



A SPRING TO REMEMBER SIMON ELSÄSSER

Simon Elsässer is an Associate Professor of Systems Biology at the Karolinska Institutet in Stockholm. He received a Biochemistry degree (Diplom) from the University of Tübingen in 2007 and a Doctorate in Philosophy from Rockefeller University, New York, in 2011. Following a postdoctoral research period at the MRC Laboratory of Molecular Biology as Junior Research Fellow of Wolfson College, Cambridge, UK, he became Assistant Professor and Science for Life Laboratory Fellow at Karolinska Institutet in 2015. He is a Fellow of the Ming Wai Lau Center for Reparative Medicine and a member of the Global Young Academy. His research career has revolved broadly around molecular and mechanistic aspects of the human cell's ingenious system to package its genetic information. In his laboratory, launched in 2015, he is developing novel quantitative and systems approaches to study the crosstalk between genetic and epigenetic information. He has received national and international funding in support of his current research portfolio, including an ERC Starting Grant. – Address: Science for Life Laboratory, Department of Medical Biochemistry and Biophysics, Karolinska Institutet, Box 1031, 17165 Solna, Sweden. E-mail: simon.elsasser@scilifelab.se.

Prelude

Not having witnessed the stunning premises of the Wissenschaftskolleg before, it was the simple and bold promise to “Gain time to think!” that drew me towards it, irresistible like a siren song. However, I remember well the doubts I had while working on my application

for the College for Life Sciences. Would an in-residence fellowship in Berlin really unchain me from the fast-paced, fast-moving academic world? Would my laboratory and research progress suffer from my absence? Would it be a good idea to rip my wife and two children out of our well-oiled daily routine in Stockholm to come with me to Berlin? Moreover, would all the organizational effort that might be involved eat up the time gained in the end? Thankfully, the romantic dream of a scientific recluse and family vacation in Berlin prevailed at that moment. Looking back, most, if not all of my concerns turned out to be unjustified.

College for Life Sciences

My first encounter/experience with the Wissenschaftskolleg, even under the tense circumstances of facing the panel interview, was a true revelation. Having arrived comfortably ahead of time, I was able to witness a small slice of the daily life at the main building (Villa Linde), the studious, yet quiet, comings and goings of staff or Fellows, the cordial and professional interactions in the hallways, the warm and welcoming reception of visitors, all of this against the background of a charming turn-of-the-century villa. My stay was prepared with marvelous efficiency, and I cannot thank Andrea Bergmann of the team enough for her commitment to solving all our family issues. On the scientific side, Ulrike Pannasch, heart and soul of the College for Life Sciences, provided fantastic support, from getting to know everyone in the Institute and making connections in Berlin to reading and editing some of my texts. It is the impeccable administration and services for Fellows and partners that made it possible to come here without worries and, indeed, "Gain time to think!" Sadly, my stay only overlapped with a fraction of the College for Life Sciences Fellows, but I enjoyed even more the company of Victor Sojo and Asheley Landrum. Spending time together with Hassan Salem would have been great, as I was told that he is a runner, too. Seeing spring make Grunewald bloom and get green on my regular runs was priceless.

Scientific Project

Throughout my education and my career as a researcher, I have explored new horizons both geographically and thematically. Planning my stay, limited to about three-and-a-half months by various external factors, I was hoping to use this opportunity to depart from

my ongoing projects towards framing more long-term goals for my laboratory. Here, one key theme crystallized quickly: the need and opportunity to move toward more quantitative methods. Work in my laboratory was already on the way to revamping a classic methodology in the field (termed ChIP-Seq) with a strictly quantitative readout, a novel approach that even within our first few successful applications resulted in a surprising number of unexpected biological insights. I set myself the task of reading up on how quantitative methods have been implemented in other areas of cell biology and how to combine experimental data with computational analysis and modeling, to cumulate in a quantitative description of molecular mechanisms. This has indeed become the center of my activity at the Wissenschaftskolleg in the form of a key experimental manuscript that we were able to move towards publication during my time here, and a draft of a theoretical paper that critically examines the biochemical foundation and rationale of quantitative ChIP-Seq methods. As I had hoped, I was able to structure my time more freely and was able to dive into various datasets we collected in the lab during my stay without too much distraction. Of course, the constant stream of e-mails never stopped, but at least I perceived them as less urgent.

Beyond the *Tellerrand*

When it comes to interdisciplinary exposure, the Wissenschaftskolleg certainly kept its promise. I felt it was an absolute privilege to be part of the group of Fellows, highly recognized in their professions, be it the sciences, humanities, literature, or arts. In addition, I should add that I never felt it made a difference that I was a Junior Fellow. Interdisciplinarity here has to be defined as a wide gradient of unrelatedness. Naturally, I felt quite at home with the unusually large group of evolution biologists in residence this year, and I would like to thank Ashleigh Griffin for inviting me to take part in her workshop on multicellularity. Also, new connections (that may even affect my research direction in the long term) have formed beyond the obviously related disciplines. As a case in point, I recall a great discussion with science theorist Sarah Richardson. Maybe most gratifyingly, the Wissenschaftskolleg provides such ample opportunities to turn to know the persons behind their work, their sometimes upbeat and sometimes deeply moving life stories.

Berlin Opportunities

Berlin is a bustling hub for biomedical research, and with Grunewald as my base camp, I was in an excellent position to make and foster new connections, friendships, and collaborations across Berlin. Particularly, I would like to thank Alexander Meissner for providing an opportunity for my wife to work in his laboratory at the Max Planck Institute for Molecular Genetics and for facilitating contact with several additional groups there. During my stay, I also had the opportunity to present my work at the Charité and the Berlin Institute for Medical Systems Biology. Moreover, I attended the Annual General Meeting of the Global Young Academy in Halle, a fantastic opportunity to meet outstanding scholars from around the world. I know it is one of the goals of the College for Life Sciences' Program to connect the Fellows in residence to institutions in the Berlin area, and this was very beneficial to me. Given the importance for a junior scientist to build networks, this is an area I would love to see expanded in the future in order to maximize contact between the Fellows from different universities and research institutes.

Mentoring from Afar

In the last four years, I have developed my laboratory rather rapidly into a multidisciplinary team encompassing five Ph.D. students, five postdocs, and one lab manager. It has been an amazing journey and challenge to conceptualize a coherent research program on the scale of an entire team. I have been dedicated to getting everyone's projects off the ground and keeping up with the details of each project from beginning to end. However, I have realized the limitations of my time, and progressively I have come to appreciate that only by distancing myself from some of the details could I buy time to put my knowledge and experience into working with our emerging data, placing it in the context of the wealth of publications in each field, writing up manuscripts, and developing new hypotheses. Having witnessed the steep learning curve of young scientists in taking control of their own projects, I also wondered if some of my activities were, in fact, unnecessary micromanagement that might hinder rather than promote creativity and progress. Thus, my Fellowship at Wissenschaftskolleg has provided a valuable opportunity to rethink mentoring models. Having already embraced the use of modern online project management and team communication, I indeed managed to keep in touch with everyone in the group, ensuring that current projects continue to run smoothly. Nevertheless, I came to miss the social interactions,

hallway discussions, and joy of sharing exciting moments of discovery in person. Catching up with the group members after gaining some distance will be a unique opportunity to collect feedback and set new goals for our professional relationships.

Family

The greatest gift of the Fellowship was certainly that I could bring my wife and two children with me on a Berlin adventure. My stay at the Wissenschaftskolleg would not have been possible without a solution for the whole family; too great would have been the sacrifice of “commuting” 1000 km between family and Fellowship. Our adventure started with a visit in September, on which we met the years’ Fellows and their families on the beautiful boat tour.

Once there, we realized how much the Fellows’ families and their children were part of life at the Wissenschaftskolleg. Our stay was still far away and many problems remained to be solved, but my children were already sold on Berlin. Given the Kita crisis in Berlin, I know that Andrea Bergmann went out of her way to secure us two spots; thank you very much for that. The transition went amazingly smoothly and soon we were enjoying many family activities in Berlin, mostly related to playgrounds, lakes, and sand dunes. The kids enjoyed their own adventures at the Kita and Thursday evenings at Weiße Villa with the other Fellows’ children; special thanks here to the babysitters. We all went home with fond memories of our time at the Wissenschaftskolleg and we are certainly looking forward to coming back.