BAG INVITED LECTURE SERIES KICKS OFF

As we kick off another semester BAGADILICO raises its profile by rolling out a new lecture series, the BAGADILICO Invited Lecture Series, BILS. The series aims to offer Bagadalics top-notch lectures in the specific areas of experimental and translational science for Parkinson's and Huntington's disease. It is also an effort to build on the BAGADILICO brand and will serve as a natural meeting point for all members. First out, on August 27th, was world-renowned expert on adult neurogenesis, Fred "Rusty" Gage.

Organizers of the series are new Vice Coordinator Johan Jakobsson and Professor Anders Björklund. They encourage all Bagadalics to offer suggestions on possible speakers for the schedule now being laid out for the upcoming two semesters.

- We want fellow researchers who have international guests visiting, thesis opponents or collaborators for example, to consider whether they could be suited as guest speakers, and then contact us if this is the case. You could of course also suggest certain lecturers to come and speak for that purpose alone, if they fit our profile and our budget. Anders and I are very welcome to suggestions from everyone who is part of BAGADILICO.

During his recent lecture, Professor Gage talked about the state of our knowledge on adult neurogenesis: what we think we know and are probably right about, what we think we know but are probably wrong about, and what we do not know well at all. He also discussed the fact that the relationship of neurogenesis to a variety of diseases is now being investigated, and that there seems to be some correlations that are indeed reliable. However, he concluded that we are yet to find out if changes in adult neurogenesis are a cause or consequence of disease.

The next speaker will be David Engblom, Wallenberg Academy Fellow and ERC Starting Grant awardee. He will give his talk "Inflammation, aversion and reward" on September 18th, 16.00 in Segerfalksalen. Coordinator Angéla Cenci-Nilsson took the initiative to bring Mr Engblom to BAGADILICO.

- David Engblom is one of the young scientists who is currently getting a lot of prestigious grants. He is working on molecular genetic determination of psychiatric disorders and the role of inflammation.

For more information on David Engblom's lecture, CLICK HERE

NEWS IN BRIEF

CSRT WORKSHOP - “MOBILIZING STEM CELLS: PRODUCTION AND TOURISM IN THE HUMAN STEM CELL ECONOMY”

On the 17th of October 2013, the CSRT workshop “Mobilizing Stem Cells: Production and Tourism in the Human Stem Cell Economy” will take place at the Pufendorf Institute, Lund. At this event, you will have the opportunity to listen to and discuss with invited international researchers from a variety of disciplines. The workshop is part of the newly initiated project “The human stem cell: Hope, health, bio economy”, consisting of an interdisciplinary team of researchers at Lund University from the fields of ethnology, visual studies, neurology, medical genetics, and political science.

The project focuses on societal, cultural, political and ethical implications of hESC research and its applications. Questions will be addressed regarding how everyday work in research on hESCs interplays with ideas about biomedicine and how new biomedical research brings about the economization of the body, and sometimes develops into legal grey areas such as stem cell tourism. The workshop will also concern how stem cell tourism affects the growth of social norms with ordinary people, and how that in turn affects the legitimacy of hESC research.

Please register your interest in participating to diana.jerman@med.lu.se, no later than 17th of September!

ROHIT SACHDREVA DEFENDS THESIS

On September 6th Rohit Sachdreva will defend his thesis “Visualization and manipulation of microRNA in neural cells”. MicroRNA has, since being identified in 1993, been shown to orchestrate the right level proteins in cells. Alterations of levels of certain microRNA have also shown to have implications in various neurodegenerative diseases such as Parkinson’s and Alzheimer’s. In his thesis Rohit Sachdreva presents three papers where he has tried to evolve tools to visualize distinct microRNAs within the cell, thereby being able to differentiate between cell types. He has also used tools to to manipulate microRNA levels in cells to look for the consequences.

For more information on the thesis, CLICK HERE

BAGADILICO RESEARCHERS HELP LAUNCH PD WEBSITE

Several BAGADILICO researchers have been instrumental in the launch of a new Swedish website called ParkinsonGuiden. The site went live last month and is a result of a collaboration between health care workers, health care organizations (VIMD, SWEMODIS), researchers, pharmaceutical industry and patient organizations. It provides easily accessible information for both people with PD and their caregivers, but it is also an important tool for caregivers.

The main goals of ParkinsonGuiden are: To help guide Parkinson’s patients and their families in their daily lives. To increase awareness of Parkinson’s disease in society in order to work on the behalf of the patient’s right to suitable care and a better quality of life. To incorporate the Swemodis guidelines into all education promoting the right to equal care for all Parkinson’s patients.

Bagadalics Per Odin, Peter Hagell, and Håkan Widner have been part of the project from its inception. To visit the website, CLICK HERE
It was really by chance, at least to a certain degree, that we stumbled on that initial discovery. What happened was that I was working on gene modification of cells and we had developed a technique where you could use viruses to put genes inside inert cells. We then transplanted that gene into the brain to look at the function. From that work I conceived of the idea of using just regular skin fibroblasts and transplanting them, making a trophic factor. At that time a new factor had just been cloned called FGF, this is in the early 90’s.

So we got an assay of fetal young hippocampal neurons in a dish and we thought that maybe this new factor could cause these neurons to induce axons to grow. But when we put the fibroblasts together with the neurons they suddenly began to divide, proliferate, and we thought we had discovered some new gene maybe by modifying the fibroblast.

Then one of my post-docs said that the FGF trophic factor might be concentration dependent. And sure enough, at low doses of FGF-2 you send out axons but higher concentrations induces proliferation.

The groundbreaking discovery of new brain cells being born in the dish really set things in motion. Early on, the group was quietly confident that the finding was transferrable to in vivo experiments. Large parts of the scientific community, however, were not. Years of tireless experimenting to prove that adult neurogenesis occurred inside the human brain, now started. The next defining moment came through collaboration with Peter Eriksson, a Swedish scientist and medical doctor, previously a post-doc with Rusty’s group.

A chemical that marks dividing cells in order to track the growth of cancer tumors, turned out to be the final piece of the puzzle. During
a short period of time this chemical, BrdU, tags all cells that has divided, throughout the body. Even years later you can go back an track that cell to see what it became, where it went and what it did. The issue now, was to get patient material and also to prove that the cells dividing in the brain were actually turn-
ing into new neurons. We knew we had to give further weight to our discov-
- er. As one post-doc said to me, “If it doesn’t happen in humans, it really doesn’t mat-
ter”. So, with Peter’s help we got patient material from a clinical trial were patients had been tagged with this chemi-
cal. This was really an exciting time!

- We tried to get at the problem from as many an-
gles as possible using multiple techniques, also inviting people from outside our lab, people who were often quite skeptical, asking if they could see the same things that we saw. In the end we were able to confirm that in the area we were examining, new cells were being born and they were actually turning into neurons.

“Rusty” Gage has since gone on to do exciting work on the back of this discovery, mainly following two different paths. One pathway has been focused around finding the cellular and molecular pathways for how this could possibly happen in the brain.

The other, more recent path is looking at function. What is the consequence? Why does this occur? Why would the brain evolve in such a way that this happens in this one area of the brain, the hippocampus, retaining the capacity for making new memories.

Incidentally, it was the sea horse-shaped hippocampus that first grabbed his attention in college, putting him on the path that he still finds himself on today.

- In the summer of my second year in college I was working on the hippocampus related to epilepsy, working on different models of epi-
lepsy, doing electrophysiolo-

- Part of the allure is of course solving mysteries but really the brain itself is such an interesting organ. When you realize that we’re commu-
icating as two separate entities, you and me right now. That simple fact is wildly interesting in itself, I think.
As BAGADILICO approaches half time, with a key evaluation to take place in January, signs are suggesting that the once sprawling research environment is truly beginning to gel. I talked to Coordinator Angela-Cenci Nilsson and new Vice Coordinator Johan Jakobsson about some new initiatives for the upcoming semester and the evolution of BAGDILICO.

**One new feature**, intended to raise the BAGADILICO profile, is the new lecture series: Bagadilico Invited Lecture Series, BILS.

- This is a more active and coherent program of invited lectures. We are currently working on a schedule for this and the next semester. Our goal has been to provide intellectual stimuli to our researchers but also to give more visibility to BAGADILICO as a consortium, says Angela Cenci-Nilsson.

**Johan Jakobsson** has been instrumental in developing the lecture series. Together with Anders Björklund he is also responsible for setting the schedule and looking over suggestions for guest speakers.

- We want fellow researchers who have international guests visiting, thesis opponents or collaborators for example, to consider whether they could be suited as guest speakers, and then contact us if this is the case. You could of course also suggest certain lecturers to come and speak for that purpose alone, if they fit our profile and our budget. Anders and I are very welcome to suggestions from everyone who is part of BAGADILICO.

- This initiative is supposed to bring in speakers who are working on areas relevant to BAGADILICO, with a strong focus on experimental and translational research on PD and HD. We believe that there is an opportunity to be taken advantage of here, says Johan Jakobsson.

**This fall** will also see the continuation of the BAGADILICO Young Investigators Talks, a program that puts emphasis on communication amongst young researchers within the network. Angela Cenci-Nilsson speaks passionately about the necessity for this initiative, underlining the importance of dialogue and feedback during the early stages of a scientific project.

- The program is meant to be a bottom-up exercise, where doctoral students and post-docs present their data when they’ve come far
enough to tell an interesting story or demonstrate a new methodological approach. This is truly a great opportunity for young researchers. It is in the process of presenting your work to others that you can really appreciate the impact of your research and get valuable feedback on how to move forward. Everyone should take advantage of this opportunity!

When BAGADILICO took its first tentative steps in 2008, it was difficult to foresee how this consortium would work out. The broader goals of interdisciplinary collaboration seemed perhaps a tad lofty to many of the presumed contributors.

Clearly, there was no handbook to follow and the place of BAGADILICO within the university was not yet defined. Neither was the organizational structure it was supposed to take. Unsurprisingly, there was some skepticism among individual investigators, as might be expected in bringing such a colossus on its feet.

Year by year, in line with the age-old tenants of science - trial and error, BAGADILICO has found those feet and is picking up momentum. At least those are the sentiments echoed by the new pair at the helm.

Johan Jakobsson explains.

- I think Bagadilico is showing the signs of a research environment that is getting ‘value for money’. Especially encouraging is to see the growing influence of younger researchers who have added key competences to the network. It has changed our dynamic and I think that younger researchers, in particular those who have spent time abroad, realize that collaboration is part of the road to success.

Coordinator Angela Cenci-Nilsson identifies a similar turn for the better.

- It has been inspiring to see that so many young scientists have strengthened their academic profile, partly thanks to BAGADILICO. We’ve had a clear goal from the start to help young scientists as well as supporting scientists who wanted to establish new lines of investigation and we are now beginning to reap the benefits of that strategy. Also, in our board meetings today there’s a tangible feeling of us being a team, more so than before, I believe. We’ve all wanted BAGADILICO to do well from the outset but in the beginning it was more seen as a big experiment, people didn’t really know what to make of it and we were not used to working as a consortium, just fragmented groups really.

The retreat planned for October 23-24, together with MultiPark, will act as an important stepping-stone towards the decisive evaluation by the Swedish Research Council at the end of January. As the future funding scheme for Bagadilico hangs in the balance Coordinator Angela Cenci-Nilsson encourages all members to take the opportunity to be a part of this process.
The researchers looked into the brains of mice with real-time imaging methods, following some of the very first stages of the disease through advanced microscopes. What they discovered was an unprecedented degradation of synaptic activity. Long before the well documented nerve cell death, synapses that are important for communication between brain centres that control memory and learning begin to wither.

This process has never been mapped before and could be an important step towards understanding the serious non-motor symptoms that affect Huntington patients long before the movement disorders start to show.

- With the naked eye, we have now been able to follow the step by step events when these synapses start to break down. If we are to halt or reverse this process in the future, it is necessary to understand exactly what happens in the initial phase of the disease. Now we know more, says Professor Jia-Yi Li, the research group leader.

Huntington’s disease has long been characterized by the involuntary writhing movements faced by patients. But in fact, Huntington’s has a very broad and highly individual symptomatology. Depression, memory loss and sleep disorders are all common early on in the disease.

- Many patients testify that these symptoms affect quality of life significantly more than the involuntary jerky movements. Therefore, it is extremely important that we achieve progress in this field of research. Our goal now is to find new therapies that can increase the lifespan of these synapses and maintain their vital function, explains postdoc Reena, who lead the imaging experiments.

To read the full article, “Dendritic Spine Instability Leads to Progressive Neocortical Spine Loss in a Mouse Model of Huntington’s Disease”, CLICK HERE
By studying the spinal fluid of Parkinson’s patients, BAGADILICO researchers at Lund University have been able to demonstrate for the first time a strong link between inflammation in the brain and non-motor symptoms.

The study, which has been published in the journal Brain, Behaviour, and Immunity, represents the first comprehensive control study in which researchers have looked at differences in the levels of inflammatory markers in the spinal fluid of people with Parkinson’s disease and that of healthy individuals. The results showed that the highest inflammatory activity was found in the patients who suffered the most serious symptoms of depression and cognitive impairment.

- We have been able to establish that high levels of inflammatory substances in spinal fluid are linked to more distinct symptoms of depression, fatigue and cognitive impairment in patients with Parkinson’s disease. This means that we can now proceed to study in more detail the causal connection between inflammation and specific symptoms, says first author of the study Daniel Lindqvist, a postdoctoral fellow at Lund University and resident in psychiatry.

Depression, fatigue and cognitive impairment in Parkinson’s disease are often difficult to treat. Oskar Hansson, research group leader, hopes that the results could form an important building block for further research that aims to develop new therapies.

- The results are very interesting, but it is too early to make any recommendations such as anti-inflammatory drugs for Parkinson’s disease. Such studies are still needed. However, we are of course working towards that goal. In the long run, the findings could pave the way for future treatments that specifically target symptoms of depression and cognitive impairment in Parkinson’s disease”, explains Oskar Hansson, researcher at Lund University and consultant at the Memory Clinic at Skåne University Hospital.

To read the full article, “Cerebrospinal fluid inflammatory markers in Parkinson’s disease – Associations with depression, fatigue, and cognitive impairment”, CLICK HERE