

1 **Journal:** *Advances in Physiology Education*
2 **Article Type:** Personal View
3 **Title:** Creating your own line – reflections from early-career scientists

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46 **Abstract**

47 The changing landscape of academia can be difficult to navigate for anyone at any point
48 throughout their career. One thing is certainly clear - effective mentorship is key to ensuring
49 success, fueling scientific curiosity, and creating a sense of community. This manuscript is a
50 collection of personal reflections and stories, offering advice directed to aspiring and junior
51 graduate trainees - written by PhD students, Post-Doctoral researchers, early-stage Assistant
52 Professors, and life-long educators. The objective of this article is to inform, empower, and inspire
53 the next generation of physiologists.

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78 **Introduction from Dr. Tymko**

79 The inspiration for this article arose from the hesitations I felt when asked two simple
80 questions: “*What is it that you do?*”, and “*What is it like to be a graduate student?*”. As a junior
81 trainee, I discovered that my answer to these seemingly simple questions changed every time I was
82 asked, and my answers were often different from my peers. Near the end of my MSc training, I
83 was awarded a modest merit-based scholarship and decided to put it to use by embarking on a
84 month-long cycling journey across Italy. Packed with a 30-year-old touring bicycle I purchased for
85 \$100, a non-water proof (I found out later) single person tent that was donated to me, a few tools I
86 borrowed from a roommate, limited clothing and money, I traversed the coastlines and through the
87 Dolomite mountains. During this time, alongside preparing for my MSc Defense scheduled for the
88 day after my return to Canada – a decision I suspect my old supervisor has yet to forgive me for – I
89 dedicated my nights while solo camping on various beaches attempting to write about the *graduate*
90 *trainee experience*. However, the document remained void of words despite my best efforts. Even
91 as time passed through my PhD studies, responding to these questions never became easier, and I
92 learned that many of my graduate friends and colleagues also shared the same difficulties when
93 answering these questions.

94 Now, after completing my postdoctoral work, I felt compelled to revisit these questions
95 before becoming too detached from my days as a trainee—before the struggles and sacrifices
96 became distant memories. Thankfully, my friend and colleague, Christina (Nique) Bruce, made me
97 realize that undertaking such a project would be near meaningless from a single perspective. She is
98 the reason for this paper coming together. Others have already written similar perspective articles,
99 such as a group of senior contributors from *Advances in Physiology Education* who shared their
100 personal journeys and offered advice to graduate trainees from an editorial perspective (1). In this
101 article, we share a common objective with the elegant piece by Modell and colleagues: to provide
102 prospective and junior graduate trainees with career advice by sharing our own stories as a diverse
103 group of young physiologists. With international training experience from areas of human, animal
104 and cellular physiology, some of the authors within this article have crossed paths at conferences,
105 international research collaborations, graduate level courses, and some still have yet to meet. Our
106 hope is to emphasize the fact that academia has no definitive playbook—we all have different
107 experiences and come from various walks of life. Although directed at young trainees, these

108 reflections will also bring invaluable insight to principle investigators as they are a proclamation to
109 the impact of meaningful mentorship. The landscape of academia is forever evolving, for better
110 and in some instances for worse, and this collection of career advice reflects some of the common
111 challenges that early career physiologists are currently facing. With the utmost sincerity, thank you
112 to the co-authors for sharing their stories.

113

114 **Christina D. Bruce** (*PhD candidate, aspiring mermaid, lover of snow*)

115 I have always loved teaching and the collaborative nature of research but I still question
116 whether or not I *belong* in academia. This may be, in part, due to the lack of representation of
117 women conducting human physiology research. Alternatively, and more likely the culprit, are
118 feelings of self-doubt about whether or not I could ‘cut-it’ if I ever landed a job. Sound familiar?
119 Keep reading for a definition of the imposter phenomenon.

120 While pursuing my undergraduate degree, I held a certificate of Indian Status recognizing
121 Mi’kmaq Indigenous ancestry from the east coast of Turtle Island (also known as Canada). The
122 grim history of this identification system (2) stems from The Indian Act (1987) which is now
123 considered a form of apartheid law by the Assembly of First Nations. For the purposes of this
124 reflection, know that the matter of being, or not being, recognized by the Canadian Government as
125 a Status Indian is beyond complicated and can be the source of extreme emotional stress for
126 individuals. This also applies to individuals having the option to self-identify in academia.

127 I no longer self-identify as being Indigenous where financial matters are concerned, which
128 will never change how I feel connected to this planet and my ancestral roots. Considering the lack
129 of Indigenous representation in academia, this was a difficult decision to navigate. For reference, I
130 once reached out to a Métis assistant professor for advice, and they informed me that there were
131 fewer than 10 Indigenous academics in the area of exercise physiology across all of Canada in
132 2019. I have come to understand that regardless of how I identify, my role as an accomplice to the
133 Indigenous community (i.e., an ally with action) is all that matters and I will forever be grateful for
134 the Indigenous elders, my MSc and PhD supervisor (Dr. Chris McNeil) and other academic
135 mentors who graciously supported me while navigating this decision. Nevertheless, temporarily
136 being identifiable as Indigenous revealed some unfortunate misconceptions and bad practices in
137 academia that should be mentioned.

138 Unless they state otherwise, individuals of a historically marginalized group are not
139 responsible for educating their peers about a population with which they may or may not identify.
140 Additionally, what may appear to be a logical, quick fix to a systemic problem (spoiler alert, there
141 is no such thing), tokenistic hiring practices are creating animosity amongst early investigators and
142 unintentionally promoting self-doubt for those who do not know if they will land a job because of
143 their hard work or simply as a result of their identity. Nearing the end of my PhD and having been
144 awarded post-doctoral funding, I still don't know (and likely never will) to what extent my
145 temporary status card and gender have helped me get to where I am today, rather than my own
146 determination and hard work. That said, I recognize hints of imposter syndrome or phenomenon –
147 pervasive feelings of inadequacies with regards to one's intellect, skills and/or accomplishments
148 (3) and I know these will only hinder my ability to leverage my privilege to create space for those
149 who need it. In addition to disclosing my primary source of existential dread, I will share a few
150 nuggets of wisdom that I've gained thus far along my academic journey.

151 As a kid, I wanted to be a mermaid when I grew up. Whenever I realized this likely wasn't
152 going to happen, I decided that pursuing marine biology (under the sea) was the next best thing.
153 From there, I quickly became enthralled with the physiology of scuba and free diving; however, it
154 wasn't until the third year of my Bachelors of Health Science degree that I became aware of
155 environmental physiology. It was during this time when Professor Trevor Day, an exceptional
156 mentor and educator, introduced me to human physiology research. In hindsight, this was an
157 impressive feat within an institution with no defined research program. Driven by my love for
158 teaching and teamwork, I then obtained an MSc degree and subsequently applied to the PhD of
159 Kinesiology program at the University of British Columbia – Okanagan (UBCO). My decision to
160 take this path in academia required countless hours of talking with family, mentors and peers. I
161 consider myself incredibly fortunate to have studied at UBCO under the supervision of many
162 amazing mentors. My time at UBCO has also provided me with invaluable insights into the
163 complex issues associated with equity, diversity, inclusion and accessibility in academia via
164 committees, workshops, seminars and guidance from knowledgeable individuals in this area. My
165 advice from this – show up and be present for every learning opportunity.

166 As a first-generation graduate student, I often felt as though I was sailing uncharted waters
167 with no sense of direction. Prior to graduate school, the only constant was my part-time/full-time
168 scaffolding job with the Alberta Carpenter's Union which paid for my education, kept me

169 grounded (figuratively, not physically) and gave me a sense of what I did not want as a career.
170 Knowing what you do not want to do is sometimes easier, and just as important, as figuring out
171 what you do want to do.

172 Altogether, here is my advice to anyone else navigating academia, 1) do your research
173 before committing to a program (e.g., meet with your prospective supervisor, converse with
174 current/previous students, visit the lab space), 2) remain acutely aware that everyone will give
175 advice based on their own experiences, which may or may not take your best interests into
176 consideration, 3) challenge yourself by stepping out of your comfort zone, you are capable of so
177 much more than you think, 4) even if you don't know exactly what you want to do, just keep
178 moving forward, 5) pick a topic that you enjoy reading about (coming from someone who does not
179 always enjoy reading – even about mermaids and diving) and lastly, 6) if you are still searching for
180 representation of yourself to feel a sense of belonging in academia, this is your call to be the
181 change you want to see.

182

183 **Lyndsey DuBose** (*PhD, a little bit all over the place*)

184 As I write this, I am starting my final week as a postdoctoral fellow prior to being
185 promoted to Assistant Professor. Looking back on the past 10+ years, my path has been shaped as
186 much by the generosity of great mentors as by receiving a lot of 'no's' that have worked out in
187 great ways I never could have imagined. I will briefly describe my path in academia in hopes of
188 offering support. But if there's one message you take from this, I hope it's that very few paths in
189 academia are ever very direct and that things always work out as they should in the end.

190 I became interested in research during my undergraduate studies in Exercise Science with a
191 pre-physical therapy (PT) focus when the thought occurred to me during one of my classes...
192 *"Where did this knowledge that I'm learning come from?"* I grew up in a small Texas town and had
193 never known of research before. I became curious about how research worked when I started
194 applying the knowledge that I was learning in class to my training as a walk-on National
195 Collegiate Athletic Association (NCAA) collegiate rower.

196 I was coached by a two-time Olympic medalist who was a member of the first women's
197 crew allowed to race in the Olympics. From 1976-1988, women were only allowed to race half the
198 distance of the men because it was believed that women could not *"handle"* rowing the full
199 distance. If you have never rowed, the most important boat is called an 'Eight' in which 8 rowers

200 move in unison to go as fast as they can while being guided by a coxswain. It is the ultimate team
201 sport because the fastest boats aren't always the ones with the fastest *individual* rowers but rather
202 the boats that can move the fastest *together*. Through rowing and my coach, I learned the value of
203 hard work, being a good teammate, and that my gender was one of my greatest strengths. My
204 gender gives me power and a community but also taught me the responsibility to create space for
205 other women to kick butt, just as my coach did decades ago. This remains a driving influence in
206 my research in women's health today.

207 I received a scholarship to return an additional year to exhaust my NCAA eligibility that
208 changed my life. I fell in love with cardiovascular physiology while completing additional
209 coursework and volunteering in a research lab for the first time. I could say that the rest is history,
210 but really, I applied to both PT and graduate programs to satisfy my parents who were concerned
211 about the long-term stability of academia. Truthfully, I was rejected from every single PT school I
212 applied to and from the graduate program I thought was my dream program, a fact I now consider
213 one of the best things to ever happen to me. I landed at a graduate program that became my dream
214 program. I had an overwhelmingly positive experience earning my Ph.D. that led to an incredible
215 postdoctoral fellowship. I'm not saying it hasn't been really hard, I'm saying I've had fun doing
216 hard things because I have had great mentors and colleagues in my corner. They've been generous
217 with their time and opportunities so I could explore what kind of scientist I wanted to be and
218 develop my own passions. They've given me the tools to drive my mentor/mentee relationships to
219 get what I needed out of those relationships and supported me when I've felt defeated. A decade
220 later, I still love competing as part of a team, except these days I've traded the racecourse for a
221 research laboratory and an oar for an ultrasound probe.

222 I was recently asked if I ever had doubts about pursuing a postdoctoral fellowship. The
223 honest answer? No, but I have done *a lot* of thinking about whether continuing in academia is still
224 the right choice for me. Doubts about pursuing tenure track positions in academia are sometimes
225 viewed as a negative because the field interprets 'doubts' as being less dedicated. In reality, I think
226 that it is a healthy life skill to ensure that the goals you developed 10 years earlier are still what
227 you desire. These 'doubts' have given me the opportunity to have conversations with myself about
228 what I enjoy (e.g., teamwork) and don't enjoy about my job and how those factors relate to my life
229 values. I've learned to consider whether the things I love about my job exist in other careers or
230 whether the factors I dislike about my job are temporary or will persist throughout my career.

231 These conversations have become more real for me as my parents have aged and my goals of one
232 day starting a family have not occurred as quickly as I'd hoped. Am I missing too many core
233 memories with my parents? Will I be able to balance my future family while pursuing my career
234 goals? Do I pursue a career less aligned with my career goals, but would decrease my work hours,
235 or remain in academia in hopes of, amongst other things, contributing to gender equality in
236 academia? What if I can't get pregnant by the time I'm in a 'good place' in my career? As a gay
237 woman of reproductive age, the intersection of these worries with the decision not to apply to
238 tenure track positions in states where reproductive rights and/or the rights of the lesbian, gay,
239 bisexual and transgender (LGBT) community are being limited (which is ~50% of US states) feels
240 terrifying and unfair after 10 years of hard work. I know I alone won't fix these barriers in
241 academia, but I do know if I leave academia, I won't be able to help fix them either. That feels like
242 something worth fighting for.

243 I don't know what the future will hold, but I know the indirect paths are worth taking and
244 that things always work out in the end. I have no doubt my career will be no different.

245

246 **Joshua Tremblay** (*PhD, Deer whisperer, six-noon-sixer*)

247 I must be up front when describing and reflecting upon my academic path: I am a second
248 generation academic and my entry point into physiology research would not have happened
249 without the involvement of my dad. I went to the University of Guelph to study Human Kinetics
250 and French Studies for my undergraduate degree. Following my second year, I was connected
251 (through my dad) with a research team from the University of British Columbia who were
252 conducting pulmonary and exercise physiology research with Kenyan distance runners at Kenyatta
253 University in Nairobi. I joined the team, gaining valuable hands-on experience and, despite my
254 interpersonal limitations, networking. Back in Guelph, I was heavily involved in student
255 government and put little thought into what I wanted to do once I graduated. I was disorganized,
256 but I unsuccessfully approached a few labs about doing a fourth-year research project. Despite this,
257 I remained interested in research, but did not meet inclusion criteria for any ongoing studies.
258 Fortunately, I was invited to observe muscle biopsies, though my exposure to research while at
259 Guelph was limited. I remember sitting on the floor of my partner's art gallery space at one point
260 with some flipchart paper writing out all of the things that I was interested in, I guess hoping that
261 some great idea for future directions would manifest. I am not sure how – maybe because I had

262 some interest in altitude physiology stemming from a conference in Colorado Springs that I went
263 to with my dad when I was younger – but I became really interested in environmental physiology.
264 At this stage, I knew that I was interested in cardiopulmonary physiology and environmental
265 physiology.

266 Midway through my final year of Undergraduate studies deadlines for applying to grad
267 school were approaching. I reached out to the PIs from the University of British Columbia that I
268 helped out with in Kenya, and they suggested contacting a new faculty member, who, at the time,
269 was a postdoc while we were in Kenya and had just taken up a position at the University of British
270 Columbia – Okanagan and was looking for graduate students. Another student and I would be the
271 first graduate students in the Cardiopulmonary Laboratory for Experimental and Applied
272 Physiology (which at the time was literally under construction). I had a hard time in the first part of
273 my MSc. I was not interested in my research topic. I was starting with virtually no experience and
274 needed guidance. I was bad at asking for help. At times the only thing keeping me there was how
275 much I enjoyed living in Kelowna and running on the cross-country team. Once our lab was built, I
276 began developing the skills required to run complex integrative studies. My biggest takeaway was
277 becoming proficient at vascular ultrasound. Towards the end of my MSc, I went rock climbing
278 with another PI at UBCO, and expressed my interest in altitude physiology, and he invited me to
279 join a forthcoming White Mountain research trip and encouraged me to develop my own research
280 study. I enthusiastically agreed to join as a vascular sonographer and was able to run a
281 straightforward, focussed study. As much as I loved this, and Kelowna, I appreciated that
282 diversifying my training environment would be critical.

283 I moved across the country to work in the Cardiovascular Stress Response Laboratory at
284 Queen's University. Within the first month of starting the program (in January), I received an email
285 from the PI at UBCO who asked if I wanted to join a research expedition to the Pyramid Lab in the
286 Khumbu Valley, Nepal that November – meaning that baseline testing would be some time before
287 that. I passed this on to my supervisor, who told me that if I wanted to, and could conceive of some
288 studies to include in my thesis, that I would have to complete all of my coursework, my
289 comprehensive exams and my thesis proposal before then. So, I put my head down and had a very
290 busy ~six months. Worth it.

291 Throughout my PhD, I conducted studies in the laboratory at Queen's University, while
292 keeping in close contact with other international collaborators. I was heavily involved with an

293 international high altitude research team, Global REACH, during a research expedition to Peru in
294 2018. This expedition formed two more of my PhD thesis studies. On that trip, I met a brilliant
295 echocardiographer with arguably the coolest research experiences in comparative cardiac
296 physiology. That echocardiographer manages the International Primate Heart Project (IPHP), who
297 regularly run cardiovascular health assessments on chimpanzees in African sanctuaries. I told her
298 how interested I was in the project and if they ever wanted to look at the vasculature, I would love
299 to help. I was instructed to email the PI of the IPHP and set up a meeting. Acting on her advice, I
300 arranged a meeting and, a month later, found myself scanning chimpanzees at the Chimfunshi
301 Wildlife Orphanage in Zambia—an extraordinary experience that took place six months before
302 defending my PhD. I cannot understate the importance of working with supervisors who are
303 willing to embrace unique opportunities. Through the relationships that I maintained and
304 established during my PhD, I ended up back at the University of British Columbia – Okanagan.

305 I loved my postdoc – living in the Okanagan is amazing and I had too many incredible
306 research experiences to list, but my takeaway is how valuable a well-intended unsolicited email
307 can be. My postdoc supervisor and I wanted to connect with a local university to start the
308 Tarahumara Health Project in Mexico, so we cold-emailed researchers in the Facultad de Ciencias
309 de la Cultura Física at the Universidad Autónoma de Chihuahua. We became close collaborators,
310 and the project would not have happened without them. Another example of this is when I saw a
311 preprint come out on high altitude adaptation in geladas, so I emailed the authors to congratulate
312 them on very cool research and to introduce myself, since I did not think there were many folks
313 doing physiology research at high altitude and in non-human primates. This led to a fruitful
314 collaboration that is ongoing and has branched to other collaborations that are fundamental to my
315 current research program. All of this is to say, if someone is doing something that you are
316 interested in, let them know! Based on my experience, genuine enthusiasm for a subject and a
317 willingness to engage can open doors and foster meaningful connections in the academic world.

318

319 ***Barbara Oliveira (PhD)***

320 The inception of my academic journey predates that of many of my peers, stretching back
321 to my childhood when school events prompted us to dress up as our desired professions and I
322 chose to be a teacher. Little did I know at the time that this childhood dream would ultimately
323 materialize into reality but lead to a completely different role.

324 Throughout my undergraduate studies in Dietetics (completed in Brazil), I gained practical
325 experience in various work environments, ranging from hospitals and clinics to industrial kitchens
326 and schools. However, it was my English teaching endeavors that provided the means to support
327 myself financially. After completing my degree, it seemed only natural to pursue a career in
328 education while aligning my focus with my true passion: sports nutrition. To achieve this,
329 obtaining a master's degree became imperative.

330 In my pursuit of sports nutrition, I found the closest avenue through a Physical Education
331 program. However, as a dietitian, securing a spot in this field proved challenging. Thus, I
332 embarked on a research adventure as a volunteer, lending my time to assist in a study that involved
333 exercise performance in a heat chamber at the Federal University of Minas Gerais. My hope was to
334 catch the attention of professors and potentially gain acceptance into their master's program. While
335 I did not achieve that specific outcome due to harsh competition, I did become quite proficient in
336 the meticulous task of cleaning metabolic testing equipment. Moreover, this experience led me to a
337 remarkable course in Sports Training at the same institution, although I ultimately chose not to
338 complete it upon being admitted to a Master's program. Nowadays, I wish I had completed the
339 course, but at that time I was too overwhelmed with upcoming challenges.

340 The shift from Dietetics to a desire for sports nutrition and eventually delving into
341 Neuroscience may seem incongruous. However, this transformation can be largely attributed to my
342 supervisor, a distinguished professor at the Biochemistry and Immunology Department of the
343 Federal University of Minas Gerais, Brazil. Despite falling short in the competition for the
344 Master's program in Biochemistry and Immunology, I seized the opportunity to work in the
345 laboratory even before the next round of applications. As a volunteer, I immersed myself in
346 preparing and setting up my project, which focused on antioxidant vitamins and their impact on
347 type 1 diabetes.

348 A year later, a newly established Neuroscience program presented itself, prompting me to
349 apply once again. Unfortunately, my work on type 1 diabetes did not align with the program's
350 objectives. However, it was adapted to investigate the relationship between antioxidant vitamins
351 and Alzheimer's disease, and was successfully completed within a year, benefiting from the
352 previously established protocols.

353 Now, one could ask about the initial aspiration of becoming a teacher. During this period, I
354 started teaching undergraduate courses while simultaneously immersing myself in the realm of

355 research, which swiftly emerged as my favored pursuit, leaving teaching aside and leading me to
356 the next step of the predictable academic career, a PhD.

357 Following the successful defense of my Master's dissertation on a Tuesday, by Thursday I
358 received the esteemed acceptance into the Biochemistry and Immunology PhD program. My
359 research endeavors in type 1 diabetes from the past, now set the stage for expansion, shaping the
360 core of my work. The anticipated timeline for completion was set at four years, a customary
361 duration for such academic pursuits; however, life's positive interruptions intervened. Marriage, the
362 arrival of a baby, and the subsequent news of another pregnancy resulted in me taking an academic
363 detour. Thankfully all my data collection was complete, which only left the writing of my PhD
364 thesis, a task that could be accomplished from home. I would work while my baby was in part-time
365 childcare and pregnancy was not an issue. Nevertheless, I found myself on the brink of delivering
366 my second child while simultaneously giving birth to my thesis, a time of accomplishments and
367 challenges.

368 With the completion of my doctoral journey, a well-deserved break beckoned as I embraced
369 being a mother. However, the passage of time reignited my desire to return to the academic realm.
370 This time, I wanted a distinct experience—one that had long been etched in my dreams: the
371 opportunity to embark on a pursuit abroad. To me, Canada seemed like an ideal destination,
372 offering a promising future and a transformational life for my family. Fate (and luck) guided me to
373 the University of British Columbia, nestled in the beautiful Okanagan region, where an unexpected
374 mentor, Dr Jonathan Little surpassed all of my expectations.

375 The postdoctoral experience unfolded with its fair share of challenges, as one would
376 anticipate for someone who had spent numerous years away from the academic forefront, added by
377 the cultural adjustment to a foreign country. Nevertheless, as time elapsed, the obstacles gradually
378 eased, and what was initially envisioned as a one-year commitment extended to two, and then three
379 years. With the conclusion of the postdoctoral period drawing near, it was imperative to
380 contemplate the next steps on this academic journey.

381 Unlike students that see themselves as principal investigators, the path of becoming a
382 professor was never felt as a viable option for me since I prefer being supervised than supervising.
383 Instead, the perfect plan entailed staying in research, where I could continue embracing the
384 scientific world within a secure and predictable setting, perfectly harmonizing with the demands of
385 family life. I've found fulfillment in my current position as a clinical research coordinator where

386 my supervisor provides a comfortable and flexible, but still challenging work environment. The
387 initial dream of becoming a teacher ultimately led me into the captivating world of research. As for
388 teaching, I might say that the future holds unexpected pathways. A piece of advice to my past self
389 and students is to try focusing on where you want to be as a professional and dedicate to the path
390 towards achieving it. Plans can change along the way, but as time passes, it is better to have regrets
391 about what was done rather than what was not accomplished.

392

393 ***Hashim Islam (PhD)***

394 I was uncertain about what I *really* wanted to do going into the last year of my
395 undergraduate degree. I had toyed with the idea of going to medical school or physiotherapy,
396 though had never taken either option seriously enough to be competitive. I found my passion for
397 exercise physiology and metabolism while enrolled in a course taught by Dr. Tom Hazell – the
398 scientist who initially inspired me to embark on the path I am on today. Suddenly, the same
399 concepts that I had glazed over in introductory biology became extremely interesting when placed
400 in the context of sport and exercise, which had always been a big part of my life. My head began
401 filling with questions around how and why exercise had such profound effects on the human body;
402 I had suddenly found what I *really* wanted to do but was still unsure about how to make this into a
403 career.

404 When I approached Tom with the possibility of doing a project in his lab, he challenged me
405 to conceive a research question that I found intriguing. My fellow classmate and I – both
406 bodybuilding enthusiasts at the time – came up with a relatively simple study to test different
407 creatine formulations for muscle strength and performance. Soon hereafter, we were off purchasing
408 tubs of creatine and enrolling our “gym rat” buddies – who needed little convincing to take free
409 creatine and lift weights – to participate in this “ground-breaking” (at least to us at the time)
410 scientific experiment we were conducting. This was a turning point in my academic journey – I
411 now knew *how* to make what I really wanted to do into a career.

412 At this point, I had made up my mind about pursuing grad school with the end goal of
413 landing a faculty position. I was briefly discouraged when potential supervisors whom I contacted
414 either did not respond or only accepted A⁺ students who would be competitive for scholarships.
415 Luckily, working with Tom had allowed me to showcase work ethic, dedication, and passion for
416 research that my transcripts couldn't reflect and he agreed to take me on as a master's student. The

417 caveat was that I would have to move from Alberta to Ontario. The thought of moving to a
418 different province seemed daunting at the time, but I was committed to my career goal, so I viewed
419 it as an opportunity to experience a new part of Canada. In hindsight, I now know that completing
420 my Masters, PhD, and post-doctoral training at different institutions has allowed me to expand my
421 network, develop new expertise, and adapt to working in different environments – factors that have
422 collectively positioned me to succeed as an academic.

423 Although I would have thoroughly enjoyed continuing within the same area of research as
424 my masters, I also wanted to study metabolism at a more basic level and dive deeper into the
425 cellular and molecular realm of physiology. Tom was also supportive of pursuing a new area to
426 “add to the toolbox” as he liked to call it, which would allow me to expand my skill set for future
427 training and career opportunities. He put in a good word with Dr. Brendon Gurd at Queens
428 University, whose work in muscle physiology had captivated me for some time and I was fortunate
429 that Brendon accepted me as a PhD student.

430 My PhD was a time of marked growth and development – both as an exercise metabolism
431 researcher and (unexpectedly) as a teacher. I never envisioned teaching would be a big part of my
432 PhD, but a last-minute opening to teach an introductory physiology course arose during my first
433 year. I was hesitant to accept due to a fear of public speaking and no formal teaching experience
434 but agreed knowing that teaching experience is required for most faculty positions. This was one of
435 the best decisions of my academic career even as a “researcher”; helping others learn physiology
436 deepened my own understanding beyond what I would have otherwise achieved. Under the
437 mentorship of Drs. Brendon Gurd and Michael Tschakovsky (both phenomenal scientists and
438 educators), I helped implement an innovative pedagogical approach that emphasized general
439 models to help students gain a more unified understanding of physiology (based on an approach
440 originally proposed by Harold Modell; 4). This approach not only helped me in the classroom but
441 was also incredibly useful in the lab when designing studies, choosing the most appropriate
442 outcomes, and interpreting findings. I developed a passion for teaching that I never anticipated but
443 deeply value, going on to teach both introductory physiology and upper year metabolism courses
444 for subsequent years of my PhD.

445 As a current postdoctoral fellow in Professor Jonathan Little’s laboratory at the University
446 of British Columbia (someone who’s work I had long admired), I have spent the last three years
447 researching inflammation in the context of exercise and type 2 diabetes allowing me to continue

448 adding more “tools” to my toolbox. Having devoted a significant portion of my PhD to teaching, I
449 am now able to focus on other skills needed to succeed as a faculty member such as grant writing,
450 student supervision, and service. Switching research areas throughout my degrees and training has
451 also given me a better idea of what my own research program will look like. I feel incredibly
452 fortunate to have “stood on the shoulders of giants” throughout my journey and attribute whatever
453 success I have had largely to the mentorship I have received and the people I have worked with.
454 I realize not everyone will relate to the experiences I have shared here constituting a largely
455 positive reflection of my journey (not for a lack of ups and downs but because believe in focusing
456 on the good). I will leave you with some practical advice or “take-home points” that may be useful
457 to others embarking on a similar journey: 1) Take on new challenges even if they seem daunting.
458 Saying “yes” to opportunities can make for some long days but, in my experience, this always
459 leads to a sense of accomplishment and a new appreciation for where your boundaries lie (not to
460 mention more experience on your CV). 2) Be a *great* colleague. Science is a collaborator endeavor
461 and helping others – from lab mates needing help with data collection to trainees looking for
462 feedback on a paper – will get you further than competing with others (a sentiment best captured
463 by the “rising tide raises all ships” analogy). 3) Pursue research that you are *passionate* about. This
464 sounds cliché and may not resonate for everyone in grad school but I often find work – whether it
465 be writing, performing an experiment, or designing a study – doesn’t really feel like work
466 (emphasis on the *often* here – I still have a life outside research). I deeply believe that this passion
467 for exercise physiology – which is what set me on this path in the first place – has been the
468 primary reason I have stayed motivated and continue working hard towards my goals.

469

470 *André Teixeira (PhD, soccer, science, and beer [randomized])*

471 My academic journey started during my undergraduate studies in Physical Education in
472 Brazil. Inspired by an exceptional professor, I realized that my career goal was to become a
473 researcher in the field of exercise cardiovascular physiology. Although my institution had very
474 limited resources with no MSc or PhD program, I was able to begin my academic pathway by
475 participating in the weekly undergraduate-driven journal clubs. In Brazil, a common requirement
476 to obtain a BSc degree is to complete a research-based thesis. Unlike my peers, I decided to
477 complete an original investigation rather than a systematic review. I decided to study the impact of
478 the menstrual cycle on body image (dis)satisfaction, which eventually became my first lead-author

479 publication. This experience strengthened my passion for science, and my next step was to obtain
480 an MSc degree.

481 I applied for an MSc program in my hometown (Juiz de Fora, Brazil). Despite being
482 unsuccessful in my first attempt, one of the committee members invited me to participate in their
483 weekly journal club. I quickly realized that the research interests of the laboratory did not align
484 with my own. Therefore, I applied for a different program and began my master's degree in
485 Exercise and Sports Science at the State University of Rio de Janeiro. To avoid renting a place in
486 Rio, I decided to drive back and forth (~160 km) and keep working part-time as a personal trainer
487 to complement my scholarship. Despite several ups and downs, my academic goal remained solid,
488 and following the defense of my MSc, I was certain that enrolling into a PhD program was the
489 right path for me.

490 A thousand kilometers away, the University of Brasilia became my “new home”. Under the
491 mentorship of Dr. Lauro Vianna, I had the opportunity to dive deep into cutting-edge human
492 cardiovascular physiology research, teaching, mentoring, leadership, critical thinking, the peer-
493 review process, new laboratory techniques, grantsmanship, honing my communication skills,
494 exploring collaborations, and attending international conferences. More importantly, in addition to
495 being an outstanding mentor, Dr. Vianna became a very close friend.

496 One piece that was missing in my academic journey, and is often strongly encouraged, was
497 international experience. Hence, I decided that my postdoctoral training should be accomplished
498 abroad. Fortunately, the solid network I had built during my PhD allowed me to pursue such a
499 goal. I met my future postdoctoral supervisor, Dr. Philip Millar from the University of Guelph
500 (Canada), at the 2017 American Physiological Society (APS) meeting Experimental Biology. Two
501 years later during the same meeting, he attended my poster presentation and, following a fruitful
502 scientific discussion, he invited me to join his laboratory.

503 I defended my PhD thesis in August 2019 and a month later, I arrived in Canada. New
504 country, new culture, new language, new environment, and far away from my family and friends.
505 It became even harder a few months later when I experienced the Canadian winter for the first
506 time. Nevertheless, little did I know that the real struggle was about to spread – the COVID-19
507 pandemic. Going through several lockdowns and not being able to go to the laboratory was
508 unfortunate, but what really affected me was the idea that something could happen with my family
509 in Brazil and I would not be able to fly back. Despite all the setbacks, my initial one-year contract

510 became a three-year contract, and working from home allowed me to explore several online
511 resources. For example, the APS offers a vast array of opportunities for early career physiologists
512 such as the Professional Skills Training Program and the Center for Physiology Education.
513 Noteworthy, after participating in the APS Reviewer Training Program, I became a regular
514 reviewer for the APS journals and was invited to join the AJP-Regul Early Career Reviewer Board
515 and the AJP-Heart Editorial Board. Nevertheless, the best milestone of my life experience in
516 Canada was the welcoming my son.

517 Following a well-appreciated “time off” during parental leave, I am currently facing the
518 challenge of obtaining a permanent faculty position. In addition to being scarce and very
519 competitive, securing a tenure-track position in Canada is very difficult for non-resident applicants.
520 Having a newborn without job security is overwhelming to say the least, and after 13+ years of
521 academic training I have deep concerns that my dream as a scientist will not come to fruition. If I
522 decide to continue my academic pursuit, I will likely need to find another postdoctoral fellowship
523 until I secure a permanent position. Now that I have a family, I can’t wait forever. Who knows how
524 long this is going to take?

525 In closing, I would like to share a few pieces of advice for the next generation of
526 physiologists based on my personal experience in academia. 1) Learn about the laboratory before
527 applying for a position. If the laboratory performs human research, volunteer to participate in their
528 projects. You can also contact the senior graduate students to ask questions about their experiences.
529 2) Recognize your weaknesses and do not hesitate to ask for help. Above all else, do not let the
530 imposter syndrome turn you away. 3) If you are an international student, learn or improve your
531 English as soon as possible and be aware that you will likely need to work harder to achieve your
532 goals than your native English-speaking peers. 4) Be active in your scientific community and build
533 a solid network. 5) Be prepared to receive criticism and don’t take it personally. 6) When you
534 become a mentor or a reviewer, be scientifically rigorous but also kind and respectful. 7) Treat
535 others as you would like to be treated and remember – be a human first and a scientist second. 8)
536 Be aware that permanent faculty positions are scarce, and you will probably need to move from
537 your hometown. This may be challenging if you have a partner or kids. 9) Do not expect to be well
538 paid as a trainee. In fact, the salary for graduate students and postdoctoral fellows is unfairly low.
539 10) Be patient and know that the time frame between your PhD defense and securing a permanent

540 faculty position is highly variable. Lastly and most importantly, find a good work-life balance,
541 keep your sense of humor, and enjoy the ride.

542

543 **L. Madden Brewster** (*PhD, Appalachia native, resident treat maker, better on skis than feet*)

544 As summer 2021 rolled into another semester, I was 3 years entrenched into a never-ending
545 PhD program with little hope and all the classic symptoms of imposter syndrome. Although I had
546 more mental clarity in my personal life than I had for the past several years (I was over a year
547 sober at this point), I still felt largely dissociative and disconnected with my research. My plans to
548 stay in academia were nonexistent and I often fantasized about walking away from science
549 altogether. My first upcoming research expedition to a high-altitude region of Peru to work
550 alongside the brilliant Professor, Phil Ainslie, and his research team from UBCO had been foiled
551 by remnants of the COVID-19 pandemic, leaving me with little to look forward to that semester.
552 Fortunately, Prof. Ainslie and his students seemed to have their hands in various global projects so,
553 instead, I was graciously invited to join a free diving research initiative in Split, Croatia. Thanks to
554 this experience and those involved, the true potential of research and academia dawned on me
555 during this trip and the following research expeditions I completed with Prof. Ainslie's team. I
556 forged a competent, supportive, and extensive scientific community during this time, which helped
557 me to reimagine the academic space. This collaborative work also served to highlight some of the
558 unspoken abuses of power I had experienced and witnessed throughout my graduate training.

559 I outline some of these potential problematic themes as the 'red flags' of academia below.
560 Colloquially, a 'red flag' is a negative trait that serves as a warning to deeper issues associated with
561 a person and/or institution. My hope in identifying these red flags, is that it will not only serve as a
562 navigational tool for other young academics, but also as a personal reminder to maintain healthy,
563 professional boundaries that mitigate toxic spaces in academia. I write these red flags with full
564 cognizance of my naivete and inexperience, and I must remind the reader that these subjective
565 ideas simply reflect my own personal experience and observations throughout my academic
566 training.

567

568 In academia, it is a red flag if...

569 1. There is major resistance to your professional development and natural evolution as a
570 young investigator. Experiencing new mentors, colleagues, and environments is both

- 571 necessary and beneficial to your career. A mentor that does not support the evolution of
572 your career, likely will continue to exploit you in exchange for as little as possible.
- 573 2. Collaboration is discouraged. It should go without saying that collaboration almost always
574 makes for better research initiatives and catalyzes the progression of your field, which
575 should be the goal of every scientist. In my opinion, science done in secrecy and isolation
576 will limit the breadth and impact of your research.
- 577 3. A healthy work life balance is not encouraged and celebrated. Graduate school and being
578 an academic is hard work, but if you cannot learn to properly implement a work life
579 balance, you will ultimately burn out. Academia ebbs and flows; I suggest learning to give
580 110% and build resiliency during the flow and rest, play, and reset during the ebb.
- 581 4. There is any semblance of sexism/racism/classism/discrimination/harassment/etc. This may
582 seem obvious, but it can be easy to overlook covert or occasional instances of these “-
583 isms,” especially when the perpetrators are highly respected (and tenured). Those “little”
584 slights underlie a deeper bias, which, can become internalized and, I believe, also affects
585 the broader academic community.
- 586 5. You are treated like a laboratory technician. It is true, technical training is *one* necessary
587 component of graduate training. However, other pedagogical skills must also be part of
588 your professional development plan.
- 589 6. The focus of doing research is for the money. This point is nuanced and difficult to detect
590 or even avoid since research is economically driven and universities are, after all,
591 businesses. Doing research requires funding, however, some grants can come with large
592 kickback incentives for PI’s. If a researcher’s focus is financially based rather than
593 academically based, it is likely that the science (and your research experience) will suffer.
594 This can be hard to gauge, but over time you may be able to tease out primary motivations.
- 595 7. You are discouraged from professional development activities. I suggest engaging in a
596 broad range of academic activities, regardless of whether it seems impressive on a
597 curriculum vitae or not.
- 598 8. You are regularly discouraged from challenging ideas. Disagreements are important as they
599 are often what drive our research questions. Moreover, our curiosity as scientists to stray
600 from the status quo makes the work we do so valuable and innovative. We must push back
601 against ideas when we have good evidence to do so.

- 602 9. Feedback on your work is given on a quid pro quo basis. Part of a supervisor's job
603 description is to provide you with instruction and feedback regardless of what you may
604 provide for them. I maintain that bartering for feedback on your work is not appropriate in
605 the mentor-mentee dynamic, especially when combined with executing personal tasks for
606 someone that are outside of your role as a graduate student.
- 607 10. Physical outbursts are commonplace in the academic environment. This should be obvious,
608 but it can be easy to become desensitized to it (e.g., slamming doors or throwing/kicking of
609 inanimate objects), particularly if everyone around the perpetrator has normalized this.
610 However, this behavior is entirely unacceptable.

611

612 I do not place blame on my predecessors or others involved throughout my undergraduate and
613 graduate training. There is good evidence to back generational trauma in families and I think this
614 concept likely extends to the academic "family" as well. Being a toxic academic is probably a slow
615 and unnoticeable transition until you become part of the problem, repeating the same old patterns
616 of mentors you swore you would never become. As trainees, we have an incredible responsibility
617 to change this system and make it better for our successors. Tenure should not be an immunity
618 blanket used to unconditionally protect abusers; however, fighting the negative elements of this
619 space may best be done as we rise to our own positions of power. I would like to reiterate that this
620 is not to rag on academia; I am still here because there are invaluable components and people
621 within this unique system which I love. However, we must have the courage and collective self-
622 awareness to evolve all of academia into a sustainable, inclusive, and productive community,
623 designed to successfully break this generational trauma.

624

625 **Victoria L. Meah** (*PhD, the black sheep*)

626 My section might read a little different, as I want to focus on my reflections since leaving
627 academia, rather than the specifics of my journey. In brief, I was a successful Postdoc, with a
628 dream tenure track position lined up. After going through an existential career crisis over many
629 months, I declined the position, left my Postdoc, transitioned out of academia into the public
630 sector, and settled permanently into life in the Canadian Rockies. Now that time has passed, I have
631 gained clarity on my unexpected departure from the academic career path. By sharing my

632 thoughts, I hope that anyone who resonates with these words might feel a little less alone and see
633 that life beyond the academic bubble can be great too.

634 During my Postdoc I burnt out. Though I didn't realize it at the time, my passion was
635 slowly being replaced with cynicism and frustration with academia. Then the pandemic hit, and I
636 found that it drastically calmed my life. The enforced pause allowed me to start a family,
637 something I had always put on hold until my job was more secure (sadly, a common consideration
638 for females in academia). This is not a sentence I thought I would ever write, but, lockdown and a
639 baby saved my mental health. The break from academia during parental leave gave me the space to
640 see how burnt out I really was, and how much it had been affecting all areas of my life. I could not
641 see an end to the mental and emotional exhaustion that had built year upon year, and putting
642 myself through that no longer felt worth it, so I decided to walk away. It can be hard to recognize
643 burn out in yourself, but if I can offer a simple piece of advice: take breaks often and acknowledge
644 the work you put on your mind and body over the years of academic training. Don't let the stress
645 build up to the point that you go up in flames.

646 The pressure on trainees comes from every direction in academia. I don't think there is enough
647 collective effort placed to break old habits or conventions ('that's just how it is'), reduce
648 unnecessary stressors, and/or to encourage decompression/life outside the lab. Here are a few
649 thoughts that might help someone, somewhere.

650 1. Academia could do with tighter checks and balances to improve the treatment of trainees.
651 Now that I have experienced a different working environment with leaders who have spent
652 much time and effort honing their people management skills, I can say that academics can
653 do more to improve their leadership. As I look back, there are moments in which I should
654 not have accepted poor treatment of myself or others, and I feel I should have done more.
655 Advocating for oneself in these moments is challenging, as academic power dynamics can
656 lead you to believe that you don't have a voice - but you do. Kindness, mutual respect, and
657 acceptance of boundaries are the minimum you should expect when interacting with
658 another human, regardless of their status. Anything less is not acceptable. I am sure that,
659 dear trainee, you have and will encounter many instances across your career in academia
660 where these basic standards are not met. We can all do better to prevent toxic academic
661 culture from continuing and I have faith that my peers who have recently become Profs are
662 the tide of change in creating more positive trainee experiences.

663 2. Trainees are not well remunerated considering the skills, knowledge, and experience they
664 bring but academia has a strange way of making us celebrate that we are paid at all. I can't
665 offer any solutions to that behemoth of a problem, but I can share advice a wise friend of
666 mine once shared with me. If you do have a salary as a trainee, work out your 'real' hourly
667 rate. For example, as a Postdoc in Canada, your contract may be 40 hours per week with a
668 \$40k per annum stipend. Working these contracted hours equates to an hourly rate of \$19
669 before tax but working ~65 hours (just an extra couple of hours per day plus one of your
670 weekend days) reduces that to \$12 per hour, well below minimum wage. These numbers
671 are even more dire as a graduate student. We often overwork or work for free as we are
672 'going to get our name on a paper.' Sure, you might get another line on the CV but if you
673 are consistently overworking, you are devaluing yourself. I would also argue that
674 overworking or working for free will keep our wages as low as they are, as well as
675 perpetuating unrealistic expectations for others who may not be so privileged in their time
676 or finances.

677 3. There is an expectation that trainees must move labs/cities/provinces/countries to continue
678 our careers, even though we may have no desire to do so. After my PhD, moving across the
679 world was an adventure I wanted. Long term, it has changed my life for the better and I
680 would do it again without hesitation, but short term, it did place strain on my life and
681 relationships. Moving away from loved ones, trying to build new connections/hobbies (in
682 the middle of Canadian winter), and dealing with the financial and logistical challenges of
683 relocation can be a burden. We are conditioned to accept the instability of moving during
684 our training, but with little thought about the wider impacts on our lives and how long it
685 can take to settle in a new place (normally, just in time for us to leave for the next position).
686 I therefore think it is important to normalize trainees moving, or not moving, based solely
687 on their priorities and to increase acceptance that you do not have to constantly move to be
688 an incredible researcher.

689 Five years ago, I would not have believed that I would have turned down a tenure track
690 position and be in another career. Plans change, clearly. I made this transition harder on myself by
691 blindly following the academic railroad, not considering that I could change trains or get off at any
692 station. My advice would be to explore your wider career options often. If you do find yourself
693 considering alternative routes, find people with experience of career shifts to talk to. Within your

694 school, there certainly are trainees who left that could help. I for one, would always be willing to
695 talk to and support others feeling out of place, tired, or lost in academia.

696 I still don't know what I want to do 'when I grow up' and I have become more comfortable
697 with not knowing what my future holds. I am thankful for each and every experience I had as an
698 academic researcher as I now understand what is important to me as well as how to live by my
699 values. I sometimes mourn for what my academic career could have been, I sometimes yearn for
700 the innovation of research (and the fun of conferences), and I sometimes wonder if I could get
701 back there. But then I remind myself of the healthy work life balance I now have, normally whilst
702 walking out my front door into the mountains, calm and happy with enough mental space to
703 patiently answer my preschoolers endless 'why' questions and it feels right. Writing this piece
704 reaffirmed how at peace I am with my decision to shift careers and how much happiness that has
705 brought into all aspects of my life, although I will always miss my lab mates, who feel more like
706 family. I will sign off by saying to any dinosaurs out there that may believe leaving academia is
707 'failing,' please come visit me and let me show you otherwise.

708

709 **Michael Tymko** (*PhD, SB, enjoyer of heavy IPA's, and hits a long ball*)

710 Despite tight finances and having my first entry application rejected, I was beyond
711 determined to leave my hometown and pursue graduate school. Armed with nothing more than a
712 mattress on the floor and an old TV my parents gifted me, I rented a room from my eccentric
713 mentor, the late Dr. Christopher Willie. Chris was complex and extraordinary, and a great friend to
714 many. He was the one who taught me the significance of embracing adventure, and the story
715 behind his tragic passing, which can be read elsewhere (5), was an important reminder to not take
716 life too seriously. I consider myself fortunate to have received unwavering support from
717 supervisors and mentors who facilitated my involvement in diverse projects and enabled me to
718 conduct fieldwork in beautiful regions of the world such as Nepal, Peru, and parts of Europe. I also
719 reached outside of my comfort zone and started my own business that specializes in making
720 custom human physiology research equipment. Throughout this transformative journey, I remained
721 steadfast in preserving a harmonious work-life balance. I tried to do everything with purpose, and
722 burned the candle at both ends. At the end of my PhD, I felt as if nothing could stop me. I was
723 eventually awarded with the Governor's Gold Medal that year as the universities top PhD
724 graduate. Nothing could get between me and a university faculty position, or so I thought.

725 Life is full of unexpected surprises. The morning I relocated for my postdoc, my wife and I
726 found out that we were expecting our first child. When she was approximately 12 weeks along,
727 with excitement, we shared the news with our family and friends. Sadly, just a week after that, my
728 wife, who was living hundreds of kilometers away completing her education, called to tell me that
729 she was going through a miscarriage. I felt helpless. I couldn't get to her in time. Both of us were
730 living in new cities with no family or friends. I sat in silence as the doctor confirmed the
731 miscarriage to me while I was on speakerphone. I remember nearly every minute of that night. I
732 doubt I will ever forget it. In the realm of academia, it is considered a weakness if young trainees
733 do not broaden their perspectives and hone their skills through a succession of relocations to new
734 cities and laboratories. I was also a believer in this course of thought, and all accountability lies
735 with me. Despite this, I still feel foolish for how many times I have moved throughout my training,
736 and question whether it truly was a necessity.

737 They say time heals everything, and I managed to find relief by throwing myself back into
738 my work. I helped organize another high-altitude expedition alongside my supportive postdoctoral
739 supervisor scheduled for April 2020, and things started looking up. I won't delve into the obvious
740 details, but as the world grappled with the COVID-19 pandemic, our research expedition, along
741 with the 10-12 projects we had meticulously planned as a team, came to an abrupt halt. Like many
742 other laboratories, our research operations were shut down for ~one year and we were told to stay
743 home, which I found very difficult to do. Nevertheless, amidst the chaos, my wife finished her
744 training as a Nurse and relocated to where I was living, and she became pregnant again. In
745 addition, I had some upcoming promising interviews for permanent faculty posts. In early 2021, I
746 received exciting news of my selection for an Assistant Professor job overseas, and my six-month
747 pregnant wife and I embraced the adventure and were excited to write a new chapter in our lives.
748 Without hesitation, we sold almost everything we owned. Our vehicles, recreational trailer, tools,
749 and even our bed. One of the last things we had to our name was a large sectional couch, so we had
750 somewhere to sleep just before our departure. We gave our landlord notice that we were leaving,
751 and they had organized new tenants. My external postdoctoral funding expired in the same month
752 as my new position start date. We thought we had timed this perfectly. Three weeks before our
753 departure, a crushing blow landed—we were informed that due to the pandemic related delays in
754 issuing healthcare, we would not be covered for labor and delivery. The university was unable to
755 accommodate us, so I had no choice but to withdraw from the position. Suddenly, we found

756 ourselves homeless and jobless in a city with no family and few friends, and our daughter was
757 eager to join us earthside. While my wife wasn't home, I sat on our couch—the last remnant of our
758 belongings—and wept for an entire day, thinking that I had irreparably ruined our lives.

759 The next day I decided to stand-up straight and get to work. I reached out to all my old
760 colleagues and friends, and I was able to *Frankenstein* together a somewhat livable salary through
761 various part-time work. If it weren't for the help and support of my academic friends, I really don't
762 know what we would have done. A wise academic mentor, and more importantly, a great friend,
763 once told me, "*Relationships are all we have*," and in those moments I finally understood what he
764 meant. I am forever indebted to those that helped us during that time.

765 My wife and I relocated once again, temporarily moving back in with family until, one
766 week before our daughter's birth, we managed to find a place of our own to live. For the better part
767 of a year, I took on any work I could find. However, I gradually became disenchanted, feeling
768 unmotivated, angry, anxious, and deeply unhappy. I hadn't worked on anything I enjoyed for ~two
769 years. In retrospect, I exhibited some arrogant behaviour, trying to mask my unhappiness, and I
770 apologize deeply to anyone who encountered that. I grew disillusioned with nearly every aspect of
771 the once-beloved job. I felt trapped. Moreover, I came face-to-face with the harsh reality that job
772 prospects are scarce for a human physiologist like myself. I wish deeply that I was warned about
773 this before I started my training. The inherent instability of academic contracts further exacerbated
774 my concerns. With the arrival of my first child and the culmination of these factors, I was
775 convinced that leaving academia was my only option. I was tired of earning the embarrassingly
776 low graduate student and postdoctoral salaries that Canada offers, I was tired of relocating, I was
777 tired of the stress. For all intents and purposes, I was "checked out".

778 So why am I sharing all of this? Despite multiple industry job interviews and offers, it
779 didn't feel right. I decided I enjoyed the multidisciplinary aspect of academia too much to leave
780 just yet. On my computer, I always keep a work-related list of tasks, and it was around the time of
781 these interviews that I inscribed bold letters at the top of the page: "Enjoy it! Today is the youngest
782 you'll ever be." It is astonishing how a simple reminder can unravel the turmoil of a spiraling mind.
783 This simple phrase has remained a constant reminder to relish in the present moment, and to stop
784 sweating the small stuff – a lesson once learned years ago from my friend Chris, that I had since
785 forgotten. Not long after I was finally able to secure an Assistant Professor position. My journey as
786 a focused graduate student to a lost postdoc taught me many valuable life lessons. For aspiring

787 graduate students, if this career path is truly what you burn for, my counsel is straightforward: be
788 persistent, embrace every opportunity, allow your passion to serve as your guide, but avoid letting
789 your work dominate your identity. Nonetheless, it's critical that you understand the possible
790 financial burdens associated with graduate school, and the stresses linked to relocating for your
791 training. Also know, that if a storm rolls through, the dust will eventually settle. Sometimes, it
792 takes longer than expected, but with continued hard work things often fall into place, and most
793 importantly, make sure to always remind yourself to enjoy the journey and refrain from taking life
794 too seriously.

795

796 **Final words from Dr. Tymko**

797 Most evenings, it was commonplace for Chris Willie and I to share and reflect on the
798 events of our days in his small wooden kitchen over pints of rich, dark ale. Among these cherished
799 moments, one night in particular stands out in my memory. Chris was a soul full of struggle, not
800 unlike many of us, especially in the realm of academia. No matter how voraciously he devoured
801 knowledge on a subject, it frustrated him that there was always "*so much more to learn*". I
802 remember responding with, "*Isn't that the beauty of it?*". We then lapsed into a shared silence, and
803 although he is no longer here to confirm, I think he was in agreeance as we finished our nectar. In
804 academia there is so much room for creativity, and at any given moment, you can work towards
805 reshaping your interests and goals. Although the structure of academia can be off-putting, it really
806 is a beautiful thing through the eye of the curious.

807 Perhaps through this lens, it becomes clear why the seemingly straightforward query,
808 "*What is it that you do?*" can cast such a profound shadow over many of us. The academic world
809 brims with a myriad of responsibilities and countless self-defining avenues, often making it a
810 daunting task to put our job descriptions into words. This revelation, woven through the elegant
811 narratives of our co-authors, illumines the erratic nature of the academic journey, and hopefully
812 gives prospective trainees insight into *what it's like to be a graduate student*. To those young
813 scholars looking towards the academic landscape, eager to be architects of knowledge within its
814 ivory towers, let this truth be your compass: It is permissible to tread a unique path, to navigate the
815 crests and troughs, to harbor doubts, to embrace adventure, and to trek outside your comfort zone –
816 these realities of your journey are the heartbeat of existence (at least in my opinion). As a final
817 thought, inspired by the excerpts of the co-authors, it is obvious that academia isn't perfect, but

818 there is clearly hope. What is urgently needed now are young scientists that recognize both its
819 merits and faults while remaining motivated to preserve and enhance the beauty of this institution,
820 fueled by a passion for scientific curiosity and mentorship.

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822 **References**

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Table 1. *Summary of advice to prospective graduate students*

Name	Title	Key Points
C. Bruce	PhD Cand.	<ul style="list-style-type: none"> • Don't let feelings associated with the imposter phenomenon stand in your way of success or helping others. • Challenge yourself, say 'yes' to new opportunities, step outside of your comfort zone, and just keep moving. There is no wrong way forward. • If you think academia is missing something, be the change you want to see.
L. DuBose	Asst. Prof.	<ul style="list-style-type: none"> • The indirect or unintended paths are worth taking, things work out in the end.
J. Tremblay	Lecturer	<ul style="list-style-type: none"> • Don't ever hold back genuine enthusiasm. Reaching out to academics who's work you find interesting will often lead to meaningful collaborations and connections.
B. Oliveira	Clinical Research Coordinator	<ul style="list-style-type: none"> • Plans may change but go for what you want – you'll regret the things you didn't do more than what you have done.
H. Islam	Postdoc	<ul style="list-style-type: none"> • Be a great colleague and build a solid network within your scientific community. • Pursue research that you are passionate about. • Diversify your skillset as much as possible (expand your "toolbox").
A. Teixeira	Postdoc	<ul style="list-style-type: none"> • Recognize your weaknesses and do not hesitate to ask for help. • Be prepared to receive criticism and do not take it personally. • Be a human first and a scientist second.
L. Brewster	Postdoc	<ul style="list-style-type: none"> • The following are some examples of negative behavior to look for and avoid in academia: <ul style="list-style-type: none"> ○ Resistance to your professional development. ○ Differing ideas are discouraged. ○ Work-life imbalance is prevalent ○ Sexism, racism, classism, harassment, toxic masculinity, or discrimination of any kind. ○ Money is a primary source of motivation. ○ Feedback is delivered on a quid pro quo basis.
V. Meah	Postdoc	<ul style="list-style-type: none"> • Don't accept poor treatment from others. • Power dynamics can make communication difficult. • Know your worth, don't work for free. • Understand the potential implications of relocating.
M. Tymko	Asst. Prof.	<ul style="list-style-type: none"> • Be persistent, embrace every opportunity, and allow your passion to serve as your guide. • Understand the possible financial burdens and implications associated with relocating for your training. • Don't let your work dominate your identity.