Chapter 7: Passion for Parasites: The Compass for My Career

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From Childhood to Africa

Since I was a child, I loved animals. My teddy bear and other toy animals meant much more to me than any doll. In early adolescence, I desperately wanted to own a dog, but my parents did not agree. On one of my grandfather's birthdays, my aunt and uncle, who at the time lived abroad in Ghana, West Africa, for work, visited for the celebration. And they had a dog! So I was especially happy to receive their invitation to Ghana a few weeks later, on my own birthday. By the time I made the trip, in 1993 at 14 years old, the dog had died, but those two weeks in Ghana were a life-changing experience. I was fascinated by the differences in life, culture, nature, and history, and my biggest wish was formed: to come back to Africa as soon as possible. Working towards this goal, I worked in an eldercare home to earn money for my next flight. My wish became reality only two years later, in 1996, when again I had the chance to visit my relatives, who by then had moved to a small town in the Volta region in Ghana. Comboni Centre, a place where a hospital and several types of schools and training centers served the local population, was located in this town. Once I finished school, I returned to the Comboni Centre in 1998–99, to do a six-month volunteer service. While I initially thought I would be best situated helping and supporting in the kindergarten, I quickly realized that my favorite place to be was the hospital laboratory. Here, I was confronted with the health problems of patients who visited

the clinic, and I learned about chronic and infectious diseases. The local laboratory technicians taught me how to test blood groups before a blood transfusion was made, and how to diagnose all sorts of parasites that cause diseases such as malaria, schistosomiasis, and onchocerciasis; bacteria that cause cholera and syphilis; viruses that cause hepatitis and HIV/AIDS; and many other infections that frequently occur in this part of the world. Hence, it was in this laboratory in Ghana that I found my second passion after exploring Africa: my passion for parasites. Besides working in the laboratory, I was able to explore and see many parts of Ghana, and from my local contacts and friends, I learned a lot about the life, culture, attitudes, practices, problems, and solutions that are special to Ghana.

From Student Time to Parasites

Six months later, I returned home to Germany with a rich experience and the idea to study parasitic diseases and tropical medicine. Of all the universities I explored, the University of Tübingen seemed to be the right place for this endeavor, since they offered excellent and highly interesting tropical parasitology courses as part of the biology diploma. Lecturers loved Africa and their field of research and transferred their vast knowledge with fascinating stories, reflecting their own experiences. In 2004–05, after four years of studying, I returned to Africa, this time to Togo, to collect data for my diploma thesis in parasitology. The thesis focused on immune responses against guinea worm infections and their diagnostic markers. Guinea worms are fascinating parasites: A human can become infected with guinea worms by drinking water contaminated with tiny water fleas that are infected with the worms' larvae. Inside the human body, the guinea worm larvae penetrate the stomach wall and start their migration. After mating and one year of migration and growing, the female worms become up to 1m long and reach their final destination, usually the lower limbs. Here they induce a painful blister. Once the human skin gets in contact with water, perhaps to cool the painful foot, the worms start emerging and release thousands

of larvae into the water. If the body of water contains the water fleas that serve as intermediate host for the parasite, they might become infected. If another human drinks the water contaminated with the infected water fleas, the life cycle of the parasite is completed.

Due to secondary infections of the wound caused by the emerging worms, and the related inability to walk, work, farm, and generate the daily income, guinea worm disease is a very debilitating disease. It is also called the "disease of empty granary." The disease is mitigated by taking care of the secondary infections and by extracting the long worm by rolling it on a small stick, little by little not to break it, which may take several days or weeks. Thankfully, country-wide programs to control and eliminate infections, transmission, and morbidity have been very successful over the past decades in all countries where it is endemic. Presently, there are very few guinea worm infections found in very few areas of the world. Hence, during the fieldwork for my thesis, I was "lucky" and able to see some among the last guinea worm cases in Togo, which achieved the transmission-free status in 2011.

From PhD Journey to Mutual Learning

Towards the end of my time as a student, I knew I wanted to continue working for health organizations and, ideally, to have the ability to visit Africa again. However, all organizations offering jobs in that regard requested several years of working experience. Hence, I felt that the only possibility to continue and obtain more experience was by doing a PhD. When writing up my diploma thesis, I came across several publications from the Swiss Tropical and Public Health Institute (Swiss TPH), which were related to West Africa, worm infections, and public health. After obtaining some more information about Swiss TPH, I decided to write letters to the director as well as to the main author of the papers, to ask if there was any possibility to do a PhD at the institute with them. I received quick and friendly responses from both, and after a six-month break traveling across New Zealand after my thesis defense, I visited Swiss TPH for the first time in late 2006. Here, I met the director himself and sev-

eral scientists to discuss possibilities for a PhD. Immediately, I felt that there was a lot of understanding and sympathy, and that Swiss TPH was a place with people who shared my own passion, a motivation to make the world a healthier place, and a sense of mutual respect and support. This feeling was very much confirmed and fostered later on during the time of my PhD, when I met many wonderful people at Swiss TPH who were all extremely nice, supportive, and driven by a high motivation for their work. The months after my meetings were filled by writing proposals and trying to get funding for the PhD. While my applications to several foundations were not successful at that time, my supervisor-to-be still found a possibility to hire me as a PhD student, and in April 2007, I started my project.

Initially, the plan for me was to work on worms and co-infections in Côte d'Ivoire. However, in early May, when a parasitologist colleague and friend of my supervisor came to visit Swiss TPH, the plans changed rapidly and a new idea sparked: I would go to Zanzibar, an island belonging to the United Republic of Tanzania, and conduct a study on the epidemiology, diagnosis, and control of intestinal worm infections. Several emails were exchanged with the local partners, and six weeks later, I and the man that would become my mentor over the next three years of my PhD arrived in Zanzibar. My mentor introduced me to life in Zanzibar, to the Neglected Tropical Diseases Program managers from the Ministry of Health, and to the laboratory of the program. Over the next weeks, the local team and I collected many hundreds of stool samples from people living in different parts of Zanzibar and examined them in the laboratory for intestinal worm infections. Moreover, and at least equally challenging, I tried my best to get the laboratory organized and to deal with a local team of more than ten people who mostly spoke only the local language, Kiswahili, and little English, and who often had quite different views from mine on when and how the field and lab work should be conducted. For the first time in my life, I had to prove myself as a team leader who, on the one hand, needed to accomplish a project and collect high-quality data within a limited timeframe and, on the other, wanted to respect and accept different working styles. While sometimes challenging, it was very rewarding to learn from the local team, which was very expe-

rienced and greatly supported the successful accomplishment of my first project in Zanzibar.

This first project sparked ideas for the second and, finally, the third project in Zanzibar during the time of my PhD. With every visit to Zanzibar and every project, I got to know the local conditions and members of the team better, which in the meantime had grown to more than 20 people. I knew their strengths and weaknesses, where I could rely on what they were doing, where they needed support, and where I had to pay special attention. Thus, I managed to appoint them to niches in the work that they could fulfil in a way all of us were happy with. Hence, we all started to enjoy our daily work more and more, and grew together as a well-functioning team with a very good output. However, mutual trust was built not only by the work we did together, but also through hearing opinions and perceptions, through the discussions we had, through the exchange of views, and through their understanding that they could approach me in challenging situations, and that we would try to find a solution together. I learned a lot not only from the team members, but also from the local program managers. Getting a feeling for sensitive issues and situations, which might be handled and discussed differently in the Swahili culture, and practicing careful (non-violent) communication so as not to be blocked but to be understood and supported, was one of the main leadership skills I acquired during my PhD.

From Postdoc Years to Networking

The stays in Zanzibar were also very essential for the future of my career, since there I got to know other students, scientists, and influential experts working in the field of parasitology and tropical diseases. One among them was a merit researcher and leader of the Parasites and Vectors research group at the Natural History Museum (NHM) in London. He had acquired a grant for a large-scale, multi-year operational research project for schistosomiasis elimination in Zanzibar in 2010, right at the time when I had concluded my PhD, and he asked me to join his

group as a postdoc and help him design, implement, and lead the new study.

While in my first two postdoctoral years, I stayed at Swiss TPH, in early 2013, I moved to London to join the research group at NHM. The three-and-a-half years I spent in this vibrant city were marvelous in many ways. The NHM was an extremely beautiful place to work. Walking through the stunning building and halls, every morning before they were opened for the public, was a unique experience. Working in the Parasite Vectors research group and communicating with other extremely open and friendly junior and senior scientists who worked in other fields was very valuable and enriching. The joint time and experiences in the field in Zanzibar and in the office in London created a lot of trust and friendship between us, with conversations and discussions that went far beyond work, and I became close friends with many of my group colleagues. Getting insights into the functioning and administration of another institute was also enlightening, and I got more ideas about what had gone well or not so well at my previous institute, Swiss TPH, and about what could be adapted from NHM and vice versa. With the group leader at my side, I had the best mentor and role model I could imagine, who guided me wherever I needed support and allowed me to work with autonomy wherever he trusted I would do well. I learned from him by observing his leadership style and passion for work, but also his immense interest for many other things beyond work, his way of caring for staff and collaborators, and his excellent ability to summarize and move forward essential points in every small or large meeting.

The large-scale, multi-year Zanzibar Elimination of Schistosomiasis Transmission (ZEST) project was funded by the large Schistosomiasis Consortium for Operational Research and Evaluation (SCORE) via the Bill and Melinda Gates Foundation (BMGF). Every year, all leading scientists from Africa, Europe, and the United States who run SCORE-funded projects, plus selected advisors, WHO members, and program officers from the BMGF, came together in annual meetings to discuss their projects and the way forward for sustainable schistosomiasis control and elimination. Presenting, discussing, and exchanging ideas with high-level experts, and carefully reflecting on and evaluating our own

project's progress in an inspiring atmosphere full of partnership rather than competition, I got to know many leading scientists and slowly but surely developed into a well-recognized scientist myself. Moreover, in 2015, I became co-principal investigator for the ZEST project.

From the PRIMA Period to Anchors and Opportunities

The ZEST project revealed many interesting findings about schistosomiasis elimination and resulted in a considerable number of high-quality papers. However, it also revealed challenges on the way towards elimination that needed to be addressed in future research. Since ZEST would come to a close in 2017 and I was also ready to leave London and return to my home country, it was clear that new funding had to be acquired and that I, ideally, should move to the next step of my career. Hence, I submitted a proposal for a European Research Council (ERC) Starting grant in 2016, and I got to the interview stage in Brussels. While I ultimately did not receive the grant, the process was great training for future applications and interviews, and for thinking about my next project in more detail. Luckily, we still had some bridge funding to finalize the project outputs from Zanzibar, and this helped me return to Swiss TPH in a project leader position. From here, but still together with my mentor at NHM, we started exchanging with the BMGF about a potential next project for schistosomiasis elimination in Zanzibar. At the same time, in 2017, the Swiss National Science Foundation (SNSF) launched a call for PRIMA grants that were "aimed at excellent women researchers who show a high potential for obtaining a professorship." So I took the chance to submit my research plan and application; as for the ERC, a few months later I was invited to take part in an interview for the grant. This time, I was more successful and was awarded with the grant in August 2018. However, since the BMGF was also interested in starting a new project with us, I faced a dilemma. I felt proud and lucky to have the chance to receive two grants. But I also felt overwhelmed and unable to manage and lead two huge and demanding projects. The situation was very difficult, and I sought help from a coach and therapist.

Talking about my feelings, it became clear to me that while I loved my work at Swiss TPH and in Zanzibar, I also feared that taking on both grants and the related amount of work would kill my joy and motivation for work and life. I felt enormous pressure and was sure that saying "no" to one of the grants would massively disappoint my former supervisors and mentors. However, taking different perspectives during the coaching sessions, and looking at individual parts of the BMGF proposal, I came to the conclusion that I would be happy to accept the PRIMA grant, and to support part but not all aspects of the BMGF grant. I also understood that talking with my former supervisors and mentors about my decision and explaining the reasons why I wanted to decline parts of the BMGF grant would not necessarily result in their disappointment. Indeed, when I communicated with both of them, they were understanding, and we jointly decided that I should go for the PRIMA grant, share sub-parts of the BMGF grant with a good colleague, and reject the big but insecure part of the latter. A huge weight was lifted from my heart. I felt happy again and was very grateful to have such great peers who not only saw the money and prestige behind the grants, but also had a good instinct for what made sense and was important and where it was okay to say no.

In early 2019, in order to accomplish my part of the BMGF grant before the start of PRIMA, I returned to Zanzibar to implement a follow-up survey for the ZEST study. A few weeks earlier, I had been contacted by a German student who wanted to do an internship in Zanzibar for her MSc project, enhancing her knowledge for epidemiology and public health. With that student, I had a fantastic support for the project and it was only a question of time and getting to know each other that I offered her a PhD position in the new SchistoBreak study, which she happily accepted. The fieldwork for SchistoBreak, which was the research part of my PRIMA grant, started in early 2020 in the north of Pemba Island. For the first time, I was fully responsible for a project, its management, budget, and the people working on it. The PhD student, a highly dedicated person, was keen to optimize and digitalize data collection procedures with new smart phone technologies. She also had a deep knowledge of epidemiology and public health, and spoke excellent Kiswahili. The local

teams we worked with consisted of both very experienced staff and new, young and smart people that were eager to learn. Thanks to the grant, I could fully concentrate on the research and on writing my habilitation. Unfortunately, the faculty rejected my application for habilitation initially in 2020, since I had not given enough courses at the University of Basel (though I had done a lot of external teaching). One year later, I had increased my teaching and was just about to resubmit my habilitation, when the SNSF urged all universities to upgrade PRIMA grantees at least to group leader positions, and ideally to assistant professor level. At Swiss TPH, I was therefore assigned the group leader status and in August 2021, at the University of Basel, I was given the title of "assistant professor without tenure-track." Subsequently, the faculty decided that I should not submit a habilitation, but that the PRIMA grant was an equivalent sign of my qualification, and that after its completion at the end of 2024, I should directly start the process for obtaining the status of "Titular-Professorin".

Yet, to date, there is one year to go with the PRIMA grant. One year that will give me the time to think about what to do next and explore opportunities for new positions, grants, and collaborations. Notably, the PRIMA grant came not only with money for research but also with a very nice program that allowed us to participate in reflections with other grantees in a series of capacity and career workshops. These workshops were extremely helpful for advancing my leadership skills. They also took me by surprise, often including topics that I had not expected to be covered in a leadership program. In one of the workshops, for example, we learned to recognize our inner motivators and to develop concrete steps for our work-life balance. In a second, domination and partnership systems were the main topic. In a third, we talked about stress and the habitual patterns of behavior to react to it. We also got a brief training on how to stop stress-related automatisms, to pause and reflect, to finally act more consciously, communicate more clearly, and to make better decisions. For me, the topics were a surprise, since in my view it was clear that if one wants to become a professor, one had to give up "life" and most professors I know and knew lived mostly for work and their colleagues and collaborators, but had hardly any time for friends,

family, and themselves. I did not want to become a professor for this reason and now it was pointed out to us potential future professors that a work-life balance matters . . .? Wow! Similarly, I did not want to become a professor because I do not like hierarchies and domination. The SNSF gave us the chance to learn that empathy, mutual understanding, and caring for others is extremely important and valuable for leaders as well, and that a partnership approach leads to happiness and health, also within a research group and team, collaborations, and stakeholders, while domination is purely destructive. Finally, learning that mindful leadership is a fundamental skill for our future was very encouraging. Over these courses, I realized that my career anchor indeed is "lifestyle" and that among my personal pleasure points "nature" ranks highest. For my motivation and happiness, it is therefore extremely important to balance my personal and family needs with those of advancing my career. All of these parts are a priority for me and need to be integrated and work together. Therefore, I would for example not sacrifice the geographical area where I am happily living, and give up the quality in-person time with friends and family that live close to me for a future professorship in a different location or country; I would rather change position at my institute if possible or find a new job elsewhere in the area. However, who knows . . . So far in my life and career, one step led to another and my passion for parasites was a guiding compass. Hopefully, this will continue, and within the year, new opportunities will arise and I will be open enough to recognize and take them and continue to live and work in happiness and great fulfilment, as I did over the past decades.