

# Focus on long term growth

By Chris Tachibana

## **How Lars Arendt-Nielsen grew a lab in Northern Jutland into an international center for pain research**

Bigger is better. That's the current trend, with the founding of large research centres and the fusing of academic departments. But for Professor Lars Arendt-Nielsen, growth has been the goal for more than 25 years. He is the director of the Center for Sensory-Motor Interaction (SMI) at Aalborg University, Denmark.

Starting as a neuroscience research group, SMI has become the world's largest pain research centre, according to Arendt-Nielsen, with more than 100 scientists and 75 PhD students, and collaborations with more than 15 international pharmaceutical companies. Last year, it spun-off the contract research organization C4Pain to do pain and inflammation studies for the pharmaceutical industry. In spring 2010, the Danish National Advanced Technology Foundation awarded 8 million Danish kroner to C4Pain and Aalborg University to develop pain biomarker screening technology. Arendt-Nielsen is establishing a business park at Aalborg University for start-up companies in the SMI competences.

### **The first fifteen years**

Building SMI has been a combination of adapting to funding priorities, while adhering to a set of goals and a vision. Arendt-Nielsen says; - Different strategies were applied as the centre grew over the years. About 15 years ago, the Danish Research Foundation made us a Centre of Excellence. Since researchers should not have to deal with administrative tasks that we are not good at and not interested in, we established professional project and financial management and secretarial assistance to take care of daily administration.

Ten 10 years ago, SMI focused on the next generation. They used additional government funding to build the centre as a model for high-quality international doctoral education. Five years ago, Arendt-Nielsen opened a new section of SMI to focus on industry-academic collaborations, which were being encouraged by the Danish government.

- We're fundamentally a basic research unit, but we optimize our strategy to comply with requirements set up by government. A major requirement in Denmark and the European Union is that we collaborate with industry, so

we established a portfolio of projects with companies, says Professor Lars Arendt-Nielsen.

### **Interdisciplinary and international goals**

Throughout the SMI expansion, Arendt-Nielsen has maintained an interdisciplinary approach with an international team, which he says is the key to discovery.

- We combine biology, medicine, and bioengineering, using medical doctors, bioscientists, engineers, and biophysicists. Working in between areas and combining ideas, gives a better chance of discovery and high-impact research, explains Arendt-Nielsen.

Global recruiting of the best and most motivated people is also a priority. To attract scientists from many fields and from around the world.

- The first step is to get the environment up and running and generate an impressive publication record. It takes at least 15 years, but once everyone sees how they can benefit from the interdisciplinary approach, you are contacted by scientists from around the world who want to be trained at your site.

To keep the pipeline of international personnel flowing into Aalborg, Arendt-Nielsen uses visiting student and scientist programs to send SMI scientists to other countries, and bring guest researchers to SMI. This creates 'ambassadors' for the centre, who promote the science and the social benefits of working in Denmark. SMI makes foreigners comfortable with social events and an administrative person who is familiar with immigration rules. One of the goals of SMI from the beginning has been 50/50 Danish and international scientists.

### **Maintaining focus**

Even with managerial support, keeping track of the groups and projects is a major task. Arendt-Nielsen believes in delegating, so SMI recently went through a reorganization. The research centre was divided into five sections, each with its own scientific and educational activities and headed by its own professor. Arendt-Nielsen continues to think of growth.

- I hope over the next ten years this will generate five new SMIs, each with its own individual research focus.

To keep from being spread too thin, Arendt-Nielsen focuses on the core area of competence. SMI specializes in sensory-motor integration, specifically pain research, so all the groups work in this area, assessing pain in volunteers and patients, and screening



**Resource websites**  
**Center for Sensory-Motor Interaction**  
[www.smi.hst.aau.dk](http://www.smi.hst.aau.dk)

**Contract research organization C4Pain**  
[www.c4pain.com](http://www.c4pain.com)

**Danish National Advanced Technology Foundation**  
[www.hoejtekologifonden.dk/?id=29](http://www.hoejtekologifonden.dk/?id=29)

compounds for pain therapy. SMI stays on track by constantly assessing the success of its strategies. It applies the kind of comprehensive, quantitative approach that most scientists use to analyze data, and the findings guide decisions about the next steps.

- We systematically monitor all possible success parameters, including number of publications, impact factor and citations, and cost per scientific paper; number of PhD students, collaborations and guest researchers; degree of internationalization; funding; patents and start-ups; invitations as lecturers and reviewers; and media exposure, says Arendt-Nielsen.

### **Promoting basic research and postdoctoral training**

In spite of the industrial collaborations, the founding of the CRO C4Pain, and the work on the Aalborg University Health Science and Technology Park and associated business park, Arendt-Nielsen strongly promotes basic research. He advocates shifting some of the national research focus from applied to basic research.

- In Denmark and Europe, most of the recent focus has been on applied research, and for some projects that's good, but if we don't do basic science now, in 15 years we won't have anything to apply.

With his experience recruiting international researchers, he also warns about losing locally trained scientists, and calls for postdoctoral training support. SMI has implemented a postdoctoral program that they hope will spark political interest, and be a model for similar initiatives.

- In Denmark, we have focused on PhD programs, but there isn't a political focus on the career afterwards. We lose a lot of PhDs when they finish, because they can't find opportunities here, so they go abroad. We have to strongly consider postdoc programs, because if we had the opportunities, we could keep them here.

Finally, even in the face of pressure to expand, Arendt-Nielsen advises patience.

- These strategies are not the only important factors, he says. At least 15 years is needed to establish a recognized world-class research centre—these things just take time to mature.