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A PHD CAN TAKE YOU ANYWHERE...

... SO WHERE IS IT YOU WANT TO GO?

Doing a PhD is an intense experience.

At the end, many people find themselves puzzled about the next step to take. Shall I continue with an academic research career? What after my postdoc? Are there other options within the university? Or do I continue with research, but outside of academia? Maybe in industry, or at an NGO? What is "in industry" anyway? What would a person with my background be able to do in a governmental agency, and how can I possibly find out?

The time is now

So, when do I start thinking about this? I'm still X time away from the end of my contract, isn't it too early? Or, too late? Decisions take time, and if you find yourself at a decision point then a bit of soul searching can be a good thing to do. Maybe you have the possibility to just roll into the next position, and are happy to do so, but maybe you want to stop and take stock. No matter if you are comparably "late" or "early", if you are struggling with these decisions, then now is the moment!

YOU HAVE OPTIONS, WHETHER YOU KNOW IT OR NOT!



A PhD is not a golden ticket, but your experience and attitude can be!

We do not meet many people who expect the mere fact of holding a PhD to result in a job, offered on a golden platter (though they are out there!). It is a requirement for an academic research career (entry requirement for our club: check!), but there are many more positions where a PhD may be meriting, even if it is not mentioned in the job add! So, what do you want to do with all your experience? What skills do you have? What kind of work tasks and duties make you happy? Which values are non-negotiable? Turn your research skills to yourself and your future (ask KI Career Service for tools or suggestions, if needed), then go out and find it!

You have options, whether you know it or not

Different teams, organizations, sectors, and countries, they all come with a variety of different job titles and available positions. There are more options than anyone can discuss, so this booklet provides some examples instead. They showcase different paths within Karolinska Institutet (KI), representing the university setting, and even more paths outside of it. Each portrait is a real example of someone currently or formerly at KI, interviewed by a PhD student at KI while they were on their own career exploration journey (it's called Informational Interviews, look it up!). The chances that your "ideal job" is represented here are pretty slim (but good for you if it is!), though maybe it can spart some thought that leads you forward!



NOTE: People continue developing, and so may also move positions. The portraits represent the career stories at the time of interviewing.



BE PROACTIVE AND HAVE A GOOD MENTOR!

Carolina Hagberg is Assistant Professor at the Cardiovascular Medicine Unit at Karolinska Institutet (KI). She has recently established her own research group that studies the mechanisms involved in adipocyte nutrient uptake and energy metabolism in the healthy and obese state. The aim of her research is to identify treatment options to prevent or reverse obesity-related diseases.

Carolina, originally from Finland, came to Sweden 15 years ago to conduct research as part of her undergraduate studies, and since then she has achieved a very successful academic career at KI.

Before starting her PhD studies, Carolina had already received her first project grants and been a part of several research groups in Stockholm, Paris, and Canada. During a summer internship at KI, she found out about an opening of a PhD position at the group of Professor Ulf Eriksson.

By the end of her Master thesis project, she was offered a PhD position and she completed it by being almost exclusively self-funded.

The PhD years to follow were very productive and led to two published papers in the distinguished scientific journal Nature, with Carolina as the first author.

"I was lucky enough to be in the right place in the right time! I was also very demanding and impatient, traits that helped me a lot to accomplish my goals," she says.

Carolina had a very good and supportive team, but at the same time, she was working independently to a high degree, which helped her a lot in her academic career later on.

After the PhD, she wanted to continue performing research in an academic setting. Doing a postdoc abroad was an important move for her academic progression, so she started searching for research groups in Europe and at the same as applying for postdoctoral grants. Carolina selected the Auwerx/Schoonjans group working with metabolic signaling pathways at the École Polytechnique Fédérale de Lausanne (EPFL) in Switzerland, and with her academic assets and her own funding,

she was offered the position. Less than a year after the beginning of the postdoc family issues urged her to move back to Stockholm.

"It was a challenging and stressful period," she recalls.

However, the situation soon became better, as Carolina had made strategic moves that helped her at this difficult moment. She had previously been asked to select a mentor in Sweden when she reveived the postdoc grant from the Swedish Research Council to go to EPFL. As it was proven later on, the mentor choice played an important role in her future career. Once she was back in Stockholm, she arranged a meeting with her mentor Kirsty Spalding, who at the meeting ended up offering Carolina a new postdoc position in her group.

Small choices can make a big difference, and for Carolina networking and mentorship are extremely important. Being chair of the KI Junior Faculty for the second year and involved in the organization of the KI mentorship program, Carolina has herself many mentors inside and outside academia. Interestingly, she has a mentor that provides her with insight into business and recruitment, as part of a Finish mentorship program. For her, the ideal mentor is someone with who you have good chemistry and discussions, and can dare to challenge your previous thoughts. She also believes that PhD students and postdocs should attend leadership courses and should be offered career orientation options from the beginning of their studies.

ADVICE TO PHD STUDENTS

According to Carolina, a big challenge in academia is to have enough merits that will take you to the next career ladder. Therefore, she has some advice for the PhD students:

- Move to different research groups in good institutions. This can boost your career, as
 you learn new things, receive input and expand your network. Being accepted to good
 institutions, can contribute to your scientific career "value".
- Start applying for your own grants at the very beginning of your research career.

 Ask your supervisor if you can help in grant revision or in writing their grants in order to get experience.
- Be brave and ask for input. Always look ahead and be proactive.

Visit https://hagberglab.com/ to read more about Carolina Hagberg's research group

- Carolina Hagberg



TEACHING IS A BEAUTIFUL WAY TO GIVE BACK TO SOCIETY!

Matthew Kirkham was the first person that gave me a teaching assignment as part of my PhD training. I hold him largely responsible for making me feel so passionate about teaching, so this text is a great chance for me to share his story and his role as an educator at Karolinska Institutet (KI).

Matthew enrolled as a PhD student at the University of Queensland where he performed research in cell biology. His journey brought him over to Stockholm for a postdoctoral position at KI.

"I actively sought teaching opportunities during my postdoctoral time."

Currently he is a senior researcher at KI where he runs his research program 50 percent of his time and devotes the other 50 percent for departmental teaching duties.

It is fair to say that Matthew has a number of important educational duties to carry out: Deputy director of education for the department of cell and molecular biology, course director and

examiner for the cell, stem cell and developmental biology course of the bachelor program in Biomedicine as well as being part of the committee for the same program. He explains how he divides his teaching time between all these different roles:

"I am responsible for 50 percent is administrative work for the course, 30 percent is delivering the actual teaching occasions and 20 percent is devoted to content development for the course."

I get excited when he says the words "course content development" and he certainly shares the same enthusiasm. "It is always nice and fun to think of new activities for the students," Matthew comments. However, he mentions that this is one of the most challenging parts of his responsibilities, as one has to develop content that will have a breadth but also be of a high level for students that go on to have very diverse career pathways.

We continue and unwind the story from the beginning of his PhD studies. The core skills he gained from his PhD that help him in his current

career as an educator could be summarized as follows: planning, organizing and being methodical about your work, basic presentation skills and interpersonal skills.

"During your PhD is when you start to communicate with people in different stages of their academic career and you have to do it in a positive, good and clear way. That helps you to start developing good interpersonal skills."

According to Matthew, teaching at a university is kind of an apprenticeship model of learning.

"It is tough to point to specific skills that can help you for certain parts of the job. The key thing to know is that your role evolves along the way, from just lecturing to organizing and developing a course so you need to have a diverse skillset to be good."

If he has to cherry-pick things that he wished he had known before he started his teaching duties, he would have liked to have had a basic teaching theory course and known a little bit more about the different ways that people learn.

The actual career path of how to be a teacher at a university, he mentions that it can vary between different countries and even different universities. "For example, there are very few purely teaching positions at Karolinska. Karolinska prefers most of the teachers to devote some time for research activities so that they are up-to-date with the science performed in their respective fields." His advice on how to be a successful, university level educator lead all the way back to the apprenticeship model of becoming an educator.

"Work-shadow course administrators in different places. Then you will see how things are handled in different environments and can enhance your own skills to cope with this role."

The voice recorder is off and I walk with Matthew back to our offices, chatting about teaching. "You know, teaching is beautiful way to give back to the society," Matthew concludes. As I walked off, I think to myself: that is the type of teacher that I would like to organize my courses!

"AS I WALKED OFF, I THOUGHT
TO MYSELF: THAT IS THE TYPE OF
TEACHER THAT I WOULD LIKE TO
ORGANIZE MY COURSES!"

- Christos Karampelias, interviewer and former student of Matthew Kirkham



THE LIGHTHOUSE PRINCIPLE

In 2008, Nitya Jayaram Lindström won the Torgny Wännström award for best doctoral thesis within the field of clinical medicine and public health. Her thesis, "Evaluation of Naltrexone as a treatment for amphetamine dependence", was a result of hard work, passion, networking, and what she refers to as the lighthouse principle.

"I've never had a detailed plan for my career, but that does not mean that I have been aimless. It is more like a lighthouse - I see where I want to go, and make my decisions to go in the direction of my vision," she explains.

Nitya's career started off in India, her home country, where she studied psychology for altogether 5 years. At that time, the only available track was in general psychology. However, she found out that psychiatry was more of her interest.

"Together with my father, the director of a center for drug addiction, I decided to go to USA to have more opportunities."

During her Master studies in clinical psychology at the University of Chicago, Nitya practiced at a psychiatry clinic where she worked with drug dependent patients. These individuals captured her interest and she started working at a substance abuse clinic in Chicago. She loved her work and could have continued working at the clinic, but life wanted different. She met her husband to be – Jonas – and when it was time for him to go back to Sweden, Nitya went with him.

At a dinner in the summer of 2002, Nitya came to sit next to Yasmin Hurd – a professor at Karolinska Institutet (KI) who worked with translational neuroscience and the effects of cannabis and heroin on the brain. This was the start of a longstanding collaboration and also of Nitya's academic career. Through Yasmin, Nitya was introduced to Johan Franck – her future main supervisor. Johan was an assistant professor in the field of neuropsychopharmacology and pharmacotherapy for substance abuse and at first Nitya thought the pharmacological orientation was too far away from her own background in dialectic behavior therapy. But eventually she was convinced by Yasmin and the trio started to plan a PhD for Nitya.

Nitya took a lot of responsibility for her PhD studies and worked independently, in the lab as well as with managing clinical trials.

"I learnt a lot from this time! Today, I am really grateful that my supervisors had confidence in me and trusted me."

During her PhD her first son, Hjalmar, was born. The family has always been the center of Nitya's life and even more so when she became a mother. When she was offered a postdoc at Yale, she hesitated – was it possible to combine with family life? But once again she was convinced by colleagues.

"It was a really good opportunity and I am glad that they were willing to meet my needs and requests."

Nitya describes her postdoc as a training postdoc rather than a productive postdoc. She gained valuable knowledge on new models that she could bring to Sweden where she continued her work as an assistant professor at KI. In 2014, she was being asked to apply for the position as Student Director

of Psychiatry Research School at KI. Since only professors had had that position up to then, Nitya hesitated but applied.

"I really enjoyed it, education is so important and I got the chance to both revise the curriculum and give lectures and teach."

The next step in Nitya's career was the position as Deputy Director at Centre for Psychiatry Research (CPF), where she worked in close collaboration with the former Director, Clara Hellner Gumpert. After only six months, Clara moved on to new challenges and Nitya was offered her job.

"I was a bit scared and discussed the offer a lot with my mentors. The possibility to work with education and leadership together with colleagues that I really appreciated, settled the case and I accepted. Being the Director of CPF is a lot of hard work, but it is very rewarding and interesting!" she concludes.

NITYA'S CAREER ADVICE:

- Have mentors! And choose them wisely. If you don't share fundamental values, you won't be able to use their advice.
- Network! Dialogue and interaction are central, we are dependent on other people to get things done.
- Love what you do! Everything is so much easier when you do it with passion.

- Nitya Jayaram Lindström



AN ALTERNATIVE CAREER TRACK WITHIN ACADEMIC RESEARCH

It is mid-February and I am meeting with Ebba Sohlberg over Zoom. Now during the pandemic, Ebba is mostly working from home, but she also goes to the office and lab now and then. Ebba has taken an alternative track within academia as a Project Coordinator in Karl-Johan Malmberg's research group at Center for Infectious Medicine (CIM), Karolinska Institutet. Their research focuses on immunotherapy with natural killer (NK) cells and includes clinical and company collaborations.

Ebba finished her PhD in Immunology at Stockholm University in 2013 and was determined to continue within academic research while at the same time starting her own family in Stockholm. Luckily, the epicenter of NK cell research was not far away, and Ebba secured a postdoc position in the lab of a previous collaborator – Karl-Johan Malmberg. Ebba very much enjoyed, and still enjoys, the atmosphere and research environment at CIM. "It is a great place for cutting-edge immunological research

and also, it is a luxury to feel that your colleagues are like your friends", she says.

During the postdoc years, the research in the group was growing even more committed to development of clinical treatments, something which appealed to her strongly as a niche to stay in. After a career development talk with her principal investigator (PI), Ebba was offered a permanent position as a project coordinator. At that time, this career path was not particularly well-known but is now becoming more common in bigger research groups, along with positions as research coordinators.

As the name of the position suggests, Ebba coordinates and manages research projects, performs experiments, analyses data and writes manuscripts. As the PI of the group is based in Norway, Ebba has also taken on many PI-tasks, including supervision of PhD students and participation in leadership meetings.

"I enjoy seeing the overall picture and to drive progress in the projects, it appeals to my impatient side."

The best thing about her job is that it varies from day to day and that she has the flexibility to decide herself how to plan her work. She still takes a lot of joy in the experimental side and finally getting that data that provides an answer, or alternatively, a question.

Even though Ebba's tasks are similar to many PI's, she does not plan to become a PI herself.

"This way I get to be part of the long-term development of the research I believe in and provide stability and continuity, within the team."

Ebba's driving force is to have an intellectually stimulating job, with strong clinical implications, that is appreciated by others. Thus, Ebba very much enjoys their collaborations with the good manufacturing practices (GMP) facility, partners within the hospital and different companies. "It is fantastic seeing many different people working towards the same goal, contributing their part for the 'greater good', and you also develop really great people skills," she says.

In her job as a Project Coordinator, Ebba has gained a lot of experience in tasks related to biobanking, ethics and GMP regulations too.

So far Ebba has not accepted a position outside academia, evidently very happy where she is. "But with the exponential growth of cell therapies, more and more headhunting emails are arriving, asking for this specific skill set."

Ebba's advice to those that would want to pursue a similar career is clear:

"work hard and with passion, interact with and take help from others."

"MAKING YOURSELF INDISPENSABLE DOESN'T HURT", SHE JOKINGLY SAYS.

- Ebba Sohlberg





FROM CIVIL ENGINEERING TO PRINCIPAL INVESTIGATOR IN ALZHEIMER DISEASE

Per Nilsson is a group leader at the Division of Neurogeriatrics, Department of Neurobiology, Care Sciences and Society at Karolinska Institutet. His research focuses on Alzheimer disease and autophagy, which is one of the main mechanisms responsible for cleaning of the garbage in the cells, and his group aims to better understand the role of autophagy especially in Alzheimer disease.

As we meet, we start to talk about the very beginning of his career and how the choices he has made got him where he is today. Knowing how much he loved mathematics, physics, chemistry and biology, he decided to do his undergraduate studies in civil engineering, followed by postgraduate studies in the molecular biotechnology field where he extensively studied basic biochemistry including enzyme kinetics. Like many young researchers, he experienced tough periods during his early career and started to wonder whether he would like to stay in academia or go to the industry.

To see what would happen, he applied for different positions both in academia and industry. Around that time, he became more interested in conducting research in Alzheimer disease in a way for personal reasons

"Losing my grandfather to Alzheimer disease made me question why we don't have anything that could help these patients."

Although his background was very different, he was motivated enough to change the field of his career and started expanding his network.

Eventually he got offered a postdoc position from Takaomi Saido's lab in RIKEN Institute in Japan.

"My adventure gene kicked in and I found myself living in Tokyo for seven years," he says.

During his postdoc, he started to work on Alzheimer disease and was involved in the tremendous work to develop a new generation of mouse models of Alzheimer disease that has completely changed his professional career. While in Japan, he missed several research grant applications for young researchers that lowered the odds for him to establish his research group back in Sweden.

"I told myself to stop worrying and started looking for all possibilities. All these struggles make you grow in your professional career, and while your personality grows you become this stronger version of yourself."

Having a good mentor, who guides and supports you along the way, is also of uttermost importance.

Eventually, Per received external funding that allowed him to get his research group at KI started. At that time, he did not have any last author published papers but he was not discouraged by this situation and wrote a project proposal for the Swedish Research Council and he received funding. Throughout these years he was not sure how things would turn out and he had no clear long-term career plans, whether in academia or

industry. According to Per, his drive to do research, to design experiments based on his own ideas and to analyse data got him where he is today.

"These things about my job make me fly," he adds with enthusiasm.

Life as a group leader is super fun and at the same time super tough according to Per.

"You have to like working with people, have good communication skills, strong drive in what you do, find a way to inspire others, have patience and have a good scientific knowledge. Despite the long working hours and challenges like financing, to find new things is the biggest reward of my job," he says.

At the end of the day, he knows that no two days are the same in research and according to him that is the fun part.

Finally, I ask him for advice to a person like me who also has doubts about staying in academia.

"Try different things, check out different possibilities and most importantly do not feel that there is only one option and that is it for you. Be brave and start something that interests you and then decide whether that is really what you want. But also do not give up when you encounter the first bump on the road."

"...DO NOT GIVE UP WHEN YOU ENCOUNTER THE FIRST BUMP ON THE ROAD!"

- Per Nilsson



ACADEMIA – SURE, BUT GIVE ME MORE! AN EXCEPTIONAL ACADEMIC PATH TO HAPPINESS

Jessica Norrbom is a senior researcher at Karolinska Institutet (KI) where she investigates the regulation of skeletal muscle adaptation to exercise in humans. But not only that. She is also a writer, a personal trainer, a teacher, public speaker, supervisor, podcaster, mother of three and if that was not enough yet, she is also running her own company. But how can anyone possibly combine all of this?

"I spend around thirty to fifty percent of my time at Karolinska, the rest of the time I focus on planning activities, writing or giving talks about training and health. I like variation. And I really enjoy being my own boss," Jessica explains.

Jessica is not completely alone on this journey. Maria Ahlsén, a good friend and former PhD colleague, is her business partner in crime. "It is good to be two. We support each other. We both felt the urge to do more than research. We wanted to go out and spread the knowledge to the public." Together, Maria and Jessica started their company,

Fortasana, in 2013 and pushed each other to further educate themselves. Maria took courses in nutritional science and Jessica became a personal trainer. Four books and a podcast later, the two of them tour most of Sweden to give talks and lectures to the public, but also to other researchers and medical staff, about the effects that training and the right food has on our health.

"Sometimes I wonder, will I ever have a real job?"

But Jessica did not always know what kind of career she wanted. After finishing her PhD Jessica was quite sure what to do. "I wanted to leave and go to industry, but then I got post-doc funding." She also got the chance to help establish the master's program in Bioentrepreneurship at Karolinska Institutet.

"It was during that time that I started thinking maybe I can start something on my own."

This spirit of entrepreneurship is still driving her and sometimes leads to an internal dilemma. "The hardest challenge is to set boundaries. I have so many ideas and would like to try all of them."

One important person that has helped Jessica throughout her career has been Carl Johan Sundberg, her former PhD supervisor and current boss at KI. "Carl Johan has really given me the chance to develop myself. He has been a true inspiration and support. He has always been open for any of my ideas." Their latest book 'Stark hela livet' (Strong throughout life) is just another proof of their strong teamwork.

"Listen to your inner voice. And dare to do it."

Jessica manages to combine doing research in an academic setting with a variety of other projects and activities that she is extremely proud of. "But sometimes I wonder, will I ever have a real job? I don't even know how a real job looks like?" Jessica says and laughs. Nevertheless, Jessica is rather satisfied with her current work situation. At the moment, she is working on becoming a docent at KI and, at least for now, wants to take a break from writing more books.

When asked about what advice Jessica would give to PhD students that are evaluating their options on the job market she says: "Listen to your inner voice. Ask yourself: What is it what I really want? And dare to do it."

"The hardest challenge is to set boundaries. I have so many ideas and would like to try all of them."

"LISTEN TO YOUR INNER VOICE. ASK YOURSELF: WHAT IS IT WHAT I REALLY WANT? AND DARE TO DO IT."

- Jessica Norrbom

NAME Johan Hartman POSITION AT TIME OF PRINT (OCT 2021) Professor of pathology at KI, Pathologist at Karolinska Sjukhuset, Co-founder Stratipath Medical **POSITION DURING TIME OF**

INTERVIEW (2021)

Associate professor at KI, Pathologist at Karolinska Sjukhuset, Co-founder Stratipath Medical

INTERVIEWED BY

lessica De Loma Olson

AT THE INTERSECTION OF THREE DIFFERENT, YET CONNECTED, WORLDS.

Johan Hartman welcomes me virtually via Zoom. I can hint half a microscope on the side of the screen, already understanding he is at the hospital where he works. At least part of his time. Johan Hartman manages to successfully combine three positions: as a pathologist, a researcher, and co-founder of a company.

He obtained his medical degree, specializing as a pathologist, in parallel to his Ph.D. in molecular biology from Karolinska Institutet (KI) in 2008. As a pathologist at the Karolinska Hospital, he works with breast cancer diagnosis. Johan is also the head of the national expert group for breast pathology within the Swedish Society of Pathology, writing guidelines for doctors on how to properly diagnose cancer.

"One has to know how to integrate new technologies while striving for reproducibility across diagnostic labs."

Johan is also an associate professor and the head

of a translational research team at KI focused on drug response of cancer patients and precision pathology. During the recent years, he has also become the chief medical officer and co-founder of the company Stratipath. Stratipath is an artificial intelligence start-up developing software to improve cancer diagnosis and is supported by KI Innovation.

His journey with Stratipath started one and a half years ago, after KI Innovation finally believed in the idea. "I had been in contact with them before and that time they didn't really believe in my idea. But this time they were super excited!" Johan's overall professional goal is to convert his research and expertise into something that patients and the healthcare system can benefit of.

"My biggest achievement is going all the way from research to the patient."

Since everything is tightly regulated within medical diagnostics, he helps the company so that it is possible for the new technologies to reach the

patient. He highlights the big impact artificial intelligence has when working with images. Big differences can exist when evaluating images between laboratories, and computers can act as decision and support systems for the doctors.

Although Johan thinks that his biggest challenge is learning how to combine things he succeeds in juggling between three worlds.

"I can pretty easily switch between tasks in my mind, switch off and find time to rest."

He also points out how important it is to find a connection between the different jobs, as in his case, where the three spheres are related to cancer diagnostics.

The advice Johan gives young researchers is to build a strong network. "You have to believe in something, and it is important to find and identify a team; you can't do everything yourself."

And this is precisely one of Stratipath's strengths: they have different teams for each responsibility.

"You have to understand your limits and that you can't be an expert in everything."

As our meeting ends, I point out a perk of having virtual meetings. That is, that we could have this conversation with him sitting next to his microscope. He laughs and jokes "These are old dinosaurs now; now we should work with computers and AI!". Only time will tell what the future holds. Or maybe artificial intelligence can predict that too?

For more information

Hartman Lab: http://hartmanlab.org/ Stratipath: https://www.stratipath.com/

"YOU HAVE TO BELIEVE IN SOMETHING, AND IT IS IMPORTANT TO FIND AND IDENTIFY A TEAM; YOU CAN'T DO **EVERYTHING YOURSELF."**

- Johan Hartman



ALWAYS LOOK FOR SOLUTIONS

I got my first glimpse of Sally Abdelmoaty in 2015 when I started my PhD in the lab where she was doing her postdoc. I didn't need much time to realize she has the qualities of a successful person - self-confidence, integrity, willingness to learn and most important - optimism. These exact traits allow her to efficiently juggle research, family responsibilities and self-development activities outside academia that led her to her present job as project coordinator at Kancera AB.

In 2007, after completing her master's degree in pharmacology and toxicology at the Suez Canal University in Egypt, Sally had won a doctoral scholarship from the Egyptian Ministry of Higher Education. This stipend provided funding for two years of research abroad and brought Sally to the Department of Physiology and Pharmacology at Karolinska Institutet (KI).

"I have gained a lot of knowledge, not only by running my projects in a different research setting but also thanks to the vast choice of courses that KI offered," she recalls her time as a PhD student. But as great as it might sound to spend some time abroad doing what you enjoy, having to split the PhD between two countries was not always easy.

"Having several supervisors, both here in Sweden and in Egypt, was often frustrating as they did not always share the same view on how to move the project forward."

But the biggest setback was yet to come. Very close to finalizing her main project on the role of anti-inflammatory lipid mediators in models of persistent pain, Sally was outcompeted by a group from Harvard, which published in Nature Medicine. This experience was extremely discouraging and forced her to prolong the work by several months in order to add novelty to the study and allow it to be published.

"As horrible as it was, I have learnt that there are always solutions, you just need to look for them."

Despite the struggles she has faced during the PhD, Sally did not lose her passion for science and stayed in academia. She moved permanently to Sweden and continued as a postdoc in the same

group at KI. Although during the next two years she worked extremely hard and received several smaller grants she did not manage to publish enough and realized that she cannot compete with others for a faculty position. She decided to restrategize and plan for an alternative career pathway.

During an intense time period she started looking for opportunities of self-development and enrolled into several organizations to strengthen her skills. One of them was the KI Postdoc Association (KIPA) where she soon was elected secretary and worked on a team that aimed at improving working conditions for postdocs at KI. Through liaising with KI Career Service, building a career development strategy for postdocs and coordinating professional events, she exercised her networking, management and organizational skills.

Sally expanded her actions also outside academia where she organized events for InterNations and volunteered for Nordic Life Science Days, the largest Nordic conference dedicated to the life science industry.

"Taking active part in all of these initiatives allowed me to break the barrier of fear and leave the academic comfort zone and resulted in industrial contacts which have been useful later on in my career." Sally's job at Kancera AB, a company that develops drugs against inflammatory diseases and cancer, is very diverse. As a project coordinator in the area of drug discovery her responsibilities include creating project plans for pre-clinical studies, providing scientific support on the projects, reaching out and communicating with experts on the field and regulatory authorities as well as creating industrial reports.

"I appreciate the applicability of my job and that the whole team works towards a well-defined goal, as well as the flexibility in finding solutions."

But Sally admits that working in a biotech company requires a specific set of soft skills.

"Rigid people don't survive in this environment, you need to be open-minded to other people's opinions and communicate in an honest but respectful way. If you are transitioning from academia - trust your abilities but accept that you need to improve yourself on several levels."

"YOU NEED TO BE OPEN-MINDED TO OTHER PEOPLE'S OPINIONS AND COMMUNICATE IN AN HONEST BUT RESPECTFUL WAY."

- Sally Abdelmoaty



A LIGHT THAT NEVER GOES OUT

Diagnostics and making a difference for patients are matters close to the heart for Sarah Thunberg. She meets me at the reception of Roche, where she works as a Technical Product Manager for Roche Diagnostics. She comes supported by crutches due to a broken foot, the result of playing ice hockey forcing her to wear a cast for six weeks. This is not ideal for an active person like her, who bikes to work year-round and has many weekly training sessions. But despite the injury, Sarah is an energetic person whose enthusiasm and joy are contagious.

She first chose a path within humanities but realized that she wanted to pursue a career in biomedicine. She really enjoyed her four years at the Biomedicine program at Karolinska Institutet (KI) and ended doing a successful master project. She was able to continue with the project as a PhD student and during the following years, she investigated novel treatment strategies and regulation of IgE-mediated allergic disease.

"During this time, I became an immunologist at heart."

In 2008. Sarah defended her thesis and was longing for independence. Through contacts, she started to work half time at the lab of Clinical Immunology at Karolinska University Hospital. She also continued to work half time in her old lab. It was thought to be a short-term solution but when she was going on parental leave, she was asked whether she would be interested in coming back full time to her position at the hospital. Having had numerous projects and fulfilling tasks, she did not hesitate. Her initial thoughts of doing a postdoc in Canada quickly fainted, especially now having a baby. Writing applications and struggling for financing was not for her anyway. That is how she ended up working as a clinical biochemist with technical responsibility for cellular analysis for five and a half years, work she much enjoyed. She was involved in many research projects and therefore to a large degree remained in academia. "I found it incredibly rewarding to do something that was close to patients and making a difference for their treatment."

At one point she started to feel that she wanted to try something else and when a contact approached her with an opportunity to become a senior scientist in a group at SciLifeLab, she did not hesitate. "It felt like a challenge and an opportunity I couldn't miss." She had now taken a full step back into academia, leaving the clinical world behind.

"During my three years at the Department of Applied Physics, I had a lot of fun, learned a lot and felt the freedom to play around with things I really loved. Going to work must be joyful, otherwise there is no point."

Being a person who enjoys change and challenge, she started to think that it could be interesting to try working in the industry. Her first application was to Roche and after many interviews, she was warmly welcomed. Just before starting, she was contacted about her current position in the company, which she gladly accepted as it suited her better due its more research-related profile. During her time at Roche, she has learned a lot about other medical fields and proudly shows me the latest equipment, the Cobas Pro, which enables quicker and more robust use in clinical chemistry labs. She is passionate about diagnostics and it really shows.

"Diagnostics are crucial. Without it, very few decisions are made in healthcare."

She admits that she misses being close to patients but emphasizes that her role now is to highlight the importance of diagnostic equipment.

Thinking back to her time in academia, she can miss the creativity. Being part of a hospital organization or multinational corporation is completely different. But she really enjoys working for her current employer and appreciates being well taken care of. When looking back she seems happy about her career journey. She now has a versatile background and her clinical experience has been an asset in her current position.

"Just do what you enjoy and dare to try things. There are plenty of jobs out there. If things don't turn out as you thought, you can always switch."

She also highlights using your contacts; this has on more than one occasion led her to a job.

In the beginning of her thesis, Sarah included a song title and quote by Morrissey "A light that never goes out". Having met Sarah, you realize that she is a light that will never go out and she will continue to pursue her drive and passion to do things that she really enjoys.

"I FOUND IT INCREDIBLY REWARDING TO DO SOMETHING THAT WAS CLOSE TO PATIENTS AND MAKING A DIFFERENCE FOR THEIR TREATMENT."

- Sarah Thunberg

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CURIOSITY: BRIDGING THE GAP BETWEEN ACADEMIA AND INDUSTRY

Jonas Söderholm is a Medical Advisor in Rheumatology and a Medical Lead in Gastroenterology at AbbVie, an American biopharmaceutical company with a strong presence in the Stockholm region. While many PhD graduates working in the life sciences go on to pursue careers working in laboratories in pharmaceutical companies, I was eager to interview someone who followed a road less travelled: the business side of big pharma.

Jonas received his PhD from Karolinska Institutet (KI) in 2006, having successfully defended his thesis on hepatitis C virus (HCV) interactions with the host immune system. He reflects back on his time as a doctoral student with great fondness, recalling an almost familial bond with his fellow PhD students, as well as an enthusiastic approach to his research topic.

"When you start your PhD you are very eager to learn so you go into everything with open eyes; you are motivated to do your best and find out new things. Everything is new and exciting."

In addition to doing basic research, Jonas' supervisor was also passionate about innovation in the context of product design and commercialization. Jonas describes this environment as an excellent growing ground for a budding entrepreneurial scientist. One of the collaborations of the group was with Inovio, a US-based company specializing in DNA medicines and gene delivery methods. Following a fruitful collaboration during his doctoral studies he was offered to do an industry postdoc with them in San Diego, USA.

While his postdoc was focused on the development of a universal influenza vaccine, the business-oriented nature of his surroundings piqued his interest in alternative aspects of life science. The company was driving combined intellectual property and product development projects, something he found interesting but skills that he felt were lacking as a formally trained scientist.

"I realized that in the US you needed an MBA to climb the ranks of a company and during

those one and a half years, I started to think about how I could get a business degree.

MBAs in Sweden are much more seldom and are not included in the system. Therefore, one has to self-finance and the fees are high."

Jonas made the decision to move to Gothenburg in 2008 to pursue an academic postdoc while also undertaking a combined Bachelor's/Master's degree program in Business Administration. "My goal was working in the pharmaceutical industry and working on drugs. I wanted to have the business side." He attributes the management of his dual workload to smart time management and efficient information extraction skills developed during his PhD.

"Every other week I took a vacation day from the lab to attend business school. I kept up with the reading and project work during my commuting time and at the age of about 30, you are much better at pulling the information you need in much quicker time."

Eventually Jonas was headhunted for a Medical Scientific Liaison position at AbbVie in Stockholm. "It was completely different working in industry, at least in a company like AbbVie," he says. He was fully supported in the pursuit of his own lines of research, work which mainly focused on projects with societal and patient-driven benefit.

Contributing good science to the field was helpful in maintaining good relationships with clinicians

and resulted in feedback and collaborations which eventually helped the company.

In Jonas' experience, successful people in industry have one thing in common: people skills.

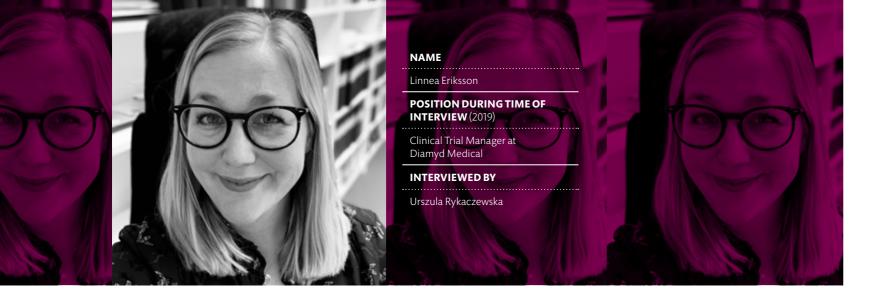
"Succeeding within a company means getting more responsibilities where you will need to interact with more people, do quick assessments, and delegate."

Management will have expectations of you, and he stresses that efficiently communicating these downwards are vital to the running of the company. "You will be in a lot of meetings every day and you can't do everything by yourself. Communicate your expectations all the time. Being straightforward is the key," he adds.

At the time of our interview, Jonas is about to start a new position as Global Medical Lead at AroCell, an Uppsala-based company focused on the development of in vitro diagnostic tools for cancer research.

"I will be able to start my own trials. I'm going to have an even greater possibility to do my own research and lead it as I want."

His concluding remarks are an important reminder of the misunderstandings of creative license in the pharmaceutical industry.



A WISH TO MAKE A REAL DIFFERENCE

- CAREER PATH OF LINNEA ERIKSSON

Her first dream job was to become an archeologist and live the life of Indiana Jones. After realizing, that what she has known from books is not even nearly as exciting as she thought, she wanted to be a veterinarian. Currently, Linnea Eriksson holds a Ph.D. degree in Medical Sciences and works as a Clinical Trial Manager, but all of the above seem to share at least two common features: genuine interest in science and a wish to make a real difference.

As we sit over a cup of tea in the headquarters of Diamyd Medical AB, Linnea goes back to the very beginnings of her professional career with that special sparkle in her eyes, reserved for people who truly love what they do.

"The idea to study Biomedicine and go into research came very naturally to me, since from high school I was interested in natural sciences, biology and chemistry".

Diabetes had caught her attention. Why diabetes?

"It was spanned over and connected to so many other disorders, that numerous courses during my studies mentioned." She applied for the summer internship at the Department of Clinical Science and Education at Karolinska Institutet, where she later stayed to do her master thesis project and eventually also a PhD. She admits that it was not an easy time. She had to change supervisors several times and her group was experiencing serious financial struggles.

"I learned how to be independent quite quickly. I couldn't rely on my supervisors, because they were constantly changing."

Despite many struggles, she admits, that her PhD studies shaped her into the person she is now: confident, independent and able to critically review scientific reports.

"It's a learning curve. You read a lot and you develop critical thinking. You train your presentation skills and gain more and more confidence while being questioned. Everything has its purpose."

She didn't plan to continue her scientific career. She got married and for personal reasons didn't want to leave Sweden.

"'I decided not do a postdoc unless someone puts it on a silver platter, give me money, give me a nice group and an interesting project. And I still don't know how, but everything aligned perfectly."

Her group received funding for a collaborative project with the Vascular Surgery Group, in which she was actively involved through one of her PhD projects. As a continuation, she was offered a postdoc position. She remembers the transition being relatively smooth, but still full of new challenges.

"As a postdoc you have to collaborate, establish your own networks and attract the funding, which is not an easy task."

Being a supervisor was also a new experience for her.

"You suddenly have to teach someone else, but it's amazing how much you learn yourself in the process."

Her postdoc lasted 2 years and towards the end the question 'what's next?' came back. While on maternity leave, she decided to think it through.

She left Karolinska Institute in 2017 and joined Diamyd Clinical AB as Clinical Trial Manager.

"I didn't have any previous experience in the field. I called the responsible person to ask whether I should even apply. Encouraged, I sent my application and even though I didn't check all of the boxes, they hired me."

She enjoys her work very much. Her company licensed the rights to a molecule discovered at UCLA many years ago and they are currently running clinical trials to test its application in Type 1 diabetes. Although she is not doing hands-on research anymore, she feels directly connected to science.

"Project management is much more administrative work, since everything has to be in accordance with local and general regulations. But it's very rewarding that it can directly benefit patients."

What is most difficult for her? She answers with a smile.

"Sometimes we want to check something quickly and it's not possible. I know I could just go to the lab and have a result in an hour, but then I realize: hey, I do not have a lab anymore. Old habits die hard.'

She does not regret leaving academia but she admits it was hard.

"While you're in, you feel it's a safe option. The alternative is so scary and unfamiliar."

ADVICE TO PHD STUDENTS

Make strategic choices and put yourself in the best possible position. Take courses, collaborate, create networks. If you feel you want to stay in academia, do it. But if not, don't be afraid to leave. You will be surprised what you can achieve when you are challenged.

- Linnea Eriksson



HOW TO FIND YOUR WAY OUT OF ACADEMIA AND INTO A GOVERNMENTAL ORGANIZATION

Susanne Johansson defended her PhD at Karolinska Institutet (KI) in 2010. Already during her PhD she knew that she did not want to stay in academia and that she instead wanted to strive for a career in industry.

"After my PhD I wanted to leave Sweden, take the chance and live in another country for a while."

Coming from KI opened doors. Susanne got the chance to do a postdoc at Janssen Pharmaceutica (Johnson & Johnson) in Belgium where she worked for three years on identifying biomarkers for treatment response and disease stage in Hepatitis C virus infected patients treated with a specific drug.

While she was able to use a lot of the skills she gained during her PhD, the company also supported her in getting further education. "I was able to learn the programming language R. That was a great experience and I also realized that I liked analysis

more than actual lab work."

Susanne decided to come back to Sweden and that it was finally time to exchange the lab bench for a desk. The fact that she had worked on drug evaluation and with samples from clinical trials helped her finding her next job.

Susanne started to work at the Dental and Pharmaceutical Benefits Agency (TLV) where she spent the next four years working together with health economists and lawyers.

"It was an exciting time to work with people coming from different backgrounds. We could learn a lot from each other."

But after some time, Susanne felt it was time for a new challenge.

She found what she was looking for at the Swedish Agency for Health Technology Assessment and Assessment of Social Services (SBU). SBU is preparing systemic reviews for decision makers and doctors, but also for the general public. Susanne is working there as project manager driving projects of various sorts in a variety of areas. "My daily job still feels a bit like research. I am searching for the right literature and writing a lot. The biggest difference I can see is that we work much more as a team compared to academia." Susanne also explains that her work/life balance has improved a lot since leaving the lab.

"One thing that I definitely have learned during my PhD is how to critically evaluate literature for its relevance. That skill helps me on a daily basis in my job. Funny enough, it also seems that having done a PhD makes people appreciate constructive feedback more, especially when it comes to comments on reports."

For the moment, Susanne wants to stay at SBU and learn more about the job there. "The potential for development at SBU is really good. They promote you to take courses and participate in conferences.

Also, because you change area with every new project there is a lot new you can learn constantly." Susanne's advice to PhD students looking for a job is to be very clear on what you can do and what your skills are, both when you apply for a job and during the interview. "When you finish a PhD you know that you are able to learn anything. Be clear on that."

Finally, Susanne says: "Of course, I am very proud that I finished my PhD. It is something that you should not forget. It has been a lot of work."

"WHEN YOU FINISH A PHD YOU KNOW THAT YOU ARE ABLE TO LEARN ANYTHING. BE CLEAR ON THAT."

- Susanne Johansson



BE BRAVE TO ASK!

Vicente Martínez Redondo is Research Scientist at Cepheid AB since 2018, while he completed his postdoctoral studies at Karolinska Institutet (KI) before starting his current position.

Looking back to when it all started, Vicente did his undergraduate and PhD studies in Barcelona, Spain. It was during his Master in experimental chemistry that he obtained his first laboratory experience. During that time, he was also introduced to many different labs, which opened the door to a PhD position in the same department.

He found research very exciting and he enjoyed working in the lab, so the search of postdoctoral studies during the final year of his PhD came as a natural choice.

"The contacts and a good network helped me to find my postdoc supervisor," he says.

Vicente and his postdoc supervisor, Jorge Ruas, had common contacts, so Vicente was informed that Jorge was establishing his research group at Karolinska Institutet (KI). After a successful interview in Stockholm, Vicente took the decision to come to KI.

His postdoc lasted 6.5 years and looking back he feels very happy about it. Despite his love for research and his academic merits, the challenges to stay in academia were big.

"It is becoming harder and harder to get to the top, as there are less opportunities to move forward in the academic ladder. The competition for researchers, especially the junior ones, is tremendous, and they even have to compete with those that are already further up," he explains.

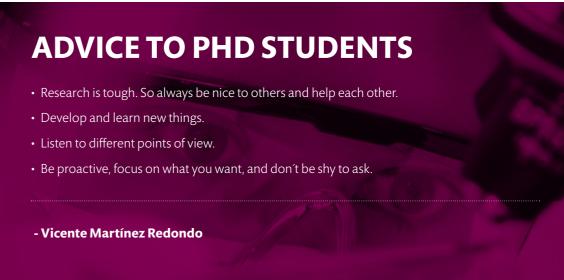
These challenges left him outside the academic ground, and that was the time when he started looking for job opportunities outside academia. He spent six months learning Swedish, expanding his network and applying for jobs. During that time, he also received guidance from Trygghetsstiftelsen, which helped him to shape his CV for industry and to search more effectively for jobs. Through LinkedIn, Vicente contacted people working at Cepheid AB, an in vitro diagnostic company in Stockholm, to express his interest in joining the company ranks.

"You should be brave and take the situation in your hands. We academics tend sometimes to be shy."

He finally secured a position in Cepheid AB, where he nowadays performs his duties as research scientist.

In his current job, he enjoys the numerous opportunities for career development, the security and a good balance between work and family. He also appreciates that the workflow is more structured, with shorter project time span and that his work has a more immediate impact on people's health. Last but not least, Swedish language skills are quite important in his current position as it is the language by which he communicates with his colleagues.

Problem-solving, scientific writing, along with some technical skills are a few transferable skills that he developed during his academic career and he is currently using.







LET PASSION AND CURIOSITY GUIDE YOU

la Khmaladze, PhD is a principal scientist skin health at the Swedish-origin global beauty company Oriflame Cosmetics AB. Her curiosity in skin research has led her to venture from academia to cosmeceutical industry.

The world of skin research was known to la since she was a PhD student at Karolinska Institutet (KI). During her PhD, she developed a murine model of psoriasis and psoriatic arthritis disease. Realizing that skin biology was her passion in science and that her curiosity pushed her to dig deeper into skin-associated inflammatory mechanisms, she decided to continue as a postdoctoral fellow in Molecular Dermatology at KI. Motivated to stay in skin research, la is now working with a group of expert researchers at Oriflame Skin Research Institute in Stockholm in developing new products for healthier skin and anti-aging benefits.

"Skin is a lot more than just to make us look presentable, it is is our body shield and body guard," la explains.

A lot of consumers are often ignorant of the huge scientific research and clinical testing behind skin

care products. R&D at Oriflame is operated by many experts ranging from raw materials, research and formulations, safety and global regulatory affairs. Ia's responsibility within the company falls into exploring and testing new ingredients.

At Oriflame, there is a strong focus in using plant stem cells to extract potent substances as this technology significantly lowers ecological footprints. The research lab is even equipped with an in-house plant stem cell laboratory to facilitate this process. Potential active ingredients generated from the plant stem cells are then subjected to rigorous pre-clinical and clinical tests on skin cells and tissues using in vitro, ex vivo assays and in vivo clinical tests using human subjects, before being incorporated into a product formulation. In addition, skincare products must cater to the consumer's skin type, age, ethnicity, gender and lifestyle.

Due to public awareness of how the environment affects skin health, la described how the demands of consumers now shifted to products that reduce impacts from environmental stress such as UV and pollution. Oriflame is now interested in applying a new holistic approach to skincare that will not

only offer 'good looks' but also promote health by combining ingredients that are skin and gut microbiome friendly.

la's decision to change from academia to industry was based on the fact that work-life balance was difficult for her to achieve in academic settings. She admits that she is the type of person that can 'easily get lost into research' and needs a more organized work ethic to find an optimal work-life balance. Was it a wise decision? Her answer was an undoubtedly yes, as her current position at Oriflame allows her to stay within a similar research orientation and passion, but at the same time achieve a harmonized lifestyle. She believes that "having a PhD degree is much more than a deep knowledge in a specific research field", all soft skills acquired during doctoral study such as project management, teamwork, networking and communication, are highly desired in many industries. Thus, the key to a successful transition from academia to industry is how best we can boost our research expertise with these transferable skills.

la's tip for PhD students considering to move into the industry is intriguing.

"Never stop being curious."

Curiosity is what has led her to her position now and in her opinion, one of the sought-after character for a role like hers. She also challenges us who are PhD students to try out the skills we want to acquire in different industrial settings even if this means exploring things that we dislike and won't do in the future. Her other piece of advice, giving a positive outlook for graduating PhD students, is that we shouldn't feel we are making a crucial lifetime decision by staying or leaving academia after graduation. Rather, we should make this a *stepwise process* and rely on our own passion and curiosity and eventually it will guide us to our light at the end of the tunnel.

"HAVING A PHD DEGREE IS MUCH MORE THAN A DEEP KNOWLEDGE IN A SPECIFIC RESEARCH FIELD."

- la Khmaladze





I SOLVE INTERESTING PUZZLES EVERY DAY

Anil Sharma works as a Data Scientist at H&M. He works on personalization. For instance, he analyzes customer data to target the right audience for an e-mail advertisement, or finds patterns in customer behaviors that can be used to tailor the H&M website so it shows products that each user is actually interested in rather than a standard view for all.

Anil defended his PhD dissertation in the field of neurobiology at the University of Western
Australia in 2012, and moved to Sweden for a postdoc not long after that. During his postdoc,
Anil focused on analyzing the RNA content in single sensory nerve cells to explore how they were different from each other. Through this experience, he realized that his interest lied in analyzing data, rather than generating it. This realization grew into the decision to change his career path and move into data science. Once he made the decision, he started taking online courses and applying for jobs.

"The hardest part was to find someone who believed that I could do it, someone that would hire me," he explains.

After numerous applications and interviews, Anil started his first job in data science working for a consulting firm in 2017. As a consultant, he gained experience from many different industries in a short time. The drawback was that he often worked alone. After about 2 years as a consultant, he moved on to work as a data scientist for H&M. There, he works in a cross-functional team of data scientists, business analysts, and developers – which is something he appreciates. The collegial support helps the team members learn and solve problems faster.

The collaborative work environment as well as the fast-paced problem solving are two things Anil really appreciates in his new career path, compared to academia.

Each morning, the team Anil works in has a 15 minute briefing. All team members brief their colleagues on what they are working with, and if they have run into any problems. That way, colleagues that may be able to contribute to each other's progress can meet up and discuss it in-depth later in the day. The rest of the day mostly consists of programming for data analysis. Anil and another data scientist work together, continuously discussing and reviewing each other's code throughout the day.

Despite not using his knowledge on nerve cells much in his day-to-day work, Anil explains that his research background, and specifically his experience in setting up his own experiments to collect data, is an asset in his work as a data scientist. "I am always suspicious about data," he concludes.

"I am always suspicious about data."



ABOUT

The Career Skills for Scientists course - an honourable mention

All the portraits in this booklet are results of the informational interviews conducted by PhD students in the course Career Skills for Scientists. It is a credit giving doctoral course organized at KI since 2010, run by KI Career Service and the Unit for Bioentrepreneurship at KI.

More info:

ki.se/en/lime/unit-for-bioentrepreneurship and staff.ki.se/doctoral-course-career-skills-for-scientists

KI Career Service

Karolinska Institutet Career Service works to educate and advise students, PhD students, postdocs and researchers for a future career in academia and beyond. We offer a varied program of seminars, workshops, lectures, and online support and inspiration. We also organize a doctoral course, called Career Skills for Scientists, as well as financed internship programs for PhD students and postdocs to get a taste of non-academic jobs.

More info:

ki.se/careerservice

KI Alumni Office

KI Alumni is a professional and social network for alumni and friends of KI. Former students, researchers and staff across the world make up an extensive contact network of experience and knowledge.

More info:

ki.se/alumni

