal implications of our research. Since all these topics are gathered within the same thematic umbrella, basal ganglia disorders, ‘cross-fertilizations’ and multidisciplinary projects become feasible. From the point of view of research funding, BAGADILICO supports, albeit partially, a number of collaborative research projects of the type that would have been difficult to fund from other sources. Finally, being part of an organization with a strong trademark facilitates getting individual research grants and career advancements for everybody.

In your view, what are the strengths and weaknesses of how Bagadilico is organized?

- Our strengths are many: the diversity of topics and approaches, the large number of successful young researchers, the gender equality, our research tradition, our well-defined administrative structure (which includes precise rotation schemes for board members and coordinators/vicecoordinators). Paradoxically, some of our strengths are also our weaknesses. For example, since we support so many different projects, we are not investing in a few, easily indentifiable long-term goals. Our program may therefore seem unfocused when compared to that of other Linnaeus consortia. Moreover, our pluralistic type of leadership requires a lot of time for proposals to be examined and approved at different levels, time that is taken away from our research work.

What do you want to say to Bagadilico members who do not feel as they are part of the research environment?

- Are there really BAGADILICO members who feel that way?
Perhaps the problem is different. There is now a general debate on whether or not Linnaeus consortia fulfill any important function. The answer obviously depends on what we do with these consortia. One point is, however, uncontroversial: no researcher today is regarded as an isolated ‘renaissance genius’. We are shaped by our interactions with peers and by our research milieu, for better or for worse. All the funding agencies for which I serve as a reviewer ask us to evaluate not only the merits of the individual applicant, but also the quality of his/her research environment. Being surrounded by excellent people and supported by strong infrastructures is regarded as a predictive index of success. Defending and developing a functional research milieu is therefore really worth the effort, even from a very individualistic perspective.

**How do we move forward in strengthening the Bagadilico brand among our members?**

- Good and well-attended seminar series and workshops certainly help to strengthen our identity, and our competence. I would like to take the opportunity to thank the organizing committee of the BAGADILICO Young Investigators Talks: they have been doing an excellent job so far, and I hope that they will continue in 2013! Other than that, it is important that the research sponsored through the BAGADILICO work packages proceeds successfully, that milestones are achieved, manuscripts published, excellent follow-up projects and synergistic collaborations developed. These are probably the two most important fronts at the moment.

**Bagadilico is funded for another six years, quite a long time. When we take stock in 2018, what do you hope are the main accomplishments of this research environment?**

- First of all, the level of funding for the next 6 years has not been set; it will depend on our evaluation in 2014. I take the opportunity to explain that, during 2013 we shall prepare a long report of all our activities and submit it to the Swedish Research Council, which will send it out for external review. At the beginning of 2014, the external reviewers (a committee consisting of five international experts) and a program director from the research council will visit us in Lund, and listen to our presentations. This will serve as a basis for their written evaluation. Now, back to your question: when we take stock in 2018, I hope that we shall have achieved all the main goals in our research program (which are stated in the work packages’ descriptions) and that we will have managed to create a functional, strong research milieu, one of the strongest within our University, and in Sweden.

**Is there anything else that you would like to add as we embark upon a new year with Bagadilico?**

- I want to wish everybody strength and success in their endeavours, Let us all keep up the good work, folks! The returns will be manifold!
What brought you to the world of science to start with?

- Disatisfaction, haha. I was not satisfied with my work as a doctor. I confusedly felt that it did not help me develop in the way I had wished. So I decided to give research a try.

Who was influential in that process? Family members, early key mentors?

- None of the above. Everybody was very skeptical about this career choice. They thought I was leaving a safe path, i.e. working as a doctor, to embark on a difficult venture, for which I wasn’t sufficiently prepared.

Where are other areas of science that tempted you during your formative years?

- Since I was a neurologist resident, I knew that I would want to work with animal models of neurological disease. I was sometimes tempted by basic molecular biology, but after some reflection, it became clear to me that I would do a much better job as a ‘rat neurologist’.

What makes you think as a scientist? What drives you to keep going?

- I think that science is, at the same time, the most exciting and the hardest area of human endeavor. It builds on the type of competence and commitment that stand above people’s cultural differences. Bullshitting is very short-lived here. My drive is to be able to contribute new scientific knowledge with the honesty and the strength of our work.

What are your goals as a scientist, short term and long term?

- Short-term: to successfully complete all of our current projects, including the most challenging ones. Long-term goals are probably two. First off that our work will impact on the way Parkinson’s disease is treated. Secondly, that our work will uncover some fundamental mechanism of brain plasticity, which is hijacked by the disease process and not restored, or further disrupted, by the current therapies.

Where are your goals the same when you started out as a scientist?

- My goals were coarse then. The realization that I would actually be able to work as a scientist came late in my career path.

What is your proudest moment as a scientist?

- It was probably the time when we showed that rats with 6-OH-DA-lesions responded to anti-parkinsonian and antidyskinetic medications in a way that was totally aligned with the results obtained in non-human primate models of Parkinson’s disease, and largely also in patients. To reveal these cross-species similarities, we developed behavioural testing routines that were largely inspired by the clinical literature. These methods have now become main stream, but they were initially looked upon with skepticism by many influential ‘experts’. When we published our first set of data (Lundblad et al. Eur J Neurosci 2002), we felt that we were about to create a paradigm shift in the field. And this proved to be the case.

What are the challenges of working and living in a non-native country?

- First of all, moving abroad brings many advantages – not only challenges. But since you are asking about challenges, I’ll reply that the biggest one for me has been, coping with a larger degree of ‘baseline insecurity’. This is not something that I am really aware of every day, but I realize that my mindset is slightly different, both ‘lighter’ and bolder, when I go back to Italy. Having said that, I’d like to emphasize that it was very good for me to move to Sweden, and that I am very grateful to everybody who...
helped this happen.

How do you view your role as a research leader, working to inspire and guide younger scientists?

- It is an enormous privilege to mentor and work with young talented people. Along with the privilege, I feel an enormous responsibility. I try to be both a good scientific supervisor and a good mentor. These are not skills that one can learn from a book, they come mainly from experience, which also includes mistakes. As a scientific supervisor, I try and convey enthusiasm and motivation, but I am also very clear about the need for hard work and commitment. I also try and keep my students well informed about political and economical aspects connected with the research work.

What’s your experience of being a female scientist in a male-dominated world? Have you identified changes over the last decade?

- Yes, there have been changes. If one looks at our Medical Faculty, it is quite obvious that the percentage of female PhD students has been growing, and that the number of women holding leading administrative positions has increased greatly over the past few years. Yet, EUROSTAT investigations continue to show a wide disparity between the percentage of female PhD students (46%) versus full professors (15%) across all academic disciplines in Europe, along with a scarce female representation among the awardees of major research grants. As a consequence, female scientists are not well represented within those selected circles of eminent people who influence large-scale decisions on research trends and funding priorities.

Is that an important discussion to have?

- Yes! We must achieve a better understanding of the factors that apparently prevent so many talented women from making it to the top. If we understood these factors, we could recognize them in time and counteract them at different levels. Why should we care? I believe in the importance of pluralism in science. There should be space for different ways of being ‘excellent’ and for different types of personalities and approaches. I am convinced that this pluralism will reduce the risk of short-sighted investments, pushed through by a few individuals, and will promote well-grounded research policies, with larger long-term benefits to both science and society at large.