Many Parkinson’s patients eventually develop dementia, a severe form of generalized cognitive decline. However, the pathological changes driving the development of dementia are poorly understood. In a new project, sprung from a Bagadilico collaboration, Angela Cenci Nilsson and Oskar Hansson hope to discover pathological changes and biomarkers of PD dementia by looking at the microvasculature in the brain.

Neurons are dependent on a continuous supply of oxygen and nutrients from the blood. A large number of studies have shown that blood flow to the cerebral cortex is reduced at an early stage of Parkinson’s disease, already when patients start to experience the first cognitive difficulties. Both the causes and the consequences of this reduced blood flow have thus far remained unknown. Recent findings suggest that degenerative changes affecting tiny blood vessels in the cortex may result in a reduced blood supply, and also trigger an increased local production of cytokines that aggravate the neurodegenerative process. With the help of a grant from the Michael J. Fox Foundation, Angela and Oskar will try to understand whether changes in the microvasculature are associated with the occurrence of dementia in PD.

This project is a true example of a synergistic interaction that has been fostered by Bagadilico. Oskar and I are bringing to the table our complementary expertises in the neurobiology of maladaptive angiogenesis and clinical biomarker discovery, respectively, says Angela Cenci Nilsson.

The study builds on the hypothesis that pathological changes of microvessels in the cortex lead to an increased local production of chemicals termed “angiogenic cytokines”, the levels of which can be measured in the cerebrospinal fluid. Human samples of cerebrospinal fluid and brain cortical tissue for this study will be provided by a large brain and tissue donation program run by the Banner Sun Health Research Institute in the US. Understanding the role of the microvasculature in the development of dementia can lead to new therapeutic targets as well as new biomarkers to identify “at risk” individuals.
Why are professional group dynamics such an interesting subject to you?

- Many reasons. One is that I’m pretty sure that creativity is not only a highly individual phenomenon but also something that occurs in groups. Bagadilico is a collective of creative individuals but I would like to find out in what sense it is also a creative collective. What are the group dynamics, the communication patterns and relationships that make new discoveries, new ways of working, happen?

- But not only in terms of creativity, also the notion which I have that the medical research society organizes intellectually gifted people and with that kind of gift often comes a feeling and character of being alone and perhaps outside most peoples’ social experiences. What happens when these personalities come together and form collaborations? So used to doing it alone and then, with necessity, doing it together? In most group dynamics there is always tension between the individual and the group, and I assume that tension are even more challenging in research teams. That’s why it’s interesting to watch how research teams form and develop.

- With teams in business settings there are, of course, business priorities and goals, making profit for shareholders and constantly cutting corners to increase productivity. In science teams the pursuit is not profit but knowledge, solving riddles of nature and that whole exploratory adventure touches the romantic in me.

What are the greatest challenges when coaching research collectives?
- First of all I would say that it is usually very rewarding. Research leaders and research teams are highly responsive to group psychology, to my theories and exercises. They find it very interesting. It’s like a sponge. That doesn’t happen so often in other branches of organizations where teambuilding is part of everyday life and people are used to consultants like me visiting. The greatest challenge, I guess, is the assurance that what the group learns will stick, that there is a lasting influence and focus on group processes once the seminar is over.

Which are the most common mistakes that large research networks do?

- Again, I would say the notion, the idea and emphasis on organization. It seems people who lead these highly complex networks almost excuse themselves that they are leading. It is as if once a group of leaders have been selected everybody else in the group let out a sigh of relief: Wow, now I am free to do my own thing, pursue my own exploratory path. A kind of delegation upward. Instead of every team member making an effort to assist leading, participate in the leading process as good teammates with clear roles in the pursuit of common goals. Leadership is, in essence, an ongoing conversation about Direction, Alignment and Commitment, i.e. Where are we going, together, with shared responsibilities and high motivation? It seems like this, which should be a collective concern, often in groups like Bagadilico becomes the concern only of the team that leads.

How do you make scientists find the balance between individual and collective goals?

- By realizing and acknowledging that there is an existential and factual conflict between those two spheres of interest. It can never solved but needs to be lived and managed by the individuals and by the group. This is a fundamental polarity, as we talked about in the seminar. It can be dealt with by setting up ground rules, an ethics of conduct for collaboration. And also by reflecting and learning from mistakes and bad experience.

Your thoughts on how BAG functions?

- I still know very little of your daily work and collaboration. I find the group that I met having a nice and warm climate. A good conversation took place. You can handle differences and I find you make good results. The difficulty, I assume, lies in the power of absence. People can influence a lot by not showing up when you meet. Maybe that can be remedied by having experiences where you are having disagreements and you resolve it, helping everybody to realize that the (necessary) differences are not dangerous but helpful in growing as a team.

- I was present when you went through the follow-up requirements from the funding agency, the review of you work so far, and I found that your response to this form was kind of reactive, a cumbersome requirement that you HAD to do and needed to do, not as if this was something for yourselves. I would think that if you could switch this attitude around so that you had steering criteria that you put up on and for yourselves as a network, find them rewarding for yourselves to fulfill and succeed with, that you, in a sense, owned your own control mechanisms you would be much more proactive as a team to fulfill your promises to yourselves. Again: Direction, Allignment and Commitment. Maybe then it would be more fun and interesting to report to VR.

Next step for BAG?

- An exciting way of vitalizing the Bagadilico Consortium, its social dynamics, would be to engage the young(est) generation within the team, the PhD students perhaps, to coach and challenge Bagadilico as a social environment for the purpose of doing excellent research. Send them for a retreat for that purpose and ask them to bring back some challenges for the seniors to grapple with.
Read the article, CLICK HERE