

Annalisa De Cia,  
Sara Hellmüller,  
Elizabeth Mesok (eds.)

# WOMEN IN SCIENCE

Experiences of Academics  
in Switzerland

[transcript]

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Women in Science

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## Foreword

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*Cassidy R. Sugimoto*

The percentage of women authorships<sup>1</sup> in Switzerland over the past two decades is around 27%, making it one of the lowest in Europe and falling below the world average.<sup>2</sup> This is aligned with the rate of women in professorships (24%), which likely prompted the Swiss National Science Foundation to produce the PRIMA call, aimed at propelling excellent women scholars to professorships. Twelve of these awardees have shown the courage and generosity to share their stories here.

These scholars represent a range of disciplines, many of which have among the lowest rates of women participation, such as astronomy and physics. It is no surprise, therefore, that their stories are often of isolation: several women noted having never met anyone in their field before going to university and many were the first in their family to do so. These scholars were navigating completely foreign paths, with few women to help them along the way.

While they all held positions in Switzerland, they hail from around the globe and took many circuitous routes to their current position. Such is the nature of contemporary scientific work. Of the 30 highest-producing countries in the world, Switzerland has, by far, the highest rate of scientific mobility. This is, in some part, due to the concentration of work in

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- 1 “Authorship” refers to “the average percentage of all authors on a paper who are women.” See Cassidy R. Sugimoto and Vincent Larivière, *Equity for Women in Science: Dismantling Systemic Barriers to Advancement* (Harvard University Press, 2023).
  - 2 All cited statistics are taken from Sugimoto and Larivière, *Equity for Women in Science*.



physics, a field where mobility is nearly a requirement for participation. Mandatory mobility can create heightened precarity, which is noted by several scholars and most elegantly by Meike Ramon, who spoke of academic life in terms of “lifelong dances with uncertainty.”

Unfortunately, these inflection moments for mobility are concomitant with when scholars are most likely to also be balancing competing domestic demands, such as partnership, childcare, and eldercare. The stories in this book resonate with global analyses, demonstrating that academic women take on disproportionate domestic care responsibilities, with adverse effects for productivity and visibility. This was particularly heightened during the pandemic: Camilla Jandus describes homeschooling three children during COVID-19 while running her lab. The stories, however, highlight a silver lining for parenting: as Annalisa De Cia noted, “working mothers probably get some pretty good field training in leadership skills.”

Despite the adversity they faced, a common theme across the narratives is passion: all the scholars have demonstrated that the foundation for resilience is commitment to curiosity, whether for sharks or the skies. Elizabeth Mesok provides excellent advice to let yourself be driven by the work you want to do, rather than the position you want to obtain. Many of the scholars, however, spoke about having projects that they “burn for” but that can create “burnout.” They note that self-care and work-life balance will never materialize organically — there will always be more to do than there is time in the day. As Sara Hellmüller observed, “our main activity — thinking — is never really done.” Space, therefore, must be created. Several spoke of structural changes in the system that are deconstructing institutions built for an “ideal scientist” — one who has the personal and financial support systems to devote themselves completely to scholarship. More work, however, is yet to be done to create structures that allow all scholars to bring the fullness of life to their work.

Another striking theme is the commitment of these women to lifting others in their scholarly pursuits. They spoke openly about their dedication to building teams and creating inclusive scholarly environments. This is an important element in diminishing the gender gap. For example, when women are in senior authorship positions, they select women

first authors in 46% of instances, whereas when men are in the same position, only 32% of first authors are women. By funding senior women for professorships, one both addresses gender disparities at the highest levels of academe and mitigates inequalities for early career researchers. The critical role of transitioning into mentorship and then leadership roles was beautifully articulated by Gina Garland, who spoke of adapting to this role and being faced with “new questions about the purpose and impact, the potential of research to affect change.” She notes that: “Scientists do not work in a vacuum. Research does not begin and end in a lab, spreadsheet, or journal. Networks of people and thoughts are what spark and inspire the ideas behind projects, and ultimately drive these ideas into action [ . . . ] This network deserves to be not only acknowledged, but nurtured.”

The stories in this volume highlight the role of women in the vast scholarly network, acknowledging their challenges and their contributions, and the communities that they have built. These stories are for the budding scholars, who contemplate devoting themselves to science; for the early career scholars, looking for a sense of belonging; for the senior scholars, considering how they can use their positions to empower others; and for those who make policy decisions to imagine and implement structural changes that support a thriving and diverse scholarly ecosystem.



## Preface

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*Annalisa De Cia, Sara Hellmüller, Elizabeth Mesok*

From 2018 to 2021, the Swiss National Science Foundation (SNSF) offered PRIMA grants, a career-funding scheme designed to support women researchers as they sought to obtain professorships. Women from humanities and social sciences; science, technology, engineering, and mathematics; and life sciences had the opportunity to compete for funds of around 1.5 million Swiss francs to support five-year research projects. The SNSF awarded 94 grants to women during this time period; the objectives of the scheme were then integrated into the SNSF Professorial fellowships and Starting grants.

*Women in Science: Experiences of Academics in Switzerland* tells the stories of twelve women, each of whom was awarded a PRIMA grant — their dreams and passions, their trials and tribulations, their goals and achievements, and the lessons they have learned throughout their careers. Featuring personal insights from women across Swiss universities and disciplines, this book offers a glimpse into the various and often nonlinear paths within academia. *Women in Science* highlights not only the rich diversity of the Swiss scientific community, but also common challenges, such as persistent structural inequalities, highly competitive — and at times, toxic — work environments, and the difficulties faced by women who bear the brunt of motherhood and care work while facing the demands of pursuing a highly competitive career path. While the book does not shy away from confronting head-on the ever-pervasive inequity that characterizes academic life for the vast majority of women, it also offers guidance and hope for those struggling to find their place in science. *Women in Science* tempers an acknowledgement of

the precarity of academic pursuits with the sheer passion and perseverance of those that continue to aim for the highest university positions, often against great odds.

The heart of this book is the women themselves: tenacious, committed, driven, creative, and acutely aware of both the downsides and the privileges of their careers. The stories in this volume ultimately reflect the best that academia has to offer: individuals who fervently believe in the work they have committed their life to, who endeavor to mentor and inspire other young scientists, and who continue to point the trajectory of both their lives and careers toward a more expansive and inclusive vision of success.

The book is organized in two sections. The first section, “Navigating Adversity and Opportunities: Stories of Perseverance and Triumph,” offers reflections on the challenges faced by women academics, many of whom are first-generation college graduates, as they grapple with barriers to education, hostile work environments, non-linear career paths, and the demands and precarity wrought by combining an academic career with motherhood and care work. The second section, “Be(com)ing a Scientist: Key Values and Traits of Academics,” contains essays that detail the different character traits or values that the authors believe to be essential in an academic career. Reflecting not only on their own profession but also on what they have witnessed among their peers, these authors outline the key components they see as necessary for academic success and personal fulfillment.

The genre of the collection is mixed, and the chapters are diverse in both tone and style. Some are written as historical narratives, others as letters to one’s young self, and some as advice to young scientists who are hopeful for careers in academia. Each essay contains important reflections on the struggles, the rewards, and the pleasures of a scientific career, highlighting passion as a necessary ingredient in pushing the way forward, often against the tide, to reach inspiring heights.

**Part I: Navigating Adversity  
and Opportunities:  
Stories of Perseverance and Triumph**



## Chapter 1: A Dream of Faith

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*Catalina Pimiento*

*In one of the few love stories by Jorge Luis Borges, a Colombian teacher meets and falls in love with a Norwegian woman. When she asks what is “being Colombian,” he responds: an act of faith.*

It is 1998 in Bogotá, Colombia. At that time, it was a city of eight million people. The wealthiest live in the north, the less fortunate live in the south. The south is where I live. From there, everywhere is so far away. It takes hours to get to work, to school. I am 15 years old and live in a cozy flat with my family: mum, dad, and two younger brothers, José and Sebastián. In two years, I graduate from secondary school. What's next? Maybe I'll study medicine, maybe chemistry. Archeology would be even better, but what is that even like? I don't know any archaeologists. My friends (who are mostly cousins) are also wondering what to study, and their parents insist they need to find a career that is lucrative. Life is too hard otherwise. My parents are not like that. Even though they know first-hand how hard life can be when you are poor, they insist that I should study whatever I want, and that I should follow my passions. I feel very fortunate, but I am not sure how we could pay for my education in a country where that is a privilege and not a right. I have always been aware of our financial constraints, even at a very young age, and I constantly worry about them.

A year has passed, and it is now my 16th birthday. My parents give me a one-year subscription to *National Geographic* magazine. I receive the first issue. The cover: an article about the great white shark. I read the issue start to finish and all of a sudden, like an epiphany, it becomes very



clear to me: I will study biology and save sharks from extinction! My parents support this idea. I am so excited. Especially because deep down, part of me thinks that becoming a biologist is extravagant, even surreal, especially for a girl from Bogotá, in the heart of Los Andes and 20 hours away from the closest beach. I have never even met a biologist before, nor a shark researcher. It is insane, but I am going for it. If my family supports it, it cannot be that crazy.

There are a number of prestigious universities I can apply to, one almost free but very hard to get into (La Nacional), one super expensive (Los Andes), and one just about affordable (La Javeriana). My missions: to get in La Nacional by passing an admission test, famous for being almost impossible, and to get the best possible grade in the secondary school exit examination test (ICFES), which is used to determine students' academic readiness for admission to universities. I stress so much about this. I think of failing this test as the worst thing that can ever happen to me. So, along with my best friend Karen, I decide to take multiple extracurricular classes after school. I also plan a strict self-study program while I aim to get the best possible grades. Part of my plan consists in waking up at four in the morning to study before school. I start developing the insomnia that will remain in my life for the years to come. But worse than that, I give myself an eating disorder because instead of eating lunch, I save all my pocket money to pay for the extra courses I am taking (although we cheekily manage to take one of these courses without paying, until they find out and kick us out). At the end, and despite my efforts, I fail to get into La Nacional.

Not securing a place at an affordable yet prestigious university breaks my heart. I feel ashamed, embarrassed. But then, the results of the ICFES arrive and I get one of the highest scores in Bogotá, which grants me the Andres Bello Award. The award letter states that this prize secures a place in any university I want, and a scholarship. Oh, immortal jubilation! Next day I go to the ICFES headquarters only to find out that I will never receive such a scholarship. The people I speak with tell me, in a mocking tone, that they do not know anything about it, and that it must be an error, a relic from a previous system. I am frustrated but I shake it off quickly because broken promises about scholarships are very

common in my country. So instead, I take a loan from the government to pay half of the tuition in La Javeriana, where I easily get admitted, as I got excellent grades at school. I have no idea how we will pay for the other half, but it doesn't matter. We will worry about that when the time comes. I need to have faith that it will work out.

It is now the year 2000. The curriculum at La Javeriana is rich, inspiring, and exciting, which is not surprising. After all, this is a mega-diverse country and there are few places in the world better suited for studying biology. So, I take courses in botany, genetics, zoology, ecology, evolution. But my years at university are taking place at a peak in Colombia's internal conflict. Violence is endemic in Colombia, with generations enduring different mutations of it. For my generation, it is bombs, kidnapping, massacres, crossfire, mass graves, displacement, and fragmentation mines, in cities as well, but mostly in rural areas. Colombian people suffer immensely. Watching the news has become too painful for me. Is the evening news showing violent scenes in black and white? Or is it a coping mechanism from my subconscious? Traveling to the countryside has become too dangerous. Some people from the cities have stopped going altogether. Even if nothing happens directly to us, we are all constantly scared. Every night I pray, begging that nothing horrible (like in the news) happens to my family. Yet, life goes on: we go to work, we go to school, we gather at our grandparents' houses on Sundays, have barbecues and dance, as per usual. In fact, these are happy times, in a way. We kind of live life as if every day was our last. Like the song says, "we are here today, we don't know tomorrow."

In the meanwhile, the education of all biology students is being tainted by a big paradox: not to be able to do much fieldwork in a mega-diverse country. However, in La Javeriana, we still visit some wonderful field sites in the Caribbean, the Amazon, the Andes, and the Eastern Plains. We manage to do so by getting to these sites by plane, instead of by bus, as crossing our convoluted geography would be too dangerous. That means I need a lot more money, which, in addition to the half-tuition, makes the already difficult situation for my family even more challenging. My brother José has just finished school and is working for a bit, so he helps me before he starts university and begins his own strug-

gle. My grandmother helps here and there, too. But my parents do most of the heavy lifting. I do not know how though, given the circumstances. No one in my family knows how we manage to pay for things, really. But it just happens, as an act of faith and a privilege I live with, without realizing. The financial stress of my family and the violent environment makes me constantly anxious, and I develop very high expectations for myself, again: to get the best grades in my cohort in order to make my family's effort worth it, and then to succeed professionally and become financially independent as soon as possible so that I can take care of them.

It is in the middle of this chaos, of this uncertainty and anxiety, and this constant sense of danger, that I first learn about academia through a Colombian scientist who later became my life-long mentor. Carlos has just returned from studying in the US and is now starting a research group. He tells me all about academic life in the US and it all seems so luxurious to me. Do people really get paid to do research in a subject they feel passionate about? Where do I sign? Becoming a scientist is my new goal in life. But for that, I need to excel. I also need to make important connections and go abroad to get international research experience. And of course, I need to become fluent in English, which I am getting close to achieving thanks to my love for rock music and US-American comedies. Every day while I commute (which takes at least one and a half hours each way), I daydream about emigrating to the US or Europe to do a master's and a PhD, to one day devote my life to the study of sharks and to lead a research group. But this dream seems so far away. One of those dreams people never achieve.

It is now March 2003. After a long day of classes, I take a bus back home. It is not rush hour, so I get to travel sitting down. The bus is rather empty. I have a Walkman and start listening to the radio. I have a long journey ahead, so I start drifting into sleep. I realize I am sitting on a pile of papers. The handwriting looks like a less nice version of my own. It seems to be a letter, addressed to me. It says:

*Catalina,*

*This is a letter written by yourself from the future, exactly 20 years from now. I know how worried you are about the next steps in your life, so I decided to send you this letter. There are a lot of things I want to say, but I will start by saying that everything will be fine. Not just fine. Your dreams will come true. So please, stop worrying so much.*

*I have a lot to tell you about the future. It is crazier than you can imagine here. We are constantly connected to the internet and can access all kinds of information within seconds from our phones. We can also message or video-call anyone from anywhere in the world, and take pictures and share them with our friends and family. We can watch all sorts of movies and (you are going to love this one) we can listen to all the music. Yes, all of it is now easily available. So, pretty soon, the world will be so inter-connected that it will feel smaller and more accessible. Traveling internationally (one of your dreams) will become easier, and we do it a lot. We have been in many different places. In fact, we have lived in five different countries. Don't worry, you have maintained your connection with your family and friends despite the distance. But you meet new people too, many of whom will become essential parts of your life. You find your other half unexpectedly, and alongside this wise, loving, resilient, and beautiful man, you feel at home, safe, and complete. Your family visits a lot and you visit them, too. Sebastián, in particular, is by your side in every step you take, and you share wonderful adventures together.*

*You fulfil your dream of learning English, moving abroad, getting a PhD, and becoming a shark researcher. You first embark on a journey to study whale sharks, which opens many academic opportunities for you and becomes your key to entering grad school. You will regard this time as one of the happiest of your life. But grad school, despite being a dream come true, is full of challenges and disappointments. You will often feel like you can't do it, and many will try to convince you that you are not good enough. But luckily, and as per usual, you have an amazing network of people who support and encourage you. After many, many, many rejections, you will do multiple postdocs where you, for the first time, will feel academically confident, independent, and strong. So, remember this:*

*you won't always feel this insecure. During this time, you get to meet incredibly clever people with whom you collaborate and establish long and loyal professional relationships.*

*Following an unexpected path, you end up working in a world-class university. You have the privilege of leading a research group and spending your workdays thinking, reading, and writing about sharks. Proposing research projects and discussing ideas on why and how sharks go extinct becomes part of your routine. You learn to use an array of computational methods that would seem like science fiction today. Your research group aims at informing conservation efforts to protect sharks from extinction, just like you wanted when you first read that National Geographic magazine. Every day you feel lucky and privileged. Although, this comes with some guilt, as you cannot help but compare your luck with that of less fortunate people in your country and the rest of the world.*

*A lot of the privileges that you are lucky to have now, such as traveling the world, being connected with your loved ones, using your phone, and living a comfortable and healthy life, comes with a price. Not specifically for you, but for us, as a civilization. Our planet is heating (actually boiling) at an accelerated rate, and we are facing a climate emergency. Our very existence in the future is uncertain. We are driving many more species into extinction than you could have ever imagined. Sharks are one of the groups facing the highest extinction risk. We are all to blame, but every day it becomes more and more evident that a minority of people, those profiting from extractivism and exploitation, are the most responsible for destroying our planet and our society. Governments and corporations all around the world are complicit. In the meanwhile, underprivileged people all over the world pay the highest price for the ecological breakdown we are facing. You are protected from this all to an extent and feel, once again, guilty, but with a sense of urgency for change.*

*But do not think this is a problem of the future where I am writing this letter from. We now know that this began before we were born. That many of these issues were not on our radar growing up in Colombia because we were too busy surviving, and because the future was more a fantasy than a matter of time. Once you realize all this, a lot of what you believe in will change. In fact, understanding*

*these issues will feel like an awakening for you, almost a re-birth. You will be finally able to fully comprehend that overwhelming feeling that you have in your chest when you see injustice and that node in your throat when you see suffering. Even if you cannot articulate that in the most eloquent way, you will understand it and that will be enough. Most importantly, you will no longer feel so lonely in that struggle because you will share all of that with others. You will find a community of people who share this view of the world in the most unexpected places.*

*Although you will have a persistent and unsatisfied hunger for change over the years, which is very present as I write this letter, I can say that some things will change. In 2016, the Colombian government will finally sign a peace agreement with the FARC guerrillas, terminating a war that for so long we thought was never-ending. You will actively participate in this peace process with enthusiasm and optimism from abroad, and you remain engaged with Colombian politics, despite the many disappointments and setbacks.*

*Importantly, as you awake to the most fundamental problems of humanity, you get to better understand who you are. You no longer wonder to what extent your interests are yours, or the influence of others. Part of that is also enabled by an interest in exercise and physical activities. You suddenly realize that you are actually physically capable, you overcome many of your numerous fears, and you become braver, stronger, and bolder. Although right now you live in a country in which, despite its immense beauty and unique geography, being outside can be scary and dangerous, this physical journey inevitably leads to a totally new journey through nature. Not that of a biologist living in a flat surrounded by concrete, but that of a human feeling at peace when she is outside hiking, running, and, mostly, swimming.*

*Yes, swimming! You discover your happy place in the ocean, as well as in lakes and rivers, and you feel pure bliss in every stroke, as you glide through the water, blinded by the reflection of sun, filling your lungs with crisp air, and hearing the silence of the dynamic ecosystems beneath you. So, as you can see, in that journey of academic ambition you embarked on as a teenager, your most precious*

*accomplishment will be that of having honest and close connections with other people, your friends, family, colleagues, and allies — and with nature.*

The bus has suddenly stopped, and I wake up from a deep sleep. It seems like there is a lot of traffic ahead of us. I look out the window and see chaos in the street. A normal scene for a weekday in the late afternoon. I take my headphones off and vaguely remember the wild dream I just had about reading a letter to myself from the future. I can only hope, have faith, in this dream becoming true one day.

## Chapter 2: In Pursuit of Peace

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Elizabeth Mesok

As a child, I was preoccupied with war. My early focus on violence makes sense to me now, given that I was raised in a setting of domestic abuse and in a culture of omnipresent US militarism, where supporting “the troops” wasn’t an option but an obligation, where dissent was unpatriotic and out of the question, especially in my house. I can recall struggling to reconcile my grandfather’s stories of serving as an Army fighter pilot in World War II and his nostalgia for times of camaraderie among men with the litany of horrors that comprise a war. I have always been fascinated with how individuals navigate times of unspeakable violence, how they make lives among rubble, cultivate friendships and love amidst trauma. As a child, I consumed books like air: *Summer of My German Soldier* taught me the term “conscientious objector” and *Zlata’s Diary: A Child’s Life in Sarajevo* taught me empathy for a young girl only a few years older than I was at the time, whose childhood was marred by bombings and death. I began to ask why — why are wars fought? Why are wars considered inevitable? And how do the stories that we tell about war — to ourselves, to our countries, to our children — matter?

Looking back, it is clear that my interest in war also coincided with the Persian Gulf War and its media coverage, which was relentlessly broadcast into homes across the US in the early 1990s. This television coverage was carefully curated and highly dramatized, with shots of journalists in the midst of the war zone and images of missiles wreaking violent devastation. Yet these images were always juxtaposed with personal, emotional stories about the men and women in uniform, children shown tearfully wrenched from their parents’ arms. The me-



dia's focus on families in the US, what they suffered and lost, was a perfect distraction from what was happening just outside the frame. In school, we wrote letters to soldiers as a part of the "support our troops" campaign, a movement necessarily absent any antiwar commentary or protest. The campaign was symbolized by yellow ribbons, which appeared everywhere — pinned to labels, tied to mailboxes, shopping carts, and car radio antennas, wrapped around trees. I was taught that to be critical of the war was to be ungrateful for the service of these men and women, to be ungrateful for the freedom they allegedly secured. I was never supposed to ask how exactly war results in freedom. War was, and continues to be, normalized as the only means through which to solve conflict, an act justified by the always-abstract promise of peace.

I felt a restlessness, a dissatisfaction with the answers offered by teachers or religion. After relatively poor grades in high school, I was accepted into college and decided to major in English, a move that I have never regretted. I later chose to double major in politics in order to apply the poststructuralist and queer theory that excited me so deeply to something more concrete, something material. This proved critical to make sense of the political environment that shaped my early years in higher education: on September 11, 2001, mere weeks after I began my freshman year, the US was attacked and would go on to launch the global war on terror, invading and occupying Afghanistan and Iraq and catalyzing a new era of perpetual, preemptive warfare. Training with antiwar feminist scholars dramatically shaped my next steps, and from that point forward I was focused on what feminists and feminist theory had to say about politics, war, and peace — and what I could add.

The path to and through graduate school is rarely linear, and mine was no exception. Clinging to the encouragement of two professors, I fumbled my way through graduate applications to politics departments without understanding how much academic disciplines could vary regionally and institutionally. As a first-generation college student, I was driven by a tenacity and a stubbornness that served me well in the years to come, earning me a PhD from New York University and then a post-doctoral fellowship from Harvard University. I was, however, very naive about the realities of academia. It never even occurred to me that I would

not be able to find a job after graduating. The economic recession that began in late 2007 (the same year I started my PhD) transformed the hiring practices and working conditions of higher education, and tenure-track professorships became (and still are) incredibly hard to secure. Yet, my friends and colleagues largely still managed to be successful in obtaining permanent positions, leaving me to feel inadequate when I struggled year after year.

Those years were hard. I began to resent the academic culture that put me in direct competition with friends. I recoiled at the expectation of gratitude for the smallest wages for incredibly taxing work. I felt that with each passing year I did not obtain a professorship, US academic culture would perceive me as irrelevant. This was acutely painful, as academia was the first place I ever felt truly at home with myself, where all the parts of me were embraced by a community of activists, scholars, and radical thinkers hoping to make profound differences in the world. I felt more “me” in academia than I did anywhere else; and yet, I still decided to leave.

After completing a visiting assistant professorship and having failed to secure a tenure-track position for the fourth year in a row, I made the difficult decision to leave the US and join my now-husband in Switzerland. Friends and colleagues were shocked at my decision; some bluntly said I was “throwing it all away” and others flat out insisted that I not “give up.” But I was tired. I was always struggling, commuting far distances and working long hours, exhausted by the constant hustle that is living in New York City, always broke, always worrying about the student debt that is as normalized in the US as war. I was also battling a reproductive disease that I knew could rob me of the choice of having children if I did not receive the proper care. And so, I did the “least feminist” thing I could imagine, the one thing I said I would never do: I left my life behind and chose to prioritize my relationship over my career.

That move transformed my life in unexpected and beautiful ways that I could have never foreseen. That is not to say it wasn't hard — it was excruciatingly hard, especially in the beginning. In Switzerland, I faced unemployment and infertility at the same time. I went from “Dr. Mesok” to “Hausfrau,” as I was referred to in the mandatory German classes pro-

vided by the Canton. At times I felt like a ghost; it was as if I had disappeared. I walked, for hours and hours along the river, through the woods, wondering what the hell I had done, panicked I had made a terrible mistake. Terrified I had somehow lost myself. Yet, I held onto the idea of finding work that would allow me to still fight for a world without war; I prioritized the work I wanted to do over the title of the job. This focused me, and I let myself be vulnerable. I explored my feelings of failure and found out that I could not just be okay outside of academia — I could be happy.

And, in the words of my brilliant dissertation advisor, I am nothing if not persistent. I corralled my grief and fear into action. I emailed professors asking to have a coffee, I attended conferences without an invitation and networked, I applied for countless jobs both in and outside of academia. I would often go home and cry from the exhausting effort of having to prove myself once again, but this time in an entirely different system of academia and in a language I didn't speak. Nevertheless, I received small teaching contracts at universities in Basel and Geneva and I continued to publish articles — writing and teaching are my two greatest pleasures, which keep me grounded and connected to myself.

Then, things began to change. I received a small contract with a peace research institute and was once again able to start researching in the area of gender, war, and peace. This gave me the confidence I needed and, most importantly, a community of scholars and friends that sustained me over the years, buoyed me when things were tough or uncertain. I applied for the PRIMA grant from the Swiss National Science Foundation on a whim after being told by a colleague that I had no chance at getting it, bolstered by a familiar combination of stubbornness and tenacity. On the day of the interview, I wrote on one of the notecards that I would hold during my presentation: “You’ve already made it.” To me, this meant to remember that one decision, one acceptance or rejection does not change your life or who you are. It is just one thing, in a hopefully very long life full of many things. I was awarded the grant on my 36th birthday.

As I write this, my PRIMA grant is nearing its end. I do not know what is next. The US no longer feels like a place I want to live; I have a

daughter now and her future is my priority. I had great success over the duration of the grant and, of course, some failures, too. I am endlessly grateful to have had the time I did, to write and teach and think with a community of scholars that are committed to making the world a better and more peaceful place. I also know that, if and when the time comes, I will be able to leave academia without also feeling like I am losing myself.

It is easy to look back and think of all that I wish I had known. But I don't believe in regrets, because even though things could have been better, they could have been a lot worse, too. If I could, I would tell my younger self to hold tight: Remain driven by your convictions, by the work you want to do in the world, the change you want to see, and seek places where that can happen. Get comfortable with rejection; let the fear guide you but not rule you. Seek out mentors that are both smart and kind; be wary of hubris. Find your community and keep them close — you will need each other. Invest in your relationships and yourself and remember that, while important and meaningful, your work isn't you. It is of you, but it is not you. Cultivate your identity outside of your career and attend to that just as closely as you do your work. There will be overlaps, of course, but you are so much more than the research you do, the papers you author, the courses you teach. We all are.



## Chapter 3: Navigating the Tides of Academia

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*Lucia Kleint*

Imagine being on a tall mountain at night, far away from any civilization. You look up into the sky and see thousands of twinkling stars in all directions. Each of them is a Sun similar to ours and each of them theoretically could harbor planets, potentially even with life. Isn't it fascinating to think about how it all could have formed, why our Earth and life exist, and if on some distant planet somebody might be thinking exactly the same thing at the exact same moment? We are only a small dot in the universe, yet we are driven by the motivation to explore, to understand, and to always try to make progress.

I have always been fascinated by the sky and our universe, and I have spent countless nights outside. I probably was in primary school when I decided to study astronomy. In an age before the internet, all of my information came from the library. I remember spending many afternoons in the local library, reading any science books they had and going from astronomy and physics to chemistry, atmospheric sciences, and engineering. I believe strongly in wide exploration to find your true passion. Astronomy has always remained my greatest fascination, even if I cannot fully explain why. Nobody in my family had ever worked in a similar field; I had nobody to ask for advice, only the desire to explore our universe.

### First Steps in Academia

My fascination with the universe remained throughout high school and I decided to study physics at ETH Zürich. I very much enjoyed learning

and also doing research, therefore the logical step after graduating was to pursue a PhD.

I was not aware that the choice of the PhD, in terms of both topic and supervisor, is critical for a career in science. During my PhD I witnessed several students who were unlucky with their supervisor or treated poorly in terms of their working conditions, and it had a detrimental effect on their career. My PhD supervisor left to take up a professorship in another country and I was assigned to another professor. In my case, I was lucky because this gave me the freedom to focus on my own preferred topics. But it also created a lack of support: there was nobody to ask or learn from on a daily basis and no one to support me later at the university, because my research direction ceased to exist in Switzerland. Unfortunately, science often works based on networks, and a strong supervisor can influence future invitations to conferences, or sometimes even whether one gets a professorship. I realized at that point that it would be very difficult to stay in my own country and continue doing research in my field. Overall, I highly enjoyed research and wanted to continue after my PhD. At that point I didn't know yet that with each step up the ladder, academia gets more difficult.

## **Noticing the Darker Sides of Academia**

For my postdoc years I moved to the US. During my first postdoc I had a great advisor who even encouraged me to write a NASA grant. I did not think I had a strong chance, considering that success rates were below 20% and I was a first-year postdoc competing with senior scientists. But I was surprised with a positive evaluation. There, I started noticing unfairness in academia, because while I was allowed to write the grant, I was not allowed to submit it under my name, being "just" a postdoc; I had to put somebody else's name. When the director announced the successful grant at a staff meeting, the other person was congratulated, which makes one feel quite worthless. This is quite systematic in academia, and this history repeated itself years later in Switzerland, where I had the scientific idea for the grant and wrote the whole science case, but again

was not given any official recognition when the success was announced in a staff meeting. Unfortunately, the system still has not changed and I am certain that many postdocs are still in the same situation, getting no recognition for their hard work. I wish I were able to change that.

Fortunately, with the move to another institute for my second postdoc position, I was able to take my grant with me. My second postdoc position initially sounded very interesting, and the group was very nice. But upon arrival, I was not allowed to do any of the promised work and instead was made to debug software. While I would not have minded learning a new area, it was clear that the treatment of researchers was very unequal and that my having a grant, which could allow me to immediately quit, meant there was no sufficient leverage for my supervisor. Power games were often played and micromanagement was ubiquitous. Having my own grant allowed me to pay myself for a day per week, which I could at least use to work on science and to buy myself a decent laptop, something that I was not given at the institute. Through the grant I was also able to pay a postdoc, which is when I learned that my salary was lower than his. In my naive thinking about equality, I hoped to be able to make my salary equal to his by paying the difference from my grant, at no cost to the institute, but this was refused by my supervisor, even though I lived in one of the most expensive areas of the US, where half of my salary was spent on rent. I realized only later that this was very systematic, especially for women, and in several later jobs, I again noticed large salary gaps between myself and people with the same experience and seniority level. I just hope that someday I will be in a position to be able to fix such injustice for future generations. Unfortunately, the power games continued. For example, imaginary deadlines for certain software tests were invented in order to coerce me to work on other things during my own science day.

After a few months, I decided that this was not the scientific career I had dreamt of. I also missed my friends and family and decided to return to Switzerland. This posed a major problem because jobs in my field are very rare, which meant I again had to pursue a grant to fund myself. I spent most of my evenings and weekends on an application for a Marie Curie Fellowship. I was overjoyed when I got the positive notice,



and, while the referees are probably unaware of it, they can be credited for keeping me in academia. This improved my working situation considerably, because I was then able to quit my job, and switch fully to my NASA grant to finish some scientific work during the months before my European grant started.

One of the highlights during my last months in the US was a trip to the observatory where I had spent my diploma thesis in order to observe eruptions on the Sun. Such eruptions are very hard to predict, which made the observations quite challenging. But with good planning and a little luck, my colleagues and I managed to catch the “best-ever observed eruption,” as NASA later called it in a press release. It was the first time that nearly all solar satellites, which we had coordinated to point to this location a day in advance, and a ground-based telescope captured such a large eruption simultaneously, giving us extremely valuable data. That night we had a party to celebrate the good measurements. For an astronomer, having such an observation succeed was the greatest gift. There was a subsequent live press conference by NASA, in which I was invited to participate. In normal cases, I would avoid anything live — even documentaries make me nervous in spite of being able to repeat the scene if I screw up. But this was such a great observation that it was worth it. The measurements were vital later because I was able to lead and participate in more than a dozen publications that led to many nice collaborations and helped me to become an expert in the field.

### **The Unpredictability of an Academic Career**

I think this experience shows very nicely that achievements are unpredictable, in terms of both science and career paths; one should never be discouraged by bad odds. For every single grant I applied for, I was told not to get my hopes up because only about 15% of the applicants succeed, and so I never expected to get a grant. By now, I have received four of these grants, recently including the most prestigious grant of Europe: the European Research Council (ERC) grant. Of course, I was convinced I would not get it after the interview and read the subsequent acceptance

letter several times. I felt immensely grateful reading the kind and very positive reviews of my scientific proposal and of my career, making me believe that some people respect and appreciate my work. I have thought more than once about quitting academia, especially after also experiencing the darker sides of it. But such kindness has now several times helped me continue, and I hope that the referees are aware of it, even though I will never be able to thank them properly because of their anonymity. I would always recommend taking any odds over not applying for grants, where chances clearly are 0%.

Returning to Switzerland, I was able to work on my own project, I had nice collaborations, and the only drawback was that my job was not permanent. After a few years I started worrying what would be next, whether I would have to choose between my home and my favorite job. In Switzerland, there was no prospect of a professorship in my field; it simply no longer existed. I also ran out of options to apply for grants because existing research groups in other fields only supported applicants they knew and who worked in their field — again the famous networking issue. When I saw a job announcement to lead Europe's largest solar telescope, I found it a highly interesting opportunity and applied. The job was based in Germany, close enough to the border that would allow me to keep living in Switzerland.

## **Leadership Positions in Academia and Crashing against Barriers**

The job was the most interesting ever — no two days were the same. I experienced a steep learning curve in optics, mechanics, electronics, and management. The institute had generous funds and the opportunities and projects it led were impressive. It operates several telescopes on the island of Tenerife in Spain, one of which had been inaugurated more than half a decade earlier, but unfortunately was experiencing some quality problems. When I asked about my job description, I was given the simple reply: “make the telescope work.” While the technical challenges were relatively straightforward, the management unfortunately

was not. For the first time, I had a management position with a large responsibility and budget, and I started experiencing every single bias that I much later heard about in leadership seminars.

As somebody who has visited many different observatories, I was surprised about the lack of control and safety rules at the telescope. This was also reflected in the complaints of the observing assistants, who told me that they were usually asked to leave and were called only when problems occurred; by that time, they could not tell who had touched which part to fix anything. There were no scientific publications from this telescope at all, even three years after its inauguration, which is the metric that scientists are judged on. I started introducing rules — for example that optical elements can only be touched by the relevant optical scientists, that all changes and errors are to be documented, and that trained assistants are responsible for the telescope. But going from “I can do everything” to “there are some rules” was not easy, and it led to many discussions.

I started experiencing every single barrier in academia. Intimidation was used as an attempt to keep old kingdoms and power structures. Information was withheld on purpose. Some people acted so maliciously that they even started random rumors to make me look bad and to set the technical staff against me. Every time I would meet some technical staff, they would ask me questions about why I decided to stop supporting something, when in fact I had never even thought about these topics, let alone decided anything about them. In summary, it was a huge culture clash because most of them had also never been observing in other facilities and did not know how they were professionally operated. It was also the first time in decades that they had a much younger and female colleague, and I had the impression that many did not seem to be able to cope with this. In the entire institute, there were only two women in leadership positions: me and the institute director, who had been appointed just a few months earlier. We both experienced similar issues and I was very glad about her support. It was only later, in events organized by the Swiss National Science Foundation (SNSF), that I learned that most women in leadership positions face very similar problems. Any type of decisiveness or enforcement of change is often seen as being too

aggressive for women, while doing the opposite would have labeled me as weak and incompetent.

While my main goal was of a purely scientific nature, certain other people seemed to have personal goals related to power and control. Nevertheless, I aimed to improve the stability and operation of the facility.

I asked our technical staff to look at the causes of the errors. With proper documentation, one could also see which ones occurred under which conditions. As the stability improved, the whole operation improved and committees started noticing it. I was asked to give a presentation to the scientific advisory committee, and the responses were very positive and culminated in the suggestion of extending my power to the institute's full observatory and its operation. However, this meant that somebody else, a male colleague a few years before his retirement, would lose power. Even though I had nothing to do with it, this person still blamed me. Unfortunately, this created even more jealousy. The new, young, and female scientist got promoted faster than anybody else and the director was blamed for favoritism, even though she only executed the advisory committee's recommendations. Unethical behaviors with the goal of demoralizing me followed regularly, until I had to defend myself by filing an official complaint. Even though the person was found guilty and even apologized, he was at first only given an oral warning, and it took another bullying case and defamation in front of more than two dozen people before he received a real disciplinary warning. While the situation was definitely unpleasant, I find it highly important to always speak up about unfair treatment. I also highly appreciated the few people that openly supported me, because change in academia and a reduction of bullying can only happen if courageous people join forces.

I asked myself many times if it is worth it to continue doing a job I love under these conditions. I was away from my friends and family and stressed by the actions of a few malicious people. What made it worthwhile was the collaboration with a few very nice and highly competent colleagues. These colleagues supported changes and out-of-the-box thinking, which led to a complete redesign of the faulty telescope. Throughout the next year, we worked tirelessly on our upgrade. We flew to Tenerife just before the start of the pandemic, when things did not yet

look bad. Unfortunately, the situation changed rapidly. By the second week, we were trapped at the observatory during a government lockdown. No one was allowed to go outside, and our flights were canceled. Being an observatory, the next grocery store was a long drive away, so we had to start searching all freezers for food that other people had left. In the end, we spent three weeks together at the observatory, unable to drive anywhere. We had common lunches and dinners, and everybody got along very well. When we saw the first sharp image on the screen, my colleague and I just had to look at each other and we knew that it was a great success. In only a year, we managed to improve the facility more than in the decade before, and, finally, the telescope was working with the proper resolution.

## **Taking Opportunities**

After a few years, I was given the great opportunity to apply for a PRIMA grant because of a collaboration I had with the department of computer science at the University of Geneva. While I enjoyed my job at the observatory, the frequent bullying was tiring, and I was curious about leading a research group with students and learning a new topic. My proposed project was about the Sun and its eruptions. Such eruptions can significantly influence Earth. They not only cause Aurora, but they can also bring down satellites, cause power outages, or increase radiation levels for astronauts and people in airplanes. Yet nobody could predict these events. This was a perfect application for computer science: using machine learning, it is possible to analyze the millions of recorded data points before eruptions to automatically find common patterns and thus aim to predict eruptions. When my PRIMA proposal was accepted, I was in Australia, on my first vacation after a long time. So instead of getting the acceptance letter — which landed at an empty apartment in Switzerland — I got a strange email request to “release funds,” making me wonder why I would have any funds to release. As usual, I hadn’t expected to get the grant. I logged into the grant system to find an incredible amount of more than 1.5 million CHF on the display. I still couldn’t believe it,

prompting me to send an email to the SNSF asking if that really meant I got the grant.

I started in Geneva during the middle of the pandemic, when home office was first mandatory and later recommended. The first time I met my colleagues in person was nearly two years later, at a faculty dinner. While home office increased the quality of life considerably and also enabled me to work very productively, it was not ideal for starting new collaborations, especially as a completely new person at the institute. But one of the very positive aspects about the grant was that it enabled us to create a network of PRIMA grantees to share support and advice. Having quit my permanent job leading the observatory, I again faced temporary employment through the PRIMA grant, in addition to not being allowed to apply for other Swiss grants that could have created collaborations and increased my chances for a permanent job. While such situations stressed me immensely at earlier stages in my career, I have now come to accept that a career in academia simply cannot be planned, and I enjoy whenever my research group and I can work in astronomy peacefully.

As of February 2024, I am fortunate and grateful to have obtained a tenured professorship at the University of Bern. This unexpected opportunity became possible by repeatedly shifting my research focus in different directions and through the support of various people. The path was definitely not straightforward, not easy, and apparently, I am now the first ever female astronomy professor who is a member of the faculty at the University of Bern. While several of the problems mentioned earlier still remain, I have learned much better how to navigate academia. I still very much enjoy going to observatories, spending nights outside, and looking at the stars. I am very grateful to be able to do a job that I love and to now be in a position where I can aim to improve equality and ethics for students and scientists.



## Chapter 4: Chasing That Sparkle of Passion

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*Annalisa De Cia*

Don't blink Annalisa, don't blink! My full attention is sharply focused on a single point. It looks like the Sun is getting squeezed between the sky and the horizon; the atmosphere distorts it and pulls it on the sides, then the sun pushes down to a single point. I gasp. Was that green? I turn my head around, nobody there, no one to confirm what my perception had suggested. The grand Atacama Desert all around me, and behind me the gentle giants, the Very Large Telescope, in a frame of marvelous colors. The sky and the desert will soon merge in the darkness of the night, and the center of our home galaxy, the Milky Way, will appear in all its majesty and fill my eyes with its glowing bulge and cosmic dust lanes. But that's for later. For now, back to the control room, quick. One of the giant four telescopes is waiting for me, Kueyen, which means "moon" in the native Mapuche mythology. Back to the many screens on which I monitor potential scientific projects, some technical aspects, and the atmospheric conditions, like the air turbulence, which make stars appear less sharp. The telescope operator is assisting me; she is an engineer responsible for the telescope itself. As a night astronomer, I'm responsible for the science plan and the scientific instruments: X-Shooter, which I like to think of as a goldfish, because it can see simultaneously in visual light, near infrared (redder than red), and near ultraviolet (bluer than blue); UVES, the eagle, because it can decompose light in its frequencies with a very high resolution; and FLAMES, the octopus, because it can observe several targets at once thanks to its multiple "arms." Everything is ready, the goldfish, the eagle, and the octopus, and I have a plan for the night. The telescope dance starts smoothly, target after target, securing high-quality obser-



vations that the astronomer community will use. I roll up my sleeves; we are going to do science tonight.

We have just started the observations of a new target, when a loud alarm goes off throughout the whole control room. Not an earthquake. This time the universe is calling. Countdown has started. The Rapid Response Mode is a system to react promptly to gamma-ray bursts, which are the most energetic explosions after the Big Bang and are associated with the violent death of very massive stars, and we automatically move and point the Very Large Telescope to catch this explosion quickly. In a few hours it might be gone forever. The light from this tremendous explosion took maybe billions of years to reach us, but now we have to be quick to observe it. Three, two, one . . . We got it. These very luminous sources can act as cosmic beacons to suddenly illuminate their very distant host galaxy, which would otherwise go unnoticed, so we can study it in fantastic detail. In my scientific research I like to use these and other sources to study the chemical composition of gas in galaxies, which is a fundamental component for galaxy formation and evolution, from our home galaxy, the Milky Way, to the most distant universe. Stars are formed from gas, and they in turn create many chemical elements that we know, such as oxygen or iron. And then many of these stars will explode, returning their material to the gas form, the so-called interstellar medium. A new generation of stars will be born from this gas, upcycling all the chemical elements that were created by the previous generation.

Science is my driving force. I used to focus mostly on very distant galaxies, things that we could barely see even with our most powerful telescopes, using some bright sources in the background. And because they are so distant, it was difficult to understand their chemical composition, especially because there are particles of cosmic dust that complicate the picture. So, I developed a new way to study gas in galaxies, focusing on the relative abundances of different chemical elements. A few years later, I realized that a similar technique could be useful to study our own home galaxy, the Milky Way. Until then, everyone had assumed that the chemical composition in the gas of the Milky Way was uniform, because the Milky Way rotates and can mix the gas. But,

because of the presence of cosmic dust, nobody had attempted to actually measure it. So, I tried, and I found that, surprisingly, the chemical composition of the Milky Way gas was not at all uniform, and that there had to be chemically poor gas coming from outside the Milky Way and feeding new star formation. I published this result in the journal *Nature* in September 2021, as the lead author. But the craziest part of this publication was actually its submission.

It was a cold Monday morning in December 2020. I was nine months pregnant, due to give birth exactly one week later. In that week I was supposed to have several interviews for a professorship at the University of Geneva. Along with the interviews, I was supposed to also give a public talk, which I had recorded as a backup, in case I would not make it to Wednesday. I was quite nervous that the baby could come earlier. As I entered the building of the Observatory of Geneva, Michel Mayor, who won the Nobel laureate in physics in 2019, saw me with my gigantic belly and approached me with a comforting look. We had barely spoken before then, and he was not aware of my situation. “Don’t worry!” he said gently. “The baby will not come earlier, it’s so cold outside, and he’s comfortable there.” I smiled: “Thank you very much. I really hope so.” After all, he has a Nobel Prize; I was definitely going to believe him. I got through the week but with no time for resting as there was still a paper to wrap up and submit to *Nature*. On Saturday morning I finally submitted it. On Sunday evening, I went to the hospital in Geneva, and gave birth on Monday evening to my beloved second child. This happened exactly on term, with Swiss punctuality, on the winter solstice. On this night there was also a rare alignment of Jupiter and Saturn in the “great conjunction,” where the two planets seem so close together in the sky that they appear like a very bright star. A new chapter began; now we were a family with two children.

Oh, my two little adorable bundles of joy! Life became something far more precious and meaningful after they came to be. No matter how rough things get, their smiles and kisses charge my brain with love and delight. Having children meant a huge change of lifestyle, which I had anticipated only in part. Do you know the feeling of being overwhelmed with a number of things to do simultaneously, with one deadline after

the other, or on top of each other? That's when one or even both kids play a joker card and get sick, and you discover that you now have to squeeze all that into about 50% of the time you had before. And you just do it. It means extreme flexibility, yet also having strict organization to replan while juggling things around, finding the best-fitting solution, prioritizing, learning to take less time to do things (yes, sometimes sloppily). Of course, it's much more fun when they feel well, and we can play together and learn things. Often it is just pure fun. And often they push you to your limits. Then you must learn about not engaging in direct conflict and finding different ways, listening to them, explaining observed things and consequences without judging, negotiating. Finding that corner where their needs and your needs are both fulfilled, and letting that win-win situation come to the surface. It doesn't always work, but sometimes it does. Working mothers probably get some pretty good field training in leadership skills. And some fathers, too.

I could not do what I do without sharing household duties and childcare with my husband, the father of our children. During his parental leave, he could take full responsibility for the children while I was at work. Once he packed for himself and the kids and came to pick me up at work to go travelling for the weekend. Now we share the household and childcare equally. Having a husband who took a few months of paternity leave was key for me to be able to pursue my career after my maternity leave. It's also beautiful for children to grow up with a caring father, and eventually for men to take on a loving and caring role. This can be so impactful for our society as a whole.

What we do in our universities and departments, how we form and nourish the next generation of scientists and leaders, can also make a difference in society. And astronomy has a unique place in and importance for society, giving the global perspective and inspiring people from across the planet, all under the same sky. I have heard too many times that astronomy is fascinating, but probably a waste of taxpayer money. Today I feel a strong sense of purpose and I believe that I can do something important to promote sustainability, both with the actions I take in my private sphere with my family and in my professional environment.

But when I had just started studying astronomy at university, this was not so clear to me.

Astronomy was perhaps one of my rebellions. I grew up in a tiny, beautiful village in the heart of the Dolomite Alps. A pearl. And wonderful people, as well. Yet, this is a society with strict traditions and ways. Everyone knows everyone, so that people are, on the one hand, protected and, on the other hand, screened and judged according to societal customs and taste. I was the black sheep in my family. As a teen, I was the crazy one who liked strange things (music, arts, clothes, etc.). Being the black sheep afforded me much more freedom, because I no longer needed to conform, and I could express myself with fewer boundaries. Actually, I was not the black sheep; I was a free spirit, not bound by the societal rules. It meant going through storms, and not always with the right sails. I was lucky enough not to get into any serious trouble, so I could pursue my studies. I was good at school, and I loved science, including geology, biology, and genetics. I thought astronomy would be the coolest and most intriguing thing I could study, something that could nourish my curiosity. Starting university, where I pursued a bachelor's in astronomy at the University of Bologna, was a big step. No one in my extended family had ever attempted to do anything like this. In my family, no one from the older generation has a high school degree. I was very much a first-generation student. Little did I know what it meant to enter the academic world, let alone what it would mean to work in the field of astronomy. Naively, I did not think for a single moment whether this would be feasible, or profitable. Instead, I followed my passion. I learned much later that difficulties are always to be found along the path, and that passion is the key to overcome them. My parents were a bit skeptical of my choice of astronomy, because it was not very clear where it would lead me. But they supported me financially and mentally, and gave me one year to try. If I was successful, they would continue paying for my studies and supporting me. So how did my very first exam go? Well, I didn't hear my alarm clock and missed it! Not a good start, Annalisa, not a good start. Focus. Don't blink. Try harder. And I did. I succeeded in my bachelor's and master's in astrophysics, with excellence.

When I moved on for a PhD in Reykjavik, Iceland, prestige was absolutely not on my radar. I didn't care that the University of Iceland was small and not well known for astronomy. The project on gamma-ray bursts seemed very exciting, and I loved the idea of living in Iceland for a while. It was my only application for a PhD position, and it seemed to me the right thing at the right moment. And looking back, I think it was. I had found an exceptional place, a safe corner of the world of exotic and stunning beauty, where I could fully develop professionally: on the one hand, I was supported with care, and on the other hand, I had the full independence to travel abroad to collaborate with international scientists and grow enormously. And I had a lot of fun in this land that is mostly powered by geothermal energy, with its playful warm waters, cold rivers, colorful mountains, white glaciers that sometimes sparkled with black glossy obsidian stones, dramatic lava fields, fluffy moss carpets, staggering green cliffs, spectacular basalt columns, deep black beaches, a mostly clear ocean, and a wonderful diversity of wildlife within.

Diversity is indeed one of the key values for a healthy planet, as well as for a healthy society. I came to realize that social and environmental sustainability are intimately linked. We need a caring society to be able to focus on the collective good for society and the planet. Women have an important role in fostering this. As Riane Eisler found in her research, the status of women is a better indicator of the wealth of a country — its true richness and quality of life — than the GDP.<sup>1</sup> In other words, the well-being of men, women, and children is higher in places where women are better represented in leading positions and participate in important decisions. As a woman in science, I feel the urge and responsibility to add my pieces of the puzzle to a more sustainable society. I try to proactively create a healthy environment wherever I worked, for example by talking about the psychological safety needed for a learning organization, or promoting and organizing exciting activities in the Diversity, Equity, and Inclusion committee of my department, supporting the

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1 Riane Eisler and Douglas P. Fry, *Nurturing our Humanity: How Domination and Partnership Shape Our Brains, Lives, and Future* (Oxford University Press, 2019).

mental health of my colleagues and team, or mentoring. I won't change the world alone, but I can do something important to help. At the same time, being a woman in science also meant running a hurdle race along my path.

I used to think that I was really lucky not to have suffered from any form of discrimination. I'm clearly privileged, being a white person born in a family that could afford my education, in a relatively stable European country, without strict social, cultural, and religious limitations, and having no disabilities. In recent years, though, my eyes slowly opened, and blurry things of the past became clearer for what they were. As a child, most women that I knew did not work, and the ones that did worked in the kitchen or as caregivers. Sexist jokes were still widely accepted. I grew up with this implicit idea of a subordinate role of women in society. I could not play with remote-controlled cars or other "boy toys" like my brother did. The only year my brother and I had the same teacher, she put me down for not being as good as my brother — a lovely person, but never brilliant at school. I ended that year with a stress-induced skin rash. I was about eleven. I was called names for being different. I have been ignored in meetings where alpha-male colleagues would dominate the discussion. I went through abuses of power, and I'm so relieved to know that one of the perpetrators was recently removed from his prestigious professorship. I experienced verbal and physical abuse, including some forms of sexual abuse. I cannot say I didn't encounter discriminations. But somehow, I did not let them stop me. I never focused on them. I kept going on my path with determination, despite the difficulties. I'm an incurable optimist. Focusing on the positive side of things helps me overcome the hard ones. It's not always easy, but I am thankful. Don't blink, Annalisa, focus on the positive side of things. Looking back at my experience, I can guess that independence, positivity, and gratefulness are really powerful in building up resilience to overcome the storms.

I found that it is in the worst moments that I could dig deep into my core values, and that introspective reflection is a compass to navigate the stormy sea of life. I spent a full year in Munich out of contract in 2019. The year before, I had been applying for a few positions while I

was on maternity leave, but those applications didn't work out, and my contract ran out. I refused to relocate again, this time with a daughter, only for another temporary research position. And at that point in my career, I thought, either I would get a significant advancement, or I should do something else. It is the hard and narrow bottle-neck that many researchers experience when trying to jump from temporary postdoctoral positions to a more permanent job. I was only applying for tenure-track professorships, permanent research positions, or big grants to lead a research group. During that year, on the one hand, I was applying for positions, and on the other hand, I was studying and training to find my physical strength again, after the pregnancy. It was a hard year, because I realized how painful it would be for me to abandon astronomy. My love for science was deep and rooted. It was a hard year also because I had zero income for almost a year, because the organization I had worked for did not allow for any unemployment benefits after my three-year contract. But I still needed to pay the bills for private daycare for my daughter, otherwise I could not afford the time to study and apply for jobs. The feeling of being about to lose independence was haunting me. It was a hard year. But a number of interesting and positive things came out of that too. First, I could eventually and finally get my paragliding license, after having dreamed about it for a lifetime. This was a pretty good investment to cheer up my mood. And, most importantly, I was pushed to really consider what is important to me and what I would like to do next. Astronomy kept on being on top of my list. Then I came up with three potential directions I wanted to take, as potential alternatives: environment, education, space.

It turned out to be difficult for me to get a job in environmental consulting or international schools, with my growing but still not fluent German, and not much background in the field. But I had the strong experience of operating the Very Large Telescope in the control room. Eventually I got a job offer to work in the control room for the International Space Station module Columbus, the European module where astronauts perform scientific experiments. I was thrilled. This was in the summer of 2019, and we went for a family holiday in the United States, to visit a grandaunt. It was a Thursday evening. We were about to come

back to Europe, our flight was on that Saturday, and I was supposed to start with my new job for the International Space Station (ISS) on Monday. Before I could start operating proficiently, I had to undergo training, which would take several months and would involve travelling a few times around the globe. On that Thursday evening, I checked my inbox, and I found the one email that changed again the course of my life and took me back to my beloved stars and galaxies. The Swiss National Science Foundation (SNSF) had awarded me 1.5 million Swiss francs to create and lead my Interstellar One research group, at the University of Geneva! This was the opportunity I had dreamed about so much; I was so full of joy. I told my family right away — we are all going to Geneva! But what about Monday, what about the ISS? I slept over it, and then I wrote them with transparency and respect. I had received a stellar grant, a once in a lifetime occasion for a researcher, and I hoped that my prompt notice would allow them to find another person for the ISS job. Not me at this moment. They were happy for me and wished me good luck. I smiled for days, incredulous that I really had been good and lucky enough to get the SNSF PRIMA grant. Not only would I continue to be an astronomer, I would build a research group, make it a vibrant group of passionate people that grow scientifically and have fun working together to unveil the mysteries of galaxies. Don't blink, Annalisa. What a dream coming true.

The experience of creating and leading a research group has given me momentous joy and motivation: from the day-to-day interaction with the team members, creating a psychologically safe environment for learning and exchanging, listening to their needs and trying to find the best way to support them and make them flourish, adapting and appreciating their own diversities and strengths, giving them opportunities for growth, gradually fostering their independence, all while unfolding the shared scientific vision that fuels and motivates our curiosity and research. The current or past members of the Interstellar One team are researchers from Italy (myself), South Africa, Greece, Denmark, Switzerland, and Ukraine. It's a lot of fun working with them, and I feel quite lucky with such a wonderful group of people! As I truly care for



them, empowering them empowers me, and helping them grow helps me grow.

I found that being explorative, giving space for reflection, being open-minded to changes, open to listening and actually incorporating the changes, are all good ways to find win-win solutions — when things click together with such a good match between my needs and the other person's needs. For example, when I was preparing to go on maternity leave, I designed a grand international tour for the two PhD students working with me to visit scientific collaborators during my absence. At some point though, it became clear that none of it would be possible due to the pandemic. I was talking to people at my department, who suggested trying a specific grant to hire somebody to help. I was sure that this possibility would not be feasible, and I could have stopped there. But I decided to inquire anyways and ask humbly. It turned out that from a different grant it was actually possible to hire a person to act as my deputy during my maternity leave. I had a person in mind, who had the perfect experience to teach the students some special techniques that we use to measure how many atoms of different chemical elements are in the gas in galaxies, among other scientific concepts. And it was the perfect moment for him, since he was in between jobs. When I came back, he ended up staying for a full year as a senior researcher in the group, and it was a wonderful experience for all of us. He left the group for a hard-to-get permanent position as an astronomer. It also meant I had some more funding to hire another researcher for a different project, but I had lots of tight constraints on a very short timing for hiring a new person, because I was slowly planning to leave the country myself. A normal hiring process would not have worked. As the war in Ukraine had started, I decided to invite Ukrainian researchers to apply for the position in my group, and I found a brilliant researcher with very good experience, a bit different from the kind of research we were doing, and very complementary: she studied stars, and I studied gas, but stars are formed from gas, and their chemical composition should be linked. It was a really difficult situation for her, having fled from the occupation with her daughter and having left part of her family behind. But she was able to come eventually, and get a refugee permit that allowed her to

start working in our group immediately. When I started my Interstellar One research group, I could never have guessed that things would go this way. I was very lucky, and I am really grateful to the SNSF for giving me the opportunity to develop my team in this way. Initial planning was essential, but remaining open to new possibilities and actually making them happen made it truly special.

As I write, I have started a new, exciting chapter of my life. I moved from being an assistant professor at the University of Geneva to working as a faculty astronomer at the European Southern Observatory (ESO) in Germany. I am also an invited professor at the University of Geneva, and I keep taking good care of my Interstellar One research group. At ESO, I do astronomical research and work for the observatory. My prime responsibility is to ensure that the selection process for scientific projects to be observed with ESO's telescopes is as fair as possible, finding the most efficient way to select scientific excellence and minimize bias. This is a great responsibility for the larger scientific community. How will our most advanced telescopes be used? What science will the focus be on? Thinking about this, my mind flies over the Atacama Desert, looking at the marvelous Very Large Telescope and the majestic Extremely Large Telescope, the world's biggest eye on the sky with its diameter of 39m, which is currently being built on the 3,046m-high Cerro Armazones, 20km away from its predecessor. The iconic mountain casts a giant shadow on the horizon. On the other side, the sun is ready to be squeezed by the atmosphere and our perception. Don't blink that sparkle away, Annalisa! Dark skies above, inspiring science for all.



## Chapter 5: The History and Presence of Motherhood and Academia

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*Stefanie Mahrer*

Over 20 years ago, I sat looking over the application forms for the University of Basel, hesitating about which field of study to choose. My hand went back and forth from medicine to history. After several days, I finally ticked “history.” I always had a profound interest in the subject, despite terribly boring history classes in high school. The application form also required to choose the planned final degree — licentiate or doctorate. Growing up in a family of teachers, education always had a very high standing, but no one in my immediate family had a university degree, and a doctorate seemed very frightening. But I got their support and the support of some teachers at university when I decided to go for it. I never regretted choosing history over medicine. At times, I might struggle with the structural settings of academia, but never with my choice to become a researcher and historian.

Transnational migration, cultural transfer, and transfer of knowledge are key focal points of my research. In my dissertation, I studied the history of Jewish watchmakers in Switzerland, an immigrant community of originally rural commodity dealers who entered a new industry that not only brought profound inner-societal changes (secularization, urbanization, social advancement), but that also enabled the industrialization of watchmaking in Switzerland. My second book (my habilitation) is a biography of Salman Schocken, a German-Jewish entrepreneur, philanthropist, publisher, and cultural Zionist who was forced to leave Germany in 1933 for Jerusalem. The study is more than the description of Schocken's life; it is an analysis of how the cultural area of German Jewry

was constituted and changed outside of Germany after 1933. In my current project, my team and I work on Switzerland in the transnational network of science in exile from 1933 to 1950, understanding Switzerland and its political and academic landscape as one location within the transnational academic networks of German Jews after 1933.

In my research I often focus on individual people. Attention to a singular life allows us to reconstruct “how social, economic, cultural, political and ethnic networks form, solidify and intersect, or dissolve.”<sup>1</sup> A biography is hence “neither structure nor agency, but always both.”<sup>2</sup> Writing a biography in context takes into account that “the autonomy of the agentic subject is an illusion,”<sup>3</sup> but understands the person according to the social groups in which they were educated and of which they were a part. People are, to use the phrase of the historian Anthony La Vopa, “positioned in a dense cluster of historical contexts.”<sup>4</sup> My interest goes beyond the merely biographical: I aim to analyze the development of the interplay between the individual, structures, institutes, relationships, and knowledge across time and space. Following this line of thought and drawing on my analysis of the confluence of the biographical and structural strands of history, I will argue that both academia and motherhood are social constructs.

This theoretical approach to historiography has shaped my thoughts on my own paths as an academic and a mother in the current system of higher education. The cover of my second book in poster format hangs on the wall behind my desk, framed by numerous drawings by my children. This background is visible in every video call, in lectures as well as

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1 Simone Lässig, “Introduction: Biography in Modern History – Modern Historiography in Biography,” in *Biography between Structure and Agency: Central European Lives in International Historiography*, ed. Volker R. Berghahn and Simone Lässig (Berghahn Books, 2008), 20.

2 Ibid.

3 Pierre Bourdieu, “The Biographical Illusion (1986),” in *Biography in Theory: Key Texts with Commentaries*, ed. Wilhelm Hemecker and Edward Saunders (De Gruyter, 2017), 210–16.

4 Anthony J. La Vopa, *Fichte: The Self and the Calling of Philosophy, 1762–1799* (Cambridge University Press, 2001).

in courses. The posters and the drawings represent my two realities. I am a PRIMA assistant professor of modern history without tenure-track; in this role, I am the supervisor of three doctoral students, the principal investigator (PI) of a major research project, a teacher, and a speaker. I am also a single mother of two young children, aged nine and seven. This work is bigger and more exhausting than being a professor. Ever since the birth of my first child, I have been in the limbo between care work and an academic career. I am writing this text as a scientist and as a mother.

The understanding of science and of motherhood have grown historically in our patriarchal society, and they are diametrically opposed. A central problem of equality between women and men in academia lies in the discrepancy between the image of science as a mental and intellectual activity and the emotional and physical connotations of motherhood. In their book *Maternity and Science*, Sarah Czerney, Lena Eckert, and Silke Martin write that it is not the “incompatibility of activities,” but the “symbolic, psychological, economic and political coordinates” that play motherhood and science against each other.<sup>5</sup> Only by demystifying both, “the mother”<sup>6</sup> and “the scientist,” will equality be achieved at universities. A look at the local university landscape shows how long the road to equality between women and men still is, despite the historical changes over the last 150 years.

In 1867, Nadesha Suslova received a doctorate in medicine from the University of Zurich, making her the first woman to complete a university degree in Switzerland. Forty years later, a quarter of all students at Swiss universities were women, 90% of whom came from abroad. At the turn of the century, Switzerland was a stronghold for women's studies. Today, more than 150 years after the first female student, 51.8% of

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5 Sarah Czerney, Lena Eckert, and Silke Martin, eds., *Mutterschaft und Wissenschaft: Die (Un-) Vereinbarkeit von Mutterbild und wissenschaftlicher Tätigkeit*, 1. Auflage (Springer Fachmedien Wiesbaden GmbH, 2020), 26.

6 Susanne Mierau, *Mutter. Sein.: Von der Last eines Ideals und dem Glück des eigenen Weges*, 2. Auflage (Beltz, 2019); Franziska Schutzbach, *Die Erschöpfung der Frauen: Wider die weibliche Verfügbarkeit*, Originalausgabe (Droemer, 2021), 166–209.

all bachelor's degree students at Swiss universities are female. If you include the universities of applied sciences, this figure rises to 52.3%.<sup>7</sup> But does this mean that the universities are female, as Urs Bloch concluded in a 2013 article in the *Neue Zürcher Zeitung*?<sup>8</sup> Clearly not. To describe Swiss universities as female institutions just because women have made up a slight majority of students since 2010 seems a bit far-fetched. The high number of female students contrasts with the still very small number of female professors — at the higher hierarchical levels the percentage of women decreases drastically. After graduation, the women's majority is over. There are more male doctoral students in Switzerland than female doctoral students and there are six male professors for every female professor.<sup>9</sup>

The reasons for deciding against an academic career and leaving after a doctorate or even after a habilitation may seem individual at first glance, but they are not; they are structural. A scientific university career enables an exciting, intellectually challenging life with numerous freedoms, inspiring encounters, and travel. But the road to a professorship is an uncertain, rocky path, especially for mothers. “Leaking pipeline” is a figure of speech used when trying to explain the declining proportion of women in science at higher qualification and career levels. Women are slowly but steadily dripping out of the scientific community.

In his 1993 work on the history of the university, Walter Rüegg wrote that the university, a creation of the Middle Ages, is “the European institution par excellence.” “The university,” he continues, “is [. . .] the only Eu-

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7 “Universitäre Hochschulen,” Bundesamt für Statistik, accessed April 6, 2025, <https://www.bfs.admin.ch/bfs/de/home/statistiken/bildung-wissenschaft/personen-ausbildung/tertiaerstufe-hochschulen/universitaere.html>.

8 Urs Bloch, “Die Frauen sind in der Mehrheit,” *Neue Zürcher Zeitung*, August 13, 2013, 185.

9 Philipp Dubach et al., *Frauen und Männer an Schweizer Hochschulen: Indikatoren zur Chancengleichheit in Studium und wissenschaftlicher Laufbahn: Im Auftrag des Teilprogramms Chancengleichheit von Frau und Mann an Universitäten SUK P-4* (Schweizerische Eidgenossenschaft, 2017), [https://www.swissuniversities.ch/fileadmin/swissuniversities/Dokumente/Forschung/Chancengleichheit/CGHS\\_Indikatorenbericht\\_22-06-17.pdf](https://www.swissuniversities.ch/fileadmin/swissuniversities/Dokumente/Forschung/Chancengleichheit/CGHS_Indikatorenbericht_22-06-17.pdf).

ropean institution whose fundamental structures and social roles have been preserved, even strengthened and expanded throughout the course of its history.<sup>10</sup> Rüegg refers to the corporate organization of teachers and students, to the reputation of scientific achievement and the awarding of titles, and thus to structures with a high persistence.

Universities were, and to many extents still are, elite institutions. At the first universities, which came into being in Italy in the eleventh century, only sons of the nobility were admitted to study. Until well into the modern era, a university education was the preserve of a very small section of society. A university career, even a life as a scholar in the service of science, often without significant merit, was reserved for a small, privileged circle, and this remained the case for a long time.

Although the understanding of science has changed over the course of the centuries and admission to university has opened up, there have been only slight changes in the path to an academic career. The structure of the academic education system in German-speaking countries — master's degree, PhD, habilitation — but also the structures of the academic teaching body with the full professorships at the top of the hierarchy, have survived in their basic features to this day. These structures, with a small number of well-paid permanent positions at the top and a much larger number of temporary, precarious positions at the lower hierarchical levels, prevent the scientific community from diversifying because they act as a deterrent. Until well into the 20th century, scientists were, with very few exceptions, white, male, and financially privileged. After all, anyone who decides to pursue a university career in German-speaking countries is taking a risk with an unclear outcome, since only a very limited number of scientists can ever achieve a professorship. Studies show that women in particular are less willing to bear this uncertainty than their male colleagues.<sup>11</sup>

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10 Walter Rüegg, *Geschichte der Universität in Europa*, Bd. 1 (Beck, 1993), 13.

11 Jutta Dalhoff, "Frauen in der Wissenschaft: Zeit, die Geduld zu verlieren," *Süddeutsche Zeitung*, June 3, 2013, <https://www.sueddeutsche.de/bildung/frauen-in-der-wissenschaft-zeit-die-geduld-zu-verlieren-1.1685299-0#seite-2>.



Researchers have long assumed that women are generally more risk-averse than men. However, as recent studies show, gender-specific differences in risk tolerance are less pronounced than previously thought.<sup>12</sup> The fact that women are less likely to aspire to an academic career is not because they shy away from risk, but because of the idealized image of the scientist as someone who is always available. This ideal is based on the principle that for a scholar, there is no place for a life outside of academia. This notion is based on a hierarchical understanding of society and a historical concept of bourgeois gender relations. The academic's retreat into academia is a departure from the world, and this is only possible when the organization of everyday life rests on the shoulders of others. A few years ago, when doing archival work for my second book, I read a male professor in a letter to a colleague referring to his female partner as "my wife and secretary." Not yet fully established in exile, and thus without a secretary who would type his correspondence and papers, he relied on the support of his wife. Professors' wives managed their husbands' affairs, the household, and the upbringings of their children. For male professors, having a family was a normal thing. For female researchers however, the idea that women have both the right to a professional career in academia and "an acknowledged right to the happiness of a family," as it was stated in 1920 at the first conference of the International Federation of University Women, was deemed radical.<sup>13</sup> Family models and life plans have changed drastically in recent decades, but the postulated image of scientists being available at all times stubbornly persists. There is no provision for parenthood, let alone for single motherhood.

For many, the central requirements for an academic career — doctorate, habilitation, and geographic mobility — occur in the years of life

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12 Antonio Filippin, "Geschlechterunterschiede in der Risikobereitschaft: Die Unterschiede zwischen Männern und Frauen bei den Risikoeinstellungen werden häufig überschätzt," *IZA World of Labor*, no. 100 (2016), <https://doi.org/10.15185/izawol.100>.

13 Christine von Oertzen, *Science, Gender, and Internationalism: Women's Academic Networks, 1917–1955* (Palgrave Macmillan US, 2014), 31.

in which children are born. Both of my children were born during my habilitation period — the first when I was living in Jerusalem as a postdoc. Suddenly two realities had to be organized and harmonized with each other. A newborn sets the pace of life, while the academic clock cannot be stopped. Articles need to be revised, applications written, and lectures given. My daughter was only two months old when she attended her first conference (she was not impressed and slept through the whole day tightly strapped to my body). I wrote parts of my habilitation thesis on park benches in Jerusalem. Back then, she would only fall asleep in the stroller. Two years later, now in Basel, I started with the final revisions to the manuscript when my son, my second child, was ten days old. I submitted it the day after my maternity leave ended.

Children are not meant to be a part of an academic career. It is the old structures of the universities and the image of constant availability that make it so difficult for academic careers and parenthood to go together. But not only that. In addition, there is the pressure of the modern meritocracy, which is expressed in the scientific environment by publishing as much as possible: “publish or perish” is the creed. (But really, who should read all the texts that are produced without interruption is another question entirely.) The high performance demands of an academic career, especially when applying for the few permanent positions, collide with the obligations of care work and the exhaustion of young parents. Like many other young mothers, I have heroic stories in my repertoire: completing my habilitation four months after the birth of my second child, for example, or defending my PRIMA project in front of a national panel with a five-month-old baby who at night woke every 45 minutes. (To his credit, he was a great audience for my endless rehearsals.) There is a fine line between resilience and overexploitation of one’s own health. The heroization of exhaustion and overwork are integral parts of the science myth and the mother myth. These hostile, neoliberal working conditions, as the editors of *Maternity and Science* put it in a nutshell, must no longer have a place in universities. As long as we do not see scientific work as a “job” with normal working hours, with protected after-work hours, weekends, and holidays, the leaking pipeline will continue to drip. As long as the maxim “publish or perish” prevails and the value

of a scientist is measured by the number of publications, many excellent scientists will continue to choose a different path. The Swiss National Science Foundation (SNSF), the largest research sponsor in Switzerland, is aware of the problem and explicitly supports female scientists on their way to a professorship. As an SNSF PRIMA professor, I am one of the explicitly funded scientists.

There is no lack of initiatives; the problem is addressed at all levels. There are support programs, mentoring, courses, relief offers, and breastfeeding rooms. Women and mothers have become visible, but they are still hardly noticed. A breastfeeding room (which I nonetheless appreciate) does not help with structural issues like meetings that last late into the night and the expectation to travel to conferences all over the globe. What we need to demand are binding working hours (as enforced by the University of Tübingen, for example), reliable infrastructure for childcare (day schools), a newly adjusted understanding of scientific performance (first approaches already exist), and improved employment conditions for scientists below professorships. This change must now be initiated, if necessary, through quotas and incentives. Above all, however, we need a change in mentality: new role models in managerial positions, far removed from previous (male) normal biographies, who exemplify new paths.

## Chapter 6: Mums, Academia Needs You!

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*Macarena Toll-Riera*

I was a curious kid and loved animals and nature, so studying biology was an easy choice for me. While taking courses at university, I soon discovered that my true passion was evolutionary biology. Evolutionary biology helped me understand the “hows” and “whys” of the enormous biodiversity of our planet, especially its origins. I devoted my entire career to studying how living organisms adapt to their environment and to changes in it. To study this question, I use experiments in the laboratory, sequencing technologies, computational approaches, and diverse species, ranging from microbes to mammals. For example, in a recent publication, we investigated whether species could adapt to temperatures above their upper thermal limit. To do so, we grew bacteria in the laboratory at higher and higher temperatures and observed how they adapted. Our study revealed that, although our model organism adapted quickly to high temperatures, it was unable to adapt to temperatures one degree above the upper thermal limit.

For most of my career, I was very naive and did not realize that being a woman in science is tough. But that changed when I became a mother. In my case, motherhood coincided with starting my own very small group as a Swiss National Science Foundation (SNSF) Ambizione fellow. I had an easy pregnancy; I was working at full capacity until the day before my daughter was born. I had a relatively easy recovery and, soon after the delivery, my brain was able to start thinking again about work. I was lucky to have a very supportive and empathetic research assistant. During my maternity leave, she would come to my home to plan and discuss experiments, and she would do it once my partner was back

from work so he could take care of the baby while we spoke and planned experiments. Thanks to the support of my partner, I also wrote the PRIMA grant during my maternity leave. He would come from work and fully devote himself to our daughter so that I could have time to write. Days when our daughter only wanted my arms, my partner would write down what I dictated while I held our baby. Once my maternity leave and our accumulated holidays ran out, our daughter started attending the nursery. We were lucky and got a place at the university nursery, which was very flexible and accommodating and only five minutes away from my office, so I could go and breastfeed my daughter when she was hungry. The nursery was also a way to meet other academic parents with similar aspirations and challenges, with whom we could easily talk and share experiences and advice. So, during the first few months of motherhood, I quickly realized the crucial importance of having a good support network, including life partner, team members, other parents with similar life experiences, and good childcare service.

But, despite having a good support network, motherhood brought with it many changes in the way I used to do science. It meant having fewer hours in the day to dedicate to science, working at times when my productivity was not at its highest (I am an evening person), and attending conferences or after-work networking events required more organization than previously. Still, I felt that I could manage motherhood and an academic career relatively well. But that changed with the birth of my second daughter, which coincided with the first months of my PRIMA grant and the start of the COVID-19 pandemic. My second daughter slept terribly until she was almost two years old, and it took me a long time to recover mentally from the second pregnancy. I was exhausted and I had difficulties focusing and thinking clearly. It was very hard for me to accept that I did not have enough time and energy to write grants and papers, work on projects, and lead my team as I had planned. I had to learn the hard way to accept my limitations and set priorities. This meant making difficult decisions, such as missing grant deadlines to focus on the PRIMA project, my team, and my family. I held on as best I could and hoped that at some point my brain would return to normal. Fortunately,

once my second daughter started sleeping better, I began to recover mentally, finally free of my post-pregnancy brain fog and back on track.

Before becoming a mother, I was well aware that science is very demanding and requires a lot of energy, but now I know that motherhood is also extremely demanding. Having two children under the age of five while building my group, developing a novel research line, and being in the middle of the COVID-19 pandemic has been extremely difficult, and I have had to sacrifice having time for myself. Through my journey as an academic mother, I have had to learn to live with the constant feeling that I cannot devote the necessary time to either science or my daughters and that I am neither a good scientist nor a good mother. But now that my daughters are a bit older, this feeling is starting to fade. Being a researcher mother teaches a very important lesson to my daughters: women can follow their passion and have a career in addition to having children. Moreover, being a mother gives me very useful qualities for science, such as patience, calmness, empathy, and time-management skills.

Unfortunately, motherhood often coincides with key moments in the academic career, such as the last postdoc years, applying for faculty positions, or starting a group. And motherhood can add additional difficulties to an already complicated point in the career of a researcher, such as problems during pregnancy, postpartum depression, lack of sleep, hormonal problems, or miscarriages. In recent years, big steps have been made to make the academic career less hostile for mothers. For example, European Research Council (ERC) grants automatically extend the eligibility window of researcher mothers by one year and a half for each child, and the DORA declaration is helping to take career breaks into account when one is evaluated for competitive calls. I myself noticed the positive change: a grant reviewer wrote that my maternity career breaks had to be taken into account to explain the decline in my publication record and that I should not be penalized. But I was also recently asked why my publications have decreased in number over the last few years. The sign of the change in mentality is that I did not have to respond to that comment; a male researcher responded for me to point out that I had two children in two years in the middle of a worldwide pandemic.

Despite these improvements, we still need to implement further measures that take into account the difficulties of being a mother in an academic career and that make science more inclusive and welcoming for mothers. Many women leave academia after their PhD or postdoc. We need more mothers in leadership positions in academia to show that it is possible to be an academic mother. Moreover, the more women there are in academia, the easier it will be to implement policies that support the needs of academic mothers. But I think there should be measures not only for mothers that want to pursue an academic career, but also for researchers with families or with care duties in general. Some measures are easy to implement, such as allowing flexible working hours and remote working, or scheduling by default meetings, seminars, and networking events during regular working hours, so that family responsibilities do not limit attendance and opportunities to network. Another relatively easy measure is to ensure that grant deadlines do not overlap with school holidays, which is a serious disadvantage for parents with young children. A more difficult measure to implement is financial support for families with children or care obligations. An example of such a measure is the Flexibility grant awarded by the SNSF, which aims to better reconcile work and family time by partially covering the cost of childcare and/or the costs of hiring a support person to reduce the working hours of the recipient. While Flexibility grants are a remarkable measure, doing science involves mobility, and most researchers live far away from their families, which means that their local support network is usually reduced. I envision a financial scheme that would function as an annual stipend per researcher to cover, for example, train or plane tickets for grandparents to care for children while at a conference or a job interview, a babysitter to care for sick children, or the costs of hiring a support person (for science-related or household issues); it could also partially cover regular childcare costs. Finally, extensions beyond the duration of the maternity leave should be granted to women researchers who have become mothers while being awardees of a grant covering their salary. As I have already mentioned, the ERC acknowledges the career delays that having children causes for female researchers, but it would be very useful to extend the length of the grant if a child is born

during the grant itself. The introduction of such measures worldwide would be a game changer; it would promote inclusiveness in science, which would lead to a more diverse scientific environment. Merit and scientific brilliance do not depend on gender or nationality; a more diverse workplace boosts productivity and creativity by increasing the range of different perspectives, skills, experiences, and approaches to problem-solving. Diversity is therefore key to nurturing excellence, and science would benefit enormously from a more diverse environment. Let's embrace diversity and let science be driven by the curiosity and passion of all scientists, regardless of their background!





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

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*Stefanie Knopp*

### **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.

## **Part II: Be(com)ing a Scientist: Key Values and Traits of Academics**



## Chapter 8: Some Key Ingredients for Becoming a Scientist

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*Petra Vetter*

Ok, so you want to become a scientist? Great idea — it is a wonderful and fascinating job (from a scientist’s point of view, of course). At the same time, it is a very challenging job, too. In the following, I will describe my experience in the scientific world and summarize what I have learned are the merits and challenges of this job, in the hope it will inspire you and help you make up your mind whether this is a path you want to follow. I will outline the key ingredients that I think make a successful scientific career.

### **Passion**

In the first place, you have to find a topic that you find genuinely fascinating and inspiring. A topic you feel an insatiable curiosity for, which you love spending even your free time reading about, about which you feel you can’t learn enough. A topic that makes you wonder about lots of new research questions and that sparks your creativity to write about and design new experiments. I am a brain scientist, and trying to solve the puzzle of how this jelly-like bunch of neurons, sized like a cauliflower, sitting inside our skull in entire darkness, is able to create all our perceptions, sensations, thoughts, and feelings, is endlessly fascinating to me. I think that even if I ended up in a different job, I would still spend a lot of my free time reading and writing about the brain — I know this sounds really nerdy, but a science nerd is what you need to be to succeed

in science! Like many people, I found my passion a bit by accident. Originally studying biochemistry, I stumbled across a textbook on biological psychology in a university bookstore. Skimming through the book, I realized it was possible to apply the methods of biology to investigate how our brain creates complex phenomena like consciousness, attention, perception — and I was hooked. At the time, there weren't many possibilities to study this topic in Germany, only within yet another five-year psychology degree. But I discovered that study programs in cognitive neuroscience existed in the UK and the US. Studying cognitive functions of the brain felt like a “wild dream” to me, but I managed to get a scholarship from the German Academic Exchange Service to do a master's in cognitive neuroscience in London — and it changed my life. My joy of reading research papers in my field is still the same as it was then, more than 20 years ago and many hundreds of papers later. I still marvel at the privilege of being able to design and conduct experiments on how the human brain creates perception and consciousness.

During my career, I realized that, in order to be successful in science, you need to become an expert on a specific topic. If you can find a topic that could be of high relevance for your field, but that not many have explored yet, this can make it easier later on to sell yourself as one of the “pioneers” of that field; you may have fewer competitors, though you may have to do a lot of groundwork first. In a field populated by many others, you have more competitors, the “obvious” research questions have often already been addressed, and it can be trickier to find your niche of expertise. In the end, however, you should just choose a topic or research field you really burn for.

## **Ambition**

Apart from passion for your research topic, ambition is another key ingredient. Curiosity and a love of reading about your topic alone will not make you a successful scientist who earns a living. You also need to have the ambition to contribute to your field, to provide even the tiniest piece of new evidence, new knowledge, or new insight. You must want to push

the boundaries of your topic and contribute to its theoretical advancement. In addition, in order to earn a living with science, and often also to actually carry out your research, you need money, and you need to become part of the academic system (at least initially). And the academic system is built around ambition — staying the eternal student won't get you a job. You keep employment in science if you finish your undergraduate degree with good marks, if you have the ambition to sweat through and complete a PhD, if you drill down on your expertise in several stages of postdoc training, and if you then face the challenge of finding a faculty position, applying for bigger and bigger research grants (and keeping on failing with them), chasing more and better publications, initiating collaborations, and growing your research group. As a researcher, you are expected to always want to reach for the stars, right up until your retirement. Even if you don't approve of all these aspects of the academic system, you need to play the game at least up to a certain point. Even if you decide for a research-related job in industry or are lucky enough to get one of the rare permanent mid-level positions at a university, you need to have completed a PhD and often some postdoctoral training. And if you want to become a professor, completing all of that training alone won't do, since the expectations get higher and the competition tougher (exponentially!) as you go higher up on the academic ladder. So, to keep your head above the water in this system, you need at least a certain amount of ambition.

## **Perseverance and Resilience**

If I had to identify the most important predictor for success in an academic career, I would say it is perseverance — the sheer stubborn drive to keep on pushing things forward for a very, very long time, irrespective of obstacles, failures, and setbacks. Research can be an extremely rewarding, but also an extremely frustrating, business. Experiments fail or don't replicate, results come out weird and unexplainable, theories become increasingly complex the more they advance, papers you worked on for years keep getting rejected (often for not entirely explainable or fair



reasons), and time-consuming, long grant applications get rejected, despite excellent reviews, just because there is too much competition and not enough money. For each small success in research, there are on average ten setbacks. If you are a person who regularly needs an experience of success in life, do not go into science! Resilience and a great tolerance for frustration are instead the personality traits you need to bring if you want to stay in research. One trick to keep going is to find joy and motivation in your work even when it has just been a hail of failures and rejections. This is where passion, the very first ingredient, becomes so important. If you burn for your topic, you will find the fun and motivation to keep on working on it, despite all setbacks. Also, keep in mind that scientific progress lives off disagreements and contradictions — if the picture were clear, there wouldn't be any point to do research. Predictions not being fulfilled, results turning out more complicated than thought, theories not being as clear-cut as initially thought — this is what prompts more research and drives progress forward. One possible perspective to take is to say: this is where the fun starts — when results are not easily explainable, when theories are unclear, this is where creativity and out-of-the-box thinking is required and the big, exciting mystery-solving exercise begins.

Another trick is to stubbornly keep on going, no matter what. Of course, take constructive feedback and criticism on board; if reviewers have a valid argument for why your paper or grant application does not quite meet the requirements, then try to improve in the next round. And allow yourself many next rounds and keep on submitting your work, up until it is finally accepted. Another trick is not to take rejections and criticisms personally — your rejected paper or application is not a sign of your being incompetent or not a good enough researcher, it just means that this particular work doesn't meet all of the often very high expectations, so just take it as chance to learn and improve. It is also okay to feel frustrated or disappointed right after a rejection (you'd be surprised how many very senior and established big-shot professors are gutted about some rejections!). The important thing is to pick yourself up and keep on going, just keep on going . . .

## Community

One of the main reasons why I'm still in academia, and have not given up yet, is the people and the scientific community in my field. When I started my PhD at the Institute of Cognitive Neuroscience at University College London, it was exhilarating to meet so many people being passionate about the brain! (If you are a nerd about something, it is great to meet a community of other nerds.) For me, the years of my PhD and my subsequent postdocs were a very formative and significant phase of my life, mostly because I was surrounded by people with the same passion and ambition, and many of them became dear and longstanding friends or scientific collaborators. We don't just share the passion for our scientific topic; scientists often share similar personality traits such as passion, ambition, perseverance, and resilience, the ingredients I have already mentioned. And finding a community of like-minded people is a joy for everyone. It is a particular joy as you often end up working and collaborating with those people in the years to come. And being able to do a job in which you enjoy the company and teamwork of people you like is a great blessing that makes up for a very big part of the mentioned frustrations that come with the job. When I'm grappling with yet another rejected grant application, rejected paper, failed experiment, etc., just having a brief chat with my science friends and collaborators really gets me back on track (also because everyone is in the same boat!), and it sparks my motivation again on why I'm doing this job.

## Independence and Academic Freedom

Another aspect that I very much enjoy about being a scientist is the famous "academic freedom," or independence of thinking and working. Within certain limits, you can choose your research topic and specific research questions, as well as most of the people with whom you work. You can choose the research field in which you do your master's and PhD, and within that you usually have a choice of topic by selecting the research groups and projects that you are most interested in, as well as your su-

pervisors. Later on, you also have the freedom to drill down on research questions that you find most relevant, promising, or fascinating. However, once you need to acquire money for your research, whether it be a postdoctoral fellowship or a research grant needed to fund your group, your choice becomes a bit more limited again. Money for research is often provided according to certain priorities that are politically decided (e.g., for topics with societal relevance like health, energy, or security), and you need to relate your research to these priorities. Alternatively, fundamental research is also funded independent of political priorities, but then it is important to demonstrate scientific impact and feasibility. If you are a young researcher, nobody gives you money for a research topic you don't have experience and expertise in. So that restricts your freedom again, because you need to propose a project that is based, at least to some extent, on the previous research you have done in your PhD or postdoc training — only there you can show enough experience that makes a new project sufficiently feasible. Choose your PhD topic and postdoctoral training projects wisely, both in terms of topic and acquired skills, because they will to a large part determine which projects you will get funding for later on. In hindsight, I wish I would have known that at the beginning of my career. Having said that, I think you can change topics between your PhD and several postdoc trainings (I did) without too much damage to your career, but only once or twice, and only if you don't change to an entirely new field every time.

I was lucky that my PhD and postdoc supervisors were always open to my ideas and that they let me develop my own research questions as long as they were roughly aligned to their research interests and funding. If you have a good research project idea, then it is usually possible to make it happen by finding the right collaborators, money, and time. This is not always obvious to achieve, and you need to accept that many project ideas will eventually not see the light of day. But if you do get your own idea realized, then this is highly rewarding! In fact, for me this is one of the fun aspects about being a scientist: I can wonder about how the brain achieves a certain function, or why we behave in a certain way in certain situations, and if nobody has found an answer yet, I can design an experiment to find out and get at least a partial answer. This is cool!

Even if you don't do experimental research, you can satisfy your curiosity by researching a topic nobody else has explored in detail yet.

Another aspect of academic freedom is that you can usually choose to defend your own scientific opinion as long as you have good arguments or evidence for it. Again, scientific progress lives off disagreements, and you have the freedom to develop your own view or own theory in your field. For people with independent minds, this can be a lot of fun. Here it is important to enjoy debate and discussion and the art of evaluating arguments and evidence.

A dear friend and colleague of mine summed it up like this: "One of the virtues of our job as a scientist is the freedom from boredom!" Use this freedom and choose research questions that do not bore you.

## **Creativity and Intellectual Challenge**

The independence in academia also makes space for creativity. Not everyone associates a scientific job with being creative, but in fact it requires a lot of unusual ideas, out-of-the-box thinking, and creative problem solving. It needs creativity to come up with a truly novel and impactful research question, to find hidden and unexpected effects in experimental data, to interpret results that do not quite fit the current theories, and to develop novel theories that tie together potentially contradicting evidence. If you enjoy this kind of intellectual creativity and enjoy solving mysteries, then science is a lot of fun. A scientific job never stops being an intellectual challenge, granting you the "freedom from boredom" mentioned above. Up until retirement, there is always a mind-boggling number of new papers with new evidence, updated theories, and novel methodological advances to keep up with, there are always new mysteries and problems to solve, and the job becomes more varied the further you advance in an academic career. Instead of drilling down on one research question, as in your PhD, you start pursuing several research projects in parallel, extending your methodological experience, and supervising and mentoring more and more advanced students. And when you are a group leader, you need to manage a research team, ap-

ply for research funding, engage in different teaching activities, and take on institutional responsibilities like organizing talks and conferences, sitting on various university and funding committees, reviewing grants and papers, and much, much more — the task list becomes longer the more you advance in an academic career. This has the advantage that the job never becomes boring, but the disadvantage that the management of this huge workload becomes a whole new task. If this scares you, don't worry too much, because you will grow into the job and get more efficient the longer you do it.

## Self and Time Management

As already mentioned, workload, project complexity, and competition increase the more you advance in an academic career (and this is probably true for many non-academic jobs, too). To stay successful, you need to find a way to maintain your sanity — both your physical as well as your mental health. This is of course quite individual, but working day and night until the last minute before an important deadline is something you can do occasionally, particularly in your master's, PhD, or post-doc training. But sooner or later you will realize it is not a sustainable work strategy in the long term — it will result in your becoming physically or mentally ill (many common symptoms I hear from colleagues are back pain, migraines, and, less often reported, depression). One deadline chases the other and you don't have much time to take a break in between, and the workload hardly ever diminishes. Plus, the constant flow of rejections and setbacks, as described above, can sometimes be tough on your mood. To stay healthy and productive, it's critical to learn how to manage your time and energy well so that it is sustainable in the long term. In my mind, one key aspect is to find and make time for activities that balance the challenges of the work — for example, regular exercise, doing something fun, and spending time with friends and family. This sounds quite trivial, but if your to-do list by far exceeds what could ever be done in a 24-hour day, then you need to specifically plan and make time for such balancing activities. And that leads to another

important aspect, which is setting priorities. In the end, there is only so much you can do in a lifetime. I realized already in the second year of my PhD, frustratingly, that my life would be too short for all the cool experiments I could think of. So, while the passion for my topic never stops sparking my creativity about research questions to explore and experiments to run, I've also learned to become more realistic about how much is feasible to do in a year, a month, or a day. In the end, the only solution to this problem is setting clear priorities for the research projects you really burn for, the collaborators you really enjoy working with, and taking on those responsibilities that really maintain and drive your career forward. And then make time for activities that recharge your batteries, otherwise you risk, literally, a burnout.

To conclude, if you are burning for a research topic and you love scientific argumentation, constant intellectual challenge, analytical thinking, and independent work, then going into research is certainly a good start. In order to succeed in academia in the long term, you also need to be ambitious, perseverant, and tolerant of frustration, as well as someone who enjoys teamwork and managing a team. Then an academic career can be a wonderful and very rewarding job!



## Chapter 9: Be Less Curious about People and More Curious about Ideas

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*Camilla Jandus*

*“Be less curious about people and more curious about ideas.”*

— Marie Skłodowska Curie (1867–1934), Polish-French physicist and chemist, Nobel Prize in Physics 1903, Nobel Prize in Chemistry 1911.

It all started during my secondary school years, when I initially had the idea of becoming a criminologist or a detective in order to decipher difficult unresolved cases and identify the culprit. Then, watching a documentary on Marie Skłodowska Curie’s life and works changed the context of my “detective” mindset. As many others before and after me, I found myself fascinated by this passionate and pioneering scientist with an insatiable curiosity, who persevered in her meticulous efforts to identify and characterize radium and polonium. This encounter fundamentally changed the trajectories of my aspirations. Although not in chemistry or physics, I realized that I wanted to become a scientist: the human body would become my daily “crime scene” to investigate. Consequently, I enrolled in medical school, not with the intention of becoming a clinical practitioner, but with the desire to better understand human (patho)physiology. My aim was not to interrogate murderers and solve crimes, but rather to unravel the mysteries of diseased tissues, identifying the culpable cells or molecules underlying human disorders. While



my peers at medical school were busy with their first clinical trainings auscultating patients and evaluating chest radiographs, I left for New York, where I was exposed for the first time to daily bench laboratory life.

Today, travelling for private and professional reasons seems natural, whereas student mobility was a rarity in the early 2000s. My parents always motivated us to follow our dreams, even if they were unconventional. Hence, despite the 9/11 terrorist attack, which happened shortly before I left, and despite the nonexistence of social media, Zoom, or Skype, they offered me my first, old-fashioned cell phone and accompanied me and my dreams to Bellinzona's train station on my way to the Big Apple. Confident in my English proficiency, I soon realized upon arrival that I struggled to keep up with conversations. Nonetheless, I had the chance to engage with pioneers in the field, which convinced me to pursue my scientific path in the field of tumor immunology. Viewing cancer cells as my adversaries, I dedicated myself to investigating which cells, receptors, and mediators would play accomplice roles in supporting cancer development and metastasis. Back in Switzerland, I was fortunate to receive generous support from various grants from the Swiss National Science Foundation (SNSF) and from other private and public sources. I progressed in the path from MD-PhD student to postdoctoral fellow to senior scientist to principal investigator, continuing my journey of investigations.

While this journey might seem simple and without obstacles at first glance, managing work, children, and the obligations of an academically active husband was not easy. I defended my doctoral thesis while seven months pregnant with our second child, which required many sacrifices and the anxiety that something could go wrong. Despite these challenges, my determination was fueled by a curiosity to understand the mechanisms and principles of immune cell interactions within the tumor micro-environment. I have dedicated countless hours sketching diagrams that depict cells trafficking between organs, connecting cell types with arrows, and speculating on potential interactions, a process similar to the meticulous work of police detectives tracking down a dangerous fugitive. I am very grateful for the freedom given to me by my

mentors to explore ideas, to test new hypotheses, to think critically and outside the box, and, most importantly, to learn rigorous scientific work. I was lucky enough to be selected twice for the final round of the European Research Council (ERC) Starting grant interviews in Brussels. I attended these interviews with a mix of enthusiasm, humility, and hope to see my ideas progressing towards concrete projects to work on in the lab. Regrettably, after all the efforts to optimally prepare for the D-Day, twice, I received a negative answer: a short email during the vacation period. That was tough! The frustrations from rejections, the disappointment of disproved ideas that we initially considered brilliant, and the discouragement from all the hard work met with negative results have all been counterbalanced by the immense joy of seeing some of our findings contribute to the understanding of tumor immunology and be translated to clinics to help cancer patients. Ultimately, some of the suspects at the crime scene turned out to be guilty. Luckily, through collaborative efforts that would also involve private companies, we can attempt to neutralize these offenders and their weapons. I appreciate with gratitude all the lessons I have learned from supervisors and colleagues, which I try to share with my team in my daily life, to pass on to junior scientists my passion for science, innovation, and quality work. The interactions within the tumor immunology community as well as with colleagues from other disciplines have been critical to developing an interdisciplinary view of our findings and contributed greatly to considering our own results from new angles and perspectives. The continued commitment and the winding path of a scientist dealing with heavy family duties with three children would not have been possible without the support of my partner, family, friends, mentors, and colleagues.

On top of all this, we were unexpectedly confronted with the COVID-19 pandemic just a few months after opening my laboratory in Geneva. During that sensitive period, managing the new team, the lockdown, and the homeschooling of three children, with a husband working at the hospital, proved to be more challenging than expected. Fortunately, the SNSF PRIMA program assigns individual coaches to the candidates. It was fundamental for me to have a competent contact person with whom I could discuss my difficulties, plans, unexpected

events, and future goals. It felt like being confronted with a very difficult case to solve but being supported by a seasoned detective, who assisted in sorting out priorities and uncertainties. Sharing with her and my family the desire to humbly contribute to the advancement of tumor immunology has helped me deal with sacrifice and periods of hard work with a difficult work-life balance. In particular, when I confronted my husband with provocative and atypical ideas, I felt encouraged and supported to go beyond my comfort zone. He was the one convincing me not to give up and to take risks, even if the success of the project seemed unlikely at first. His support and the precious moments of free time spent with our children and their engaging naivety proved restful, unforgettable, and inspiring. But above all, what cheers me up the most is that I can live in my daily life, together with the people I care, the intimate meaning of my life motto: "*Normal is boring.*" The vision that cancer will become largely preventable and a chronic manageable disease, in large part due to our community-borne mastering of the immune system's weapons to control early-detected tumors, continues to animate my dreams.

If you were to ask me what has driven me in my career, I would answer without hesitation:

My *PASSION* for thinking, for doubting, and for understanding. My detective mindset.

My take-home messages of this journey in science are:

Master the dogmas. BUT doubt.

Be visionary and curious. BUT be patient.

Open new fields. BUT accept critique.

Contribute to the puzzle of science with your own little piece.

Be grateful.

Improve every day.

*AND enjoy.*

## Chapter 10: Choosing the Game You Want to Play

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*Meike Ramon*

Scientists are interesting vessels of atypical experiences and character trait combinations gravitating towards very specific questions. The desire to understand fuels sleepless nights and lifelong dances with uncertainty. It leads to labyrinthine question journeys through different countries and cultures. Scientists often have to bid farewell to their original families, and grow their own along the way, with curiosity and perseverance as their steadfast companions.

It actually does not take anything special to be a scientist; children are naturals at it. Adult scientists have simply received some type of formal training. They have learned how to twist and turn things in order to observe them from as many angles as possible. And they have acquired and cultivated a language and structure to facilitate communicating their observations.

Being an academic, however, is an entirely different game. The rules of academia are unwritten, hard to explain, and in perpetual flux. Players are constantly moving on and between complex boards, which vary across countries, institutions, labs, and time. Much like any legacy game, with every new move these boards can change. Sometimes it is unclear if you are playing a single-player game, who your teammates and opponents are, and if your next move will nullify your current plan.

Despite — or perhaps because of — having played this game for over 15 years (mostly without knowing it), writing this chapter is a challenge. I do not consider myself creative, and wonder: Who — if anyone — will read it? How will it feel to reread these lines myself, at some point in

the future, when I am no longer a non-tenured professor wondering what's next? At the least, this text is a bird's-eye, retrospective snapshot account, deliberately redacted to leave room for the imagination.

## **Navigating Unseen Barriers: The Role of Mentorship**

I entered academia because it offers a world that thrives on questioning everything, where nothing is (mis)taken for black and white. While living comfortably in grey areas has fed my curiosity, it has also led me to question my own instincts. Environments that cultivate healthy skepticism attract great thinkers and generous educators, but also individuals who exploit others' uncertainty or are insecure themselves. Throughout my career I have experienced both. Universities, institutes, departments, and their organizational structures can empower or stifle you. Their processes and individual people can support or hinder the pursuit of your research, professional growth, and mental well-being.

Six years ago, funded by a Swiss National Science Foundation (SNSF) PRIMA grant, the first cohort of the most talented female scientists in Switzerland embarked on their journey of setting up and heading their own research groups. Since then, we have learned a great deal. Aside from some truly remarkable scientific and professional achievements, many of us were subject to discrimination, harassment, and power games — in which some of “us” were even complicit.

## **Looking Back, What Would I Advise Myself?**

Trust your sense of right and wrong and do not let others gaslight you into accepting a broken culture. Seek out information on what others are experiencing: Are PhD students expected to “sink or swim”? Is there any indication of power games (defamation, isolation, rival camps), nepotism, or favoritism? Are non-professors regarded as *valuable* (maximally benefiting senior colleagues interested in maintaining the status quo), or are they *valued* and supported in their own right? Are your superiors

and colleagues gatekeepers or victims of the idea of maintaining the “hierarchy” through “process” (i.e., micromanagement)? I believe that good leaders will trust you and want you to grow; they will give you the freedom to develop and fail, and will support you when this is what you need.

Personally, I have learned that individual efforts can change neither cultures nor collective and individual wrongdoings. I have come to understand this through the incorporation of mentorship into my life. Unlike family and friends who cannot relate to the world of academia, mentors provide invaluable guidance and expand your horizons through their networks. I strongly advise early-career researchers, especially first-generation academics, to seek mentorship from a tribe of supporters. Finally, if you find yourself in an environment that does not serve you, remember that you have the freedom and resources to seek one that aligns with your beliefs and values. After all, people and institutions are temporary fixtures; their and your actions are what remain memorable.

## **The Complexity of Independence in Uncharted Territory**

Entering academia often feels like stepping into a world of infinite possibilities. This freedom can be liberating at times and isolating at others. I experienced this profoundly when I moved countries for my PhD and later started my own research group. With no familiar support and the great weight of (solely) self-imposed expectations, I found myself navigating periods of loneliness. This was not just due to being physically removed from family and friends. I was collecting responsibilities, experiences, and perspectives to which they could not relate, which increased the distance between my old and new world.

Starting my own research group, I found myself shielding my team from issues that were unrelated to their work but could affect it. The isolation I experienced as a new principal investigator (PI) still feels like the loneliest period of my life. Looking back, I understand that becoming a PI meant that for the first time I had the opportunity to independently *create my own collective*. Previously, I had only ever joined and adapted to groups that others had created. So, if you find yourself feeling lonely, rec-

ognize this as your chance to build your own community. Identify peers you trust and respect and create the tribe you want others to experience.

## **The Interplay Between Discipline and Creativity**

Whether in the intricacies of the brain, the nuanced choreography of cooking, or the precision and artistry of ballet, I have always been intrigued by how discipline and creativity can blend to produce exceptional results. Professional cooking and dance mirror key lessons for science. They all require solid scientific and technical foundations acquired only through discipline, diligence, and commitment. When skills so firmly consolidated that their execution seems effortless meet dynamically changing environments, something exciting and exceptional can emerge. Collectively, the different paths that artists and scientists take, how they advance their expertise across the individual pieces of work they have developed, and how they persevere in the face of challenges highlight some things I believe are critical for excellence. When their passion (obsession) and skill have room to breathe in an environment that nurtures their energy and creativity, magic can happen. Try and find that place for yourself.

## **Curiosity Trumps Inherited Knowledge**

Professional journeys are highly varied, but our minds are primed to pick up on patterns, especially when encountering uncharted territory. While I always felt like a bit of an outlier in my field of work, with no knowledge of the unwritten rules and conventions of science and academia, curiosity kept me going. Looking back, I realize that the professional advice we receive should mostly be taken with a grain of salt. For instance, more senior (predominantly white male) colleagues would try to instill the idea that becoming a very specialized expert in some technique or method, that finding your one niche or brand, is the recipe for academic success. In the best case, this was well-meant advice based on their own

experience. In the worst case, they realized that this approach was obsolete, but proffered their wisdom nugget nonetheless. Fortunately, my curiosity also prevented me from going down that route. I was more interested in questions that would require different tools to be answered. I think this kept me navigating near the boundaries of fields, and in turn seeking out and creating opportunities to cross them.

## **On Facing Apparent Failures**

Success requires discipline, which means showing up and persisting after a setback. In the beginning of my studies, I applied for a fellowship to study in the US and was rejected. I was utterly devastated, but later realized that my inexperience in applying for things was likely a significant factor. Towards the end of my master's studies, I met my future PhD advisor. Under his guidance, I applied for two PhD grants around the same time. While the first was rejected, the second was not only accepted, but ranked highest among all applicants.

With hindsight, these early experiences normalized the process of being rejected in academia. Rather than dwelling on the whys of a rejection, I identified what I could learn from it and moved on. I remember enjoying writing these projects with my supervisor. There was no formality or hierarchy involved; the process was purely goal-oriented. His experience and mentorship undoubtedly helped me improve, but I also learned that experience was not the only factor at play. Although I think I have always been very gritty and resilient, my experiences have helped me perceive setbacks not as failures but rather as crucial waypoints on my path.

## **Embracing Constraints**

Constraints can either stifle your creativity or serve as an opportunity for innovation, depending on how you respond to them. In my experience restrictions — such as limited access to costly equipment, or time



required to develop and gather data — make for better science and scientists. Constraints lead to more investment in and appreciation of the process, and at least for me, less attachment to the result. Constraints increase the likelihood of exploration of non-conventional means, which are needed to create links between things that might at the surface seem to be unconnected.

The continued duality between constraint and freedom has shaped my professional life. It has helped me create a space to bring together and work with colleagues from vastly different domains, united by common interests and dedication to their craft. Today, I work with empirical scientists, legal experts, policymakers, artists, and philosophers, who share the view that true learning and progress happens when the connections between seemingly different fields are strengthened and elevated. I hope I'll still be dancing this dance when I reread these lines.

*“Grace is the beauty of form under the influence of freedom.”*

— Friedrich Schiller

## Chapter 11: What It Means to Be a Leader

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*Gina Garland*

Although my path to academia has not been direct, when I look back at my childhood, it isn't a surprise that I somehow found my way here. As a kid I was full of fire — energetic, independent, fearless. As a young adult my endless curiosity, interest in the natural world, and general inability to sit still led me to travel far and wide, ever in search of my elusive “life's purpose.” I wanted to see, hear, smell, feel, and taste everything. I wanted to meet people who were different from me, who could teach me new ways to view and interpret this crazy and beautiful world. I wanted to know where and how I fit into this big puzzle called life. It must have been this craving for adventure and a deeper understanding of how things work that slowly yet irrevocably drew me into the sciences, for I never explicitly aimed for this path.

At a certain point though, it dawned on me that I had officially entered academia. As a young researcher, I greatly valued the opportunity to reflect on issues of food security that were very important to me both scientifically and personally. I relished being able to ask pointed questions, to identify issues that required more understanding, and then to utilize all my available resources (creativity, logic, personal connections, university funding, and a good dash of luck) to address this uncertainty. I enjoyed the independence that my work granted me, and the freedom I had to develop my own ideas. I learned to appreciate each step of the scientific process: the formation of a hypothesis, the organization and planning of the experimental approach, the field work, mixing chemicals in the lab like a mad scientist, and then creating and writing a story from the numbers that eventually filled my spreadsheets. I could focus

entirely on my work, managing each step of the process. I deeply enjoyed this familiar sequence and could easily see myself continuing in just this way for a long time to come.

As time would tell, however, my life in academia did not continue like this indefinitely. I found that the old saying “change is the only constant in life” was true for academia as well. Slowly — so slowly, in fact, that I can’t even pinpoint when or how it started — I found my tasks and responsibilities shifting, evolving in ways that left me uncertain of my role in academia. Just as a carefree young adult suddenly realizes their free time is being encroached upon by thoughts of paying bills and scheduling doctor visits, as a young scientist I eventually realized that my focus had shifted over time as well. Rather than being able to direct all my time to the project at hand, my daily tasks were increasingly filled with writing proposals, managing budgets, teaching, mentoring students, and sitting in on seemingly endless meetings — activities that seemed to take me further and further away from engaging in actual science.

In my case this inevitable shift in focus came hand in hand with motherhood, which magnified its impact on my changing professional perspective exponentially. No other experience came remotely close to teaching me that I had reached a point in my life where my own priorities were simply no longer the main focus. The message was loud, simple, and clear — and often accompanied with a wet diaper. As I learned to adapt my way of thinking and balance my life as a scientist with my life as a mother, I found that my role and focus within academia naturally shifted as well; my perspective on what constitutes science and what my role was within this larger system was inevitably impacted. Whatever the impetus for this paradigm shift may be, I think this is something we all experience at some point in our professional progression. What is more, no matter how fiercely we may fight these growing pains, I argue that such a change in perspective is not only positive, but indeed vital to self-growth and development. In my experience I found that this “zooming-out,” if you will, did not diminish the importance of my own work in any way. Rather, it allowed me to see even more clearly how my primary research focus is just one small puzzle piece in the bigger picture, and that we as scientists are all working, in one way or another,

towards the same overarching goal. In just the same way, it showed me that my role in this larger scientific picture will, and should, change over time as well.

This budding realization made it much easier for me to accept my changing responsibilities in the workplace. For example, as a mentor and supervisor to students, this new role meant reducing my time in the lab and handing over the reins to the next generation of curious minds. Of course, I have always liked the details, the basic hands-on aspects of research. However, my evolving perspective helped me to see that there is much more to it. The longer I stay in academia, the more I realize that what we do as scientists is not, and should not, be solely focused on the numbers. During my younger days, “science” was always focused on data collection, analysis, and the final step of writing the inevitable report of said results. *Done. Check. Science accomplished.* The years of thought, effort, money, and time necessary to provide me with the opportunities to investigate intriguing questions and to prepare my results were beyond my field of vision. Yet as I have continued in science, I have become aware of these issues; indeed, I now actively grapple with them every day. In so doing, I have come to the realization that I am engaging with science not only as a researcher, but also as a supervisor and mentor. And, as I have begun to adapt to this new role, new questions about the purpose and impact of research, as well about its potential to affect change, have arisen.

Through deep contemplation amidst my changing perspectives, it has become crystal clear that science, regardless of the field or topic, is ultimately based on human interactions and connection. Scientists do not work in a vacuum. Research does not begin and end in a lab, spreadsheet, or journal. Networks of people and thoughts are what spark and inspire the ideas behind projects, and ultimately drive these ideas into action. Along every step of the way, it is this human touch that really makes the difference. It is understood that even the most well-cited articles in the top journals cannot alone change farmer attitudes and management practices, nor instigate a change in the way policies are designed. This requires a human connection, outreach, interaction, and trust. Numbers alone are not enough to make the changes to which

we aspire. At the end of the day, no matter how independent we imagine we are, it is a network of people that drives our work. This network deserves to be not only acknowledged, but nurtured.

At the forefront of my vision are the students in the classroom, field, and lab who help produce the numbers, as well as the people these numbers are for (in my case, the farmers, consumers, policymakers, and other scientists in similar or overlapping fields). And it is this recognition that motivates my overall research goal: to contribute to a better understanding of how nutrients turn over in soils, and how the push and pull of these nutrients, between soil minerals, plants, microorganisms, people, and loss into the environment, influences the food produced in our communities, the health of our soils, and the functioning of entire ecosystems. As I have continued in this field, the imperative to address the sustainability challenges facing us has become clearer. Here again, my children have shaped my perspective and made me cognizant of the need to support the next generation of community leaders, activists, and scientists.

My two beautiful children, who fill my ears and heart with exhilarating tales of their day and songs celebrating the joys of watching leaves fall from the trees, contribute to my work in countless ways, refilling my batteries each night and motivating my passion to improve our food systems. What is more, I see this same enthusiasm and energy in the students, flooding the university each semester, who are either just beginning their studies or excitedly poring over the possibilities for their next career step. These are eager, curious minds that need to be nourished. They are not worker ants whose only task is to deliver data points in the spreadsheets of academia; they are potential future scientists of the world. Through time and deep reflection, both within formal leadership courses and simply on my own during long walks in the forest, I have come to realize that it is my job as a scientist and supervisor to be a role model for these students. I must do my best to instill in them the knowledge that they can make a difference, and that they, collectively, can be a positive force in the world. It is critical to remember this during those hard days when things don't go well, when the burden of proposals, revisions, bureaucracy, and rejections feels overwhelming. In these times of stress, I see all too often that not only myself, but we as scientists tend to

stay to ourselves, weakening the connection and transfer of excitement with our students and colleagues. I find this very dangerous. We deserve to give the people around us, and ourselves in the process, the chance to re-connect. This connection, this invisible network which promotes the transfer of ideas and motivation, is what keeps science alive. It is important to identify, accept, and take seriously the fact that we have the power to either weaken or strengthen these networks through our actions. We are not fully independent scientists focused on our own work — we are leaders.

There, I said it: we are leaders. Leadership is an integral role of academic researchers, and relates to how well we support our students, and not simply to the overall numbers we can report in annual statistics measures. Yet sadly I have the feeling that this aspect of what we do is rarely discussed, and almost never highlighted. For, if you cannot put a value or number to this, if it is not evaluated in a tenure dossier, why put effort into consciously developing this quality, right? Wrong. As a mother, my leadership role came naturally, easily, and without hesitation. There were no doubts about my leadership style, or the qualities I aimed to exemplify and nurture in my children. In contrast, however, I have struggled greatly with how to be a leader in academia, especially because the issue is very rarely discussed. This is partly because the qualities of “the ideal scientist” were never explicitly taught, nor were they written in an official guideline that could be studied. Instead, these characteristics were imprinted in my mind upon entering academia, as shown to me through the actions of my mentors and successful people in the field. Through my eyes, these scientists were strong, independent, confident, competitive, productive, and tireless workers — calm, cool, and collected at all times — who did not show their emotions, let alone let these emotions slow them down, as they climbed the academic ladder. Nowhere did I see an alternative way of being modeled, and thus the only thing I could conclude is that this “checklist” of characteristics must simply be what is required to make it in the sciences.

Despite my passion for research and decision to stay in academia, this vision of a scientist has always given me doubts about my place here. It is safe to say that I did not, do not, nor will I ever, fit this vision. Peo-

ple come first, not numbers. To many people in the scientific community, this trait is seen as a weakness, and for a long time I believed that as well. As my perspective has shifted and continues to shift over the years, I now see that this way of thinking is seriously flawed. For in fact, such a checklist does not actually exist. We may consciously or unconsciously believe it does, but it is simply not the case. What is more, while many of these traits are indeed beneficial from a publishing and scientific standpoint, this list does not give any emphasis to the leadership role that I believe we as scientists must uphold. It was this change in perspective that led me to a very significant “aha moment.” I realized that I am not bound in any way to a non-existent, invisible checklist. I can be genuine and true to who I am, to the values I want to bring to my work, and not only survive, but indeed thrive in this environment. This change in perspective allowed me to stop wasting time worrying about the fact that I will never live up to what I thought others expected me to be. Instead, I put my thought and energy into carefully considering what characteristics I personally find valuable in a scientific leader. I then highlight and celebrate my strengths which contribute to this goal and continue to improve upon areas that I feel need further development.

It was not enough for me to simply think about these characteristics in an abstract manner. I needed a tangible guideline and reminder of what a good leader is, tailored to me and my own leadership goals. And with that in mind I decided to write my own “checklist of characteristics of a successful scientist and leader” and hang it in my office, where I could be inspired every day. Among other things, it states that a good leader needs to have the ability to be both strong and empathetic, and to be independent to a certain point, while also not neglecting the importance of actively collaborating and staying connected to peers and co-workers. It comforts me by stating that a good leader does not need to be overly confident that they know everything and have a solution at their fingertips at every moment. Instead, it is much more effective (and realistic) to have confidence in what they do know, and confidence that they have the ability to find solutions to issues that may arise outside of their own expertise. It states that a good leader does not need to be rigid and unyielding, but instead should be open-minded and flexible in

their scientific approach; they should stay up-to-date on the ever-evolving topics related to their field, rather than sticking to one way of doing things without wavering. A good leader should be energetic, quick, and ambitious, but must also remember to have a healthy work-life balance and to support the same for their team members. A good leader must find ways to foster a positive team atmosphere, and to actually *feel and use* their emotions to be understanding, supportive, empowering, trusting, and inclusive.

This is, of course, just the start of my list, and most likely there will never be an end. Just as my perspective on my role in academia has shifted over the years, I have no doubts that this list will continue to change, and that adjustments will be made. I see this not as uncertainty, but as progress. I am excited by this fact and welcome the opportunity to further develop these skills and in turn teach the next generation of scientists the importance of leadership. I hope I can encourage others to reflect on and develop their own values. I hope it gives them courage to foster an atmosphere that they may not necessarily have experienced themselves, but that they hope to create for others. I hope it gives people an opportunity to think about the bigger picture of what we are all doing day-to-day to create an environment where not only science, but leading and encouraging people from the inside out, takes precedence over individual accolades. Ultimately, I hope this reflection helps shift the focus in academia from an “*I can do*” attitude to a “*we can do*” attitude, where we see our work not as an individual puzzle piece, but as one small piece of the big picture, where we are all contributing to the same overarching goal to create positive, on-the-ground changes in society.





## Chapter 12: Take Good Care

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Sara Hellmüller

Dear young scientist,

I want to write this letter to you to give you hope: academia is a wonderful place. You can choose the topics that interest you the most; you are up for a lifelong learning journey; you are free to structure your days quite flexibly; and you can work with people who are as convinced as you about the value of science. Yes, academia is a wonderful place. But it is also a harsh place to make a career. You are likely to have to live for quite a while with the precarity of time-bound contracts, you never really have the satisfaction of an empty “to-do” list, your intellectual performance is being judged continuously, and it is not easy to fully disconnect, as our main activity — *thinking* — is never done. To make the wonderful aspects prevail over the anxiety that the downsides may create, I want to share with you some principles that have guided me as I navigated my way through the universe of academia.

### Construct Your Own Specific Profile

A few years back, I met a young professor. I was impressed by how fast she had secured a tenured position and asked her for advice. “It is simple,” she said, “you have to know what you stand for.” She was right: you must find your niche! This means creating a core profile for yourself. While much also depends on the opportunities you get, and not everything can be planned, it is important for you to know what you are most passionate about and to make that the center around which you build the

other aspects of your profile. It may not be easy initially, but your core passion will crystallize with time. In my case, it was the topic of *peace* and how various actors perceive and promote it. I then constructed my theoretical, methodological, and empirical focus around this core passion. Everything beyond the core can then also be strategic to make you recruitable for professorships, as long as it is still compatible with your main passion. For instance, I linked the topic of peace, which is usually covered by the niche discipline of peace research, to broader international relations and political science theories. I continuously extended my methodological skills to work on the topic of peace from different angles, and I generated a diverse range of empirical material on the topic of peace, ranging from first-hand accounts of people living in conflict contexts to an extensive database on peace missions. Your core and its surroundings may be different — maybe you will become known for a specific method, empirical approach, or area of expertise — but you need to know what you burn and stand for.

## **Be Kind and Generous**

Academia is a harsh place and some people seem to think that the tougher they are, the more authority they gain. It is a highly competitive environment, as many more people are pursuing academic careers than there are tenured positions available. Much has changed in recent years, but bullying, offending, and degrading still happens. We need to jointly transform that. Yes, maybe we will not all make it exactly to where we initially wanted to arrive, but envying and obstructing each other will not bring us to the top. Maybe being nice will not do that either, but at least we will have been generous on whatever paths we will end up pursuing. There is no argument against kindness. So, my advice would be: share that proposal you have written, give constructive advice, speak positively about colleagues, and support even your seemingly direct competitors. Don't get me wrong: it does not mean that you do not put your interests first, as in the end you are surely ambitious and want to succeed. Nor does it mean not warning others about people who

exhibit toxic behaviors because you think this may be badmouthing. But wherever possible, try lifting up others on the path you are pursuing, as you surely do not want to reach “the top” and find yourself without any friends there.

## Contribute to Leveling the Playing Field

Not everyone has the same chances of making an academic career, and access to knowledge production in many fields is still highly unequal. For instance, the scholarly research on one of the topics I am researching – international peace mediation – is still produced mostly by male authors at Western universities.<sup>1</sup> We are all tied up in our busy daily lives of publishing, teaching, attending conferences, leading our teams, and fulfilling institutional responsibilities. However, we also all have a collective responsibility to make academia a space where careers are determined more by merit and professionalism than by access and privilege. Making sure to cite relevant authors from underrepresented geographical regions, genders, and social groups in your publications and syllabi of the courses you teach is one thing. Recruiting diverse teams, engaging in true partnerships beyond your own geographical bubble, and actively contributing to more inclusive institutional policies is another. I have experienced it as a good practice to regularly check in with myself whether my activities are contributing to leveling the playing field. So, I ask myself: Do I schedule meetings, organize conferences, set deadlines, and communicate with my team in a way that takes into account different religious holidays, care responsibilities, and other aspects that may influence people’s professional availabilities? Am I sufficiently aware of my own cultural or other biases when recruiting new team members, inviting guest speakers, setting up conference panels, or contacting authors for a special issue? Do I speak out in case of inequalities and problematic practices by others? All these questions feed into my overall vision

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1 Sara Hellmüller, “Knowledge Production on Mediation: Practice-Oriented, but Not Practice-Relevant?” *International Affairs* 99, no. 5 (2023): 1847–66.

of more diversity in academia: an environment where it becomes less a matter of including some persons and groups into the existing structures of others and more about changing these structures to enable exchanges of different persons, groups, structures, and institutions in a leveled playing field.

## **Be Realistic and Set Priorities**

Over the years, I have learned to be realistic in terms of what I can expect from myself. But this was not always the case. When becoming a mother, I felt very strongly about proving that having a family and an academic career were not mutually exclusive — and making a point to broader society about that. And yes, parenthood and academic careers are by no means mutually exclusive, but it is far from easy. In my case, I initially tried to be the super-mom and super-academic at the same time. I only slowly learned that I cannot (and should not) compare myself to the academics without the same care responsibilities or the parents without the same job responsibilities. I was constantly falling behind my expectations in both aspects of my life, and left with a feeling of “not being enough” in either of them. Besides the fact that comparisons are not useful, I have now learned to set my own priorities. I cannot (and do not want to) spend hours in the kitchen cooking elaborate meals every evening and I may not be able to attend all the academic conferences I would like, but that is alright. As a friend told me just before I had kids: “Don’t fool yourself, you will not be as productive as before, but you will be productive in different ways.” It is true. We indeed must be realistic about how many hours a day has. I am convinced that we can have both a happy and healthy family and a fulfilling career if we learn to be realistic and do not pursue flawed ideals! And we are often the hardest judges with ourselves. So, let’s face it: combining parenthood (or other care responsibilities) and academia is pretty tough, but not impossible if we are kind and patient with ourselves. This is all the more important because we do not want to convey to younger generations the image of perfec-

tionism when it is pretty hard to reconcile all the different responsibilities we may have, including self-care.

## **Know Your Non-Negotiables**

In the day-to-day balancing of different priorities, what helped me most not to lose myself was knowing my “non-negotiables.” They are, of course, different for everyone. For me, I have two main non-negotiables: First, I want to be there for my son if he needs me. This does not mean that I stay at home whenever he complains about going to school or has a little cough (he would notice pretty fast how to pull that trick). But it means that if he is emotionally or physically unwell, I cancel a meeting, instead of sending him to daycare or asking someone else to take care of him. Children grow up fast, their inner life is richer than the universe, and parents have a unique responsibility to accompany them on their way to becoming strong individuals as well as respectful members of society. We should not take that light-handedly, and we should respect when we or others fully embrace care roles. I therefore also openly communicate about it, so that it becomes more acceptable for working parents to be there for their kids when they need them. A second non-negotiable for me is that I want to stay in Switzerland, even if there may be better job opportunities abroad. While I have always been the one in my family who was seemingly predestined to go live abroad due to my extensive travels, now almost nothing would bring me away from my hometown. This is where my family and friends are and where every corner of the city is filled with profound memories that render it immeasurably beautiful. My happiness and mental health are closely tied to having such strong roots in a place I call home, and I would not give it up even for the best job in the world. Why is knowing your non-negotiables important? It is important because it means that you will not regret the compromises you make to respect them — in fact, they do not even seem like compromises. Did I miss an important meeting? Yes, but I solidified my relationship with my son, who knows that he can count on me. Did I miss an interesting job opportunity because it was

not within commuting distance from my hometown? Yes, but I have a deep sense of belonging instead.

## **Relativize**

It saddens me when I see how many people are struggling in academia. The postdoctoral phase between your PhD and a tenure-track position is especially daunting. For many people, this is a period of deep anxiety and worry. This is why you need other pillars in your life to relativize academic priorities. Don't put all the emotional eggs in the professional basket. Spend quality time with your family and friends, go for a run, contemplate the fall colors on the trees, smell the perfume of the spring flowers, hike in the mountains, or do whatever helps you relax. Important life events with your family or friends are not to be missed. These moments do not come back. And these events, along with the smaller moments that make up our daily lives, help you put the hardship of academia into relation and experience the feeling of appreciation for what you have. A career may be fulfilling, but it may not procure that deep sense of happiness, serenity, and gratefulness that human relations and connecting with nature can.

## **Have a Plan B**

Academia has a strong element of unpredictability. Of course, it is not fun not to know whether “one will make it” in academia, and we are all somehow striving towards this one professorship as the seeming coronation of our career. But I would like to suggest a change of perspective. A wise colleague of mine once said: “If you reach your target, you miss everything else.” This is why it is important to have a plan B. I have always had one, namely becoming an elementary school teacher. I know that it would not be the end of the world if I do not make it as a university professor, because I can also be happy if I fail. This does not mean that I did not pursue my plan A with all the perseverance and commitment needed,

but it takes away a lot of pressure to have a viable alternative. This is particularly important because not everything is under our control. While an excellent CV is needed to get a professorship, it is no guarantee. As with everything in life, we also need luck: the right position at the right time, the right fit in the department that hires, the right people who support us, the right methodological or theoretical approach. So, you can do everything “right” and still not get a position. Given this final bit of luck that we all need, there is no guaranteed pathway towards a professorship. So not having a plan B would be like playing the lottery while giving up all other sources of income.

### **Know What Works for You**

No job in the world is worth putting your own mental and physical health at risk or missing important moments in the lives of your close ones. There is no recipe for how to balance work and life. Some people may need a clear separation between the time they work and the time they are off; for others this would cause more stress. So, it is important to know what works for you and to find your routine. For me, I know I can concentrate best in the mornings. So, I try to do most of the heavy brain work then and leave the later afternoons for other tasks. I also do not mind catching up with some tasks or writing emails outside of office hours (but I delay delivery), if it gives me more liberty to structure my week. You may not be a morning person, or you may need a clear-cut end time in the evening to sleep peacefully. And your own routines may change if other aspects of your life change (such as having children). All is fine and everyone works differently. The important thing is that you find out what works for you (and your family). And adapt if needed.

### **Be Proud and Celebrate Successes**

Be proud of what you have already achieved and celebrate successes. I remember distinctly being convinced that I would never get the grant



before I received it; being convinced that I would never get the position before I got it; being convinced that I would never have an academic career before I had one. And I am sure you know the feeling that once you have achieved something, you downplay how difficult it was to get there and thereby also expose yourself to fundamental doubts: “Yes, my paper was published, but maybe the reviewers were just nice”; “Yes, I got this position, but maybe they just wanted me for other reasons than my academic credentials”; “Yes, I received the grant, but maybe I was just lucky and the competition was weak this year.” No! You achieved all of this because you worked hard for it and because you deserve it. Be proud and celebrate successes.

So, my dear young scientist, all will be fine. But you need to take care of yourself.

# Appendix



## List of Contributors

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**Annalisa De Cia** is an astronomer at the European Southern Observatory (ESO) (Germany). Between 2020 and 2024 she was an assistant professor and then invited professor at the University of Geneva, leading the Interstellar One research group, funded by a PRIMA grant from the Swiss National Science Foundation. Previously, she was a postdoctoral research fellow at ESO (Germany and Chile), at the Weizmann Institute of Science (Israel), and at the University of Iceland (Iceland), where she also obtained her PhD in 2011. She completed her undergraduate studies at the University of Bologna (Italy) and the University of Calgary (Canada). Her scientific interests gravitate around the evolution of galaxies and the Universe, especially from a chemical perspective, using facilities such as the ESO Very Large Telescope and the NASA/ESA Hubble Space Telescope. She has authored more than 80 peer-reviewed astronomical papers, including a first-author publication in *Nature*. She is also the principal investigator of a Large Programme for the Hubble Space Telescope, one of only a handful approved worldwide for 2024. Annalisa is also a mother of two children.

**Gina Garland** is head of the Soil Ecology of Agricultural Landscapes group at ETH Zürich. Her ever-expanding research interests lie at the interface between soil, microbial, and plant interactions within agroecosystems. Specifically, Gina explores how different agricultural practices impact soil health and environmental sustainability across various global contexts. An avid traveler, she has worked both practically

and scientifically with farmers across California, New Mexico, Malawi, Switzerland, Germany, Sweden, France, and Spain, and continues to learn from these priceless cultural exchanges. Her ultimate goal is to sustainably improve crop yields and global food security by harnessing natural biogeochemical processes. When she is not in the office, Gina enjoys spending time outside with her partner, two children, family and friends, and new puppy.

**Sara Hellmüller** is a research professor at the Geneva Graduate Institute. Her research focuses on peace and conflict studies, in particular United Nations (UN) peace and security engagements, mediation, peacekeeping, local and international peacebuilding (especially in Syria and the Democratic Republic of Congo (DRC)), knowledge production on peace, and Switzerland's peace policy. Prior to her current role, she was a senior researcher at the Center for Security Studies (CSS) at ETH Zürich, senior researcher at swisspeace, and lecturer at the University of Basel. She also held visiting positions at the University of Oxford, the University of Montreal, Columbia University, and the University of Bunia in DRC. She has (co-)led several multi-year research projects, including on belligerents' consent to UN peace missions (2025–2029), on Switzerland's first membership on the UN Security Council (2023–2025), on the impact of changing world politics on UN peace promotion (2020–2024), and on the role of norms in peace mediation (2015–2019). Sara is deeply committed to transformative science by combining in-depth empirical research with the application of her expertise in practice. She has conducted several mandates, for instance for the Swiss Federal Department of Foreign Affairs or the United Nations, in support of peace processes.

**Camilla Jandus** is an assistant professor and the head of the Targeting of Cytokine Secreting Lymphocyte (TCSL) group at the Department of Pathology and Immunology (PATIM) at the University of Geneva. She is also adjunct scientist at the Ludwig Institute for Cancer Research (LICR), Lausanne Branch. She earned her medical degree in 2003 from the Faculty of Medicine at the University of Bern, after a training at the Memorial Sloan Kettering Cancer Center in New York. From 2004

to 2008 she completed her MD-PhD training at the LICR in Lausanne, under the mentorship of Professor Romero. She then undertook a two-year postdoctoral fellowship at the Pharmacology Institute in Bern. In 2012, she was appointed associate investigator at the LICR in Lausanne, where she was promoted to Swiss National Science Foundation (SNSF) professor in 2019. Since 2020 she has held a tenure-track assistant professorship at PATIM in Geneva. Her primary research is on T cell- and innate lymphoid cell-mediated immune responses to human tumors, with the aim of developing strategies to enhance existing immunotherapies for patients. Recently, she has expanded her research to investigate how neural derived stimuli shape immunity, including anti-tumor immune responses. Camilla is from Bellinzona, married, and a mother of three children.

**Lucia Kleint** completed her PhD at ETH Zürich and then spent several years conducting research in the US. She returned to Europe with a Marie Curie Fellowship to work on the Solar Orbiter satellite, among other things. She then headed the German Solar Observatory on Tenerife and successfully led the optical redesign of the largest solar telescope in Europe. Thanks to a PRIMA grant from the Swiss National Science Foundation, she became an assistant professor of computer science at the University of Geneva and joined the University of Bern in July 2022 as an assistant professor and vice director of the Zimmerwald Observatory. She was able to expand her research group in 2024 with the receipt of a SERI-funded European Research Council (ERC) consolidator grant. In 2024 she was promoted to associate professor of astronomy, and since 2025 she is the director of the Zimmerwald Observatory. Lucia is interested in the physics of the Sun, astronomical instrumentation, and machine learning, and she combines these fields to study eruptions on the Sun and their effects on the Earth.

**Stefanie Knopp** is an epidemiologist with a primary interest in neglected tropical diseases (NTDs), which mostly affect vulnerable population groups in the Global South. Her main areas of research concern the diagnosis, epidemiology, and control of parasitic worm infections

in Sub-Saharan Africa. Assisting and leading research projects in Africa since 1999, Stefanie has vast experience working with local research and field teams, project managers, and international stakeholders and implementing large-scale projects, including multidisciplinary operational research studies and randomized clinical trials. As an implementation scientist aiming to improve interventions for the control and elimination of NTDs, she closely collaborates with local ministries of health and supports and advises NTD control programmers in the implementation of mass drug administrations, vector control, and behavior change interventions. Since 2021, Stefanie is assistant professor at the University of Basel and leads the Helminth Interventions research group at the Swiss Tropical and Public Health Institute. Together with her team, she aims to contribute evidence for innovative intervention tools and strategies that can help reduce and eliminate NTDs. The research group focuses on the application and rigorous validation of new diagnostic tools and integrated intervention strategies that can help program managers effectively gain and sustain schistosomiasis control and break transmission.

**Stefanie Mahrer** is assistant professor for modern history with teaching engagements at the Universities of Bern and Basel. Her research focuses on historical and cultural networks, with particular emphasis on (forced) migration, biographical studies, and the integration of micro and macro perspectives in historical analysis. She holds a PhD (2011) in Jewish studies and a *venia legendi* (2019) in general modern history (both University of Basel). She is currently serving as co-project leader for the *Modern Zug Canton History* project (2024–2032), a major initiative dedicated to researching, documenting, and publishing the history of the Canton of Zug. Her scholarship engages with the history of forced migration during the Nazi era and beyond, applying an intersectional approach to explore how gender, class, and age shape individual experiences. Additionally, she investigates the role of friendship and social networks in historical contexts. Through her interdisciplinary work, Stefanie bridges personal narratives with broader historical structures, shedding light on the complexities of migration, identity, and collective memory. Her research

provides nuanced insights into historical processes, emphasizing how individual experiences intersect with larger socio-political transformations.

**Elizabeth Mesok** holds a PRIMA grant from the Swiss National Science Foundation at the Center for Gender Studies at the University of Basel, where she leads the Gender, War, and Security research group. A feminist theorist of war, security, and peace, Elizabeth relocated to Switzerland from the US in 2016, which led to her broadening her research interests from the US military to include the development, humanitarian, and security sectors, peace operations, and counterterrorism agendas and practice. She holds a PhD in American studies and an MA in politics from New York University and was a postdoctoral fellow in global American studies at Harvard University. Since relocating to Switzerland, she has taught at the University of Basel and the Geneva Graduate Institute, and has been invited to speak to policymakers, military personnel, and foreign diplomats across Europe on topics related to gender, peace, and security. She is completing her first book, *Gender is a Weapon: Liberalism, Feminism, and the US Military*, and lives in Basel with her husband, daughter, and cat.

**Catalina Pimiento** is a Colombian paleobiologist with a lifelong passion for sharks. She earned her bachelor's degree in biology from Universidad Javeriana in Bogotá before moving to Panama, where she worked as a laboratory assistant at the Smithsonian Tropical Research Institute. From 2008 to 2015, Catalina completed a master's degree and then a PhD at the University of Florida. Her postgraduate research focused on the extinction mechanisms of Megalodon. In 2015, Catalina received a Forschungskredit postdoctoral fellowship from the University of Zürich, where she discovered a previously unknown extinction event during the Pliocene that resulted in the loss of one third of the marine megafauna. In 2017, she obtained a Humboldt fellowship to work at the Naturkunde Museum in Berlin, uncovering the evolutionary pathways to gigantism in sharks. In 2018, she was awarded a Marie Curie – COFUND fellowship to work at Swansea University, where she forecasted marine megafaunal



extinctions during the Anthropocene and proposed a novel conservation index to safeguard their functional diversity. In 2020, Catalina received a five-year PRIMA grant from the Swiss National Science Foundation to investigate the extinction mechanisms of sharks over the past 145 million years. She is currently an associate professor in conservation paleobiology at Swansea University.

**Meike Ramon** is a professor of applied data science at the Bern University of Applied Sciences and head of the Applied Face Cognition Lab. She is an expert panel member for Innosuisse, the Swiss Federal Innovation Agency, and a board member of the Association for Independent Research. Her research focus is on cognitive neuroscience and vision and is centered around face processing. She uses various methods and paradigms to study identity processing and develop translations into applications and policy. Meike is a member of the European Association for Biometrics (EAB), Europol Platform for Experts (EPE), and Europol Data Protection Experts Network (EDEN), and she is a node leader of the Swiss Reproducibility Network. She is an advisory board member for the multi-centric project Increasing Eyewitness Identification Accuracy in Lineups Using 3D Interactive Virtual Reality (3DIL). A longstanding scientific advisor for the Berlin Police, Meike co-developed the Berlin Test for Super-Recognizer Identification (beSure®), a bespoke tool involving authentic police material. With a PRIMA grant from the Swiss National Science Foundation, she founded the Applied Face Cognition Lab, which she previously led in Switzerland at the University of Lausanne and the University of Fribourg.

**Macarena Toll-Riera** did her PhD at the Universitat Pompeu Fabra (2012), which included a predoctoral stay at the University of Pennsylvania (2011). Then she did a first postdoc at the University of Oxford and a second one at the University of Zürich. In 2019 she received a PRIMA grant from the Swiss National Science Foundation and started her group at ETH Zürich. In 2024 she joined the Institut de Biologia Evolutiva (IBE) in Barcelona as a “Ramón y Cajal” group leader. Her research is focused on the study of evolutionary adaptations, specifically

the molecular mechanisms underpinning their origin as well as their evolution, using experimental and computational approaches.

**Petra Vetter** is a cognitive neuroscientist and currently assistant professor at the department of psychology at the University of Fribourg in Switzerland. Originally trained as a biochemist at the University of Halle, the University of Montpellier, and the Free University of Berlin, she won competitive scholarships to specialize in cognitive neuroscience with a master's at Imperial College London and a PhD at the Institute of Cognitive Neuroscience at University College London. She did postdoctoral fellowships (partly with competitive grant funding) at the University of Glasgow, the University of Geneva, and New York University. She obtained her first faculty position as lecturer (assistant professor equivalent) in psychology at Royal Holloway, University of London and then moved to the University of Fribourg with a highly competitive PRIMA grant from the Swiss National Science Foundation (SNSF) (ERC Starting grant equivalent). Subsequently, she was also awarded a highly competitive SNSF Consolidator grant (ERC Consolidator grant equivalent), which currently funds her research group, in addition to other national and international grants. Petra's research focuses on how the human brain creates our visual and multisensory perception of the world both during intact sight and during blindness. She has a daughter and lives in Zurich.









