* Lyrics: ***TW Cen MT***
* Titles:

Focus for this draft: I think I found a way to make this the most relatable: instead of writing to my PhD, I’ve decided to change the narrative a bit and just write to myself. This way, I can depict these letters as ways to remember the times in graduate school, but also as a quick way to remind myself of the lessons that I learned.

The above being said, I have to change a little bit, and maybe rewrite some letters/parse down the emotion, and make a bit more of a story around a lesson. I think for each letter, I’m going to add a Tl;dr section, that way I can remember the most important part of the letter, and if someone is too lazy to read the entire letters or doesn’t like the narrative for a particular letter, they can easily look at the lesson, listen to the song, and then go on to the next. And of course same with me in the future. And I hope that since you’re just writing to yourself, you’ll be able to fit this into your voice a bit easier. So I think I now just have to think of the biggest lessons I learned in graduate school, see what parts I already have that I can fit those into, and then work on voice.

I’ll also retune some of my songs. I want these to be the songs I remember the most during my grad school tenure, and reasons why.

I also think it’s okay to have short letters. Not one liners, but like short paragraphs of semi significant things, that way it breaks up from reading just the big emotional ones. Maybe those are the ones I’ll try to add in around these?

**Why I’m writing this chapter**

A PhD ends in a finish full of triumphs: a published paper that will be used to inform the world of your research and a final defense that allows you to showcase all you’ve learned as an expert in your field. These accomplishments are the fruits of intense labor and rigorous mental fortitude, but often research is presented without mentioning the mental toll and strain on life that it took to succeed. Throughout graduate school I’ve missed out on holidays with family and friends, weddings and other important moments in the lives of those around me. I’ve willingly put myself through this experience because of how big this opportunity feels to me: the first person in my family to receive a PhD, in a field as prestigious as science. An opportunity to become another minority in a field that is still growing in diversity. I write this chapter to identify with anyone who has ever felt inadequate, who has suffered from imposter syndrome, and who throughout failure nearly gave up. This chapter highlights my journey into a world of knowledge that I never thought I would have the opportunity to take, and I hope it gives you some perspective on the daunting process that it takes to become an expert in an area of learning.

The rest of the thesis is research and work, but when I saw the opportunity to write a chapter about “the parts of the story of science that don’t get told in scientific publication”, I felt compelled. Although I’ve been fortunate throughout my research career to have a very supportive lab environment with my professors and other students, made lasting friendships, and have only had minor health scares, my PhD journey wasn’t straight forward. Like many other students before me, I’ve struggled mightily with my mental health, and it felt like a necessary addition to my PhD thesis to share a transparent view of the graduate school experience.

10 years from now, I’m not sure how I’ll feel about graduate school. 7 years. 1/4th of my life. A project that brought me deeper into the niches of science than I ever thought I could go. What is van der Waals packing anyways? This miniscule attractive force that relies on the periphery of (a gigantic word to describe small) atoms in space. Necessary and crucial for life…(or something to this effect), involved in and … and … Investigating these subatomic interactions within both theoretical and physical experimentation, and making sense of the results. And here, finally at the end, realizing that my thesis is a translation of my findings that this superficially nanoscopic (it’s actually smaller) force has on membrane protein folding and association. Discovery and novelty are extremely difficult to quantify. So what does it mean to become an arbiter of this seemingly immeasurable and imponderable academic knowledge?

I don’t have the answer right now, but I do have the lessons I’ve learned along the way. And by preserving my experiences in writing, I’ll have the opportunity to reflect on these thoughts while considering the answer to that question in the future.

This experience is my own and probably not universal, but if you’re at all interested in the anxieties, the learning lessons, and the … in graduate school, then I hope you enjoy my chapter for the public!

Thanks again for reading, and best of luck on whatever journey you are currently facing. Sending love and good vibes your way :D.

**“I consider it a good rule for letter-writing to leave unmentioned what the recipient already knows, and instead tell him something new.” ― Sigmund Freud**

Intro for it if I ever needed it:

In my effort to develop a chapter that might appease any reader, I initially found myself struggling to hear my inner voice. I wrote snippets of my time in graduate school, but in returning to read them I found them lacking joy. My writing felt restrictive, …, opaque. I was unable to adhere to the traditional narrative technique “Show, don’t tell”. But after multiple failed drafts, I’ve begun hearing my inner voice again, allowing me to write transparent, deeply personal insights. All that was left was to decide on a medium, some format that felt appropriate for me to communicate these thoughts and reflections.

A few years before I was born, in a time of the early internet, two individuals separated by 8400 miles corresponded as pen pals, sharing their feelings and emotions through writing before ever meeting in person.

I’ve always been a fan of writing letters.

And when reading letters from others, I can hear their voice as if they’re personally telling me about their lives.

I’ve decided that writing letters to my future self will be the best way for me to convey my time in graduate school: recounting experiences alongside lessons I learned along the way. In pulling myself back into memories of the times that I felt were most personally impactful, I’ll be able to reflect on my PhD journey. Together with each of these letters, I’m including a song that embodies my emotions either through the lyrics or the … that I feel exudes from the sound.

Gilbert

P.S. Years ago, I never knew what P.S. stood for. I simply thought it was something you put at the end of a letter, signifying that there’s a smidge more to say, not knowing that it was an abbreviation for “postscriptum”, Latin for “written after”. In the future post scripts, I’ll be using this space as kind of a tl;dr (too long, didn’t read) for each letter, having a short summary of the story and reflection. If interested with less time to read than you would like, feel free to look at the P.S.’s to have a shortened version of each letter.

***A letter always seemed to me like immortality because it is the mind alone without corporeal friend.* ― Emily Dickinson**

Dear future me,

*What do you want to be when you grow up?*

I’ve been answering differing versions of this question for the past few years: What major are you going into? What’s next after college? Do you want to be a doctor?

No one in my family is a scientist, yet I decided to major in biology because I felt a passionate curiosity about learning how life works down to the cellular level. These interests introduced me to the world of chemical bonding, discovering how atoms each have unique ways to interact with each other, playing a significant role in innate human biology. I found myself engulfed in a desire to delve deeper in mixing my love of biology with my understanding of chemistry.

But I never expected to go to grad school. Maybe a master’s program, learn a bit more, and then move on to some biotech company or to teach high school biology and chemistry. So when my undergrad mentor told me that a PhD might be a good fit for me, I was both bewildered and ecstatic. I’d been rejected from several scientific labs throughout my college career and I didn’t even know that PhD programs existed until junior year of college, yet I applied and I’ve been accepted to a program that integrates both biology and chemistry together at the University of Wisconsin-Madison.

I’m not particularly gifted, I end up being pretty average at anything I try, and although I wanted to help people from a young age, I couldn’t see myself taking on the path of a medical doctor as soon as I arrived in college. The grind seemed arduous and the learning too focused on memorizing knowledge, something that my mind just doesn’t have the capacity to do. But my fascination with how to learn to apply knowledge between different areas of learning might actually fit well in a PhD. My time in college didn’t prepare me for the real world. I don’t rely on my opinions or my preconceived notions of a subject to assume that I can understand it. Instead, I process the information given to me to see what I understand, and that has become something that I enjoy the most. I’ve acquired a passion for learning, and it seems that this PhD doctor is going to be an exciting journey for me!

Where are you now? Have you finished your PhD? Would you consider yourself grown up? Do you have a job that satisfies this intense craving for learning that was instilled in you during your youth? Or are you still working on yourself, figuring out what you want to do and what will truly make you happy in life?

Sending love and good vibes!

Gilbert

P.S. Do you still experience frisson?

***I do***

*Flipside-postlude* by Kid Quill

The aesthetic chills from the layering of instruments, the tingling up your spine from hypnotic harmony, engulfing you in tantalizing bliss. When I close my eyes to listen, I feel those sounds pouring into my being, as if my physical body is literally resonating with sound. I really hope you can still feel it. I’m constantly impressed by the sounds people create to convey subtle emotions that are difficult to explain with words.

*Flipside-postlude* follows an argument between two people, where one person doesn’t seem to understand the importance of musical records to another. It culminates in this passionate exchange:

“Who cares about what’s on the flip side of a record?”

“I do!”

This song is about wanting to be heard. About having bold ideas and indelible passions to share. I’m hoping that a PhD will allow me to cultivate ideas, determine my strengths in learning, and allow me to confidently share something that I’m passionate about with the world. I’m sure some of these letters will be more convoluted than others, so I hope that these song choices are able to return you to this moment and feel the emotions that brought you here!

Dear future me,

Graduate school classes have a unique, conversation like feel: Instead of lectures, the lesson plan isn’t strict, with professors who focus on maximizing the time to discuss what we as students are most curious about. *Why do proteins fold differently inside and outside of the membrane? What forces are involved? Does the amino acid composition of the protein matter?* Questions like these come up and we’re told about the research experiments that determined our current understanding in the field of biochemistry.

But recently, one professor posed a more personal question: “What are your goals with your graduate education?”

No one raised a hand.

“Gilbert, what about you?”

“I’m not sure”

“That’s okay, just say anything that feels right.”

*After what felt like 5 minutes*

“I want to find a way to replace PowerPoint.”

“Okay! Why is that?”

“I feel like there are some weaknesses in how it communicates concepts and I think there would be some benefits to having something better.”

How would you answer now? I know that I’ll likely never revolutionize the way that presentations are done with PowerPoint, but what sticks with me is that I was given the opportunity to share an idea of an idea. By my professor asking me “why” about my answer instead of “what”, my mind drifted towards something creative and fantastical. “Why” is an open-ended question!

In biochemistry, there’s a technique called polymerase chain reaction, or PCR. Using our knowledge of the biological conditions of DNA replication, we’re able to effectively duplicate DNA. And it’s not just used in basic research, but in forensics to identify people by amplifying and analyzing DNA left behind. But how did we come up with something that is now so fundamental in scientific research? Kary Mullis, the inventor of PCR said it best: “I was looking for something else…PCR was the possible outcome of a solution to a hypothetical problem that didn’t really exist.” Things aren’t always straightforward in research. The best science comes from harnessing creativity, trying to see things that haven’t been imagined, and finding questions that haven’t yet been answered.

Questions in graduate school don’t look for a particular answer, having us question why things are as they are. *How is membrane protein association influenced by van der Waals packing?* It’s a complex question, but I’m beginning to ponder the why’s of my research. Why hasn’t this been studied yet? Why is it important to understand? Why is the influence of packing different in the membrane than outside of it? My mind is racing, questioning what I know about the subject, striving to delve deeper into membrane protein research. And although it currently feels impossible to think that I’ll have an answer to that in the future, I can feel myself beginning to enjoy this embarkment into biochemistry and this search for knowledge.

Gilbert

P.S. How often do you go outside of your comfort zone?

***'Cause getting made you want more  
And hoping made you hurt more  
Oh, there must be  
Something wrong with me***

*Something Comforting* by Porter Robinson

Grad school has shown me that personal growth is enhanced when outside of your comfort zone. Whether it’s getting called out in a class and answering with something that sounds outlandish, or moving to a state where sometimes the temperatures reach an unimaginable -40 degrees (which is the same in both Fahrenheit and Celsius!), there are a variety of ways to get outside of your comfort zone to grow! Why does caramel cheese exist, and why does it taste so delicious? By harnessing creativity and learning when to ask why, I’m starting to find my stride on this journey for discovering knowledge.

Hey future me,

I was chatting with someone recently about TV shows. They were surprised that I had never watched How I Met Your Mother and Arrested Development.

“Why not?”

“Honestly, there are too many white people in them.”

I thought they knew what I meant. But a couple of days later, they recalled the conversation: “I looked up the demographics in those shows, and they don’t skew too far from the population in the US.”

Why did they think I didn’t want to watch those shows because they don’t seem realistic? Why didn’t they just ask me to expand upon my point, to clarify? I would have told them I just don’t think those shows are likely to portray experiences that I can relate to.

As a person of mixed descent, I’ve found it difficult to figure out how I belong, how to fit in, when I can be myself. I love to share my culture, to express my perspectives, and to listen with no judgment. So why do I oftentimes feel like an outsider?

In science I feel the same. Coming from a biology background into a biochemistry program, my transition has been a bit more arduous than I expected. I’m finding it difficult to communicate how I understand science with the wording and depth that people need to understand it. *What am I missing in my knowledge? Do I have the ability to navigate the field of biochemistry? Do I even belong here?*

Imposter syndrome: a persistent, unjustified feeling that one’s success is fraudulent. Because I know how the world perceives me just by the color of my skin, I sometimes fall into this trap of perceiving myself in the same way. When these thoughts arise, they quickly spiral into a mix of other negatives: *I’m a token minority for my program to look good, people don’t understand me because I’m just not smart enough to be understood, if I wasn’t a minority I wouldn’t have been accepted, I don’t deserve to be here.*

A comic strip of a person

Description automatically generated

In both my personal and professional life, I feel like an outsider. Does that feeling ever go away?

Gilbert

P.S. When was the last time you felt insecure because of your identity?

***The world sayin’ what you are***

***Because you’re young and black, don’t believe ‘em***

*Outside* by Childish Gambino

I know that everyone has their own unique experiences. We grow up with different parents, educations, foods. Are exposed to … sports, films, lifestyles. I thought coming here I would feel more comfortable because I’d find more people who questioned things, who want to learn by asking questions and developing insights into other people's unique experiences. So why does it feel like I have to conform to what other people expect of me rather than being given the chance to share my own … I recognize that I’m being pushed both emotionally and intellectually more than I’ve ever been pushed before. I just wish I could confidently say that’s a good thing.

Future me,

A couple of days ago I had my preliminary exam, or prelim for short. It’s the most unique exam I’ve taken: After months of conducting independent research, reading academic papers, and learning as much information as I can about my membrane protein folding and association, I prepared a presentation detailing how I’m going to successfully complete my research.

I’m put into a room with my mentors, 5 professors who I’ve asked to supervise my progress during my PhD. I explained a carefully thought-out research proposal to these professors who have many scientific publications to each of their names. I stood in front of them talking about the beginnings of my project, sharing my ideas to bring this research to completion. And then for an hour after that, they asked me detailed questions, expecting me to think on my feet and to come up with reasonable answers:

“What’s the definition of van der Waals?”

“What will you do if your experiment doesn’t work as you expect?”

“If a tree falls in a forest and no one is around to hear it, does it make a sound?”

I left the room to allow my mentors to discuss how I did. Deflated, exasperated, mind afloat, I finally remembered to breathe.

“Did you just finish your prelim?”

I nod to the student passing by in the hall.

“Congrats, the worst part is over.”

27 minutes of waiting on the floor later, I’m called back into the room.

“Gilbert we’d like to thank you for the presentation. We think your progress has promise, but we can’t give you a pass at this time. There are some weaknesses…”

But I tuned the rest out. They didn’t say the word, but I knew what it meant. *I failed.*

“…However, we do think that you’re making progress and look forward to seeing you have another opportunity next year.”

I cried for an hour and a half in that windowless, … lit room. I couldn’t look at anyone the rest of the day. I didn’t want to talk, I didn’t want to listen to music, I didn’t want to exist.

I went back home, laid in my bed, and cried until my eyes had no tears left to give.

Gilbert

Dear future me,

I’m anxious. I started this journey to learn science, but I think to pass this exam, I’m going to have to learn about myself. Why does it hurt so much that I didn’t pass my prelim? Why do I want to pass so badly?

Some facts:

* For many prelim exam failures, there is no second chance
* I have a year to move on from this grueling, heartbreaking moment just to do it all over again, hoping for a different result
* I’m one of the few black people in my research program, one of the few who fail prelim, and one of the few who gets a second chance

Maybe I feel like this reflects poorly on my ability as a scientist. Or because I was hoping to become a professor, to mentor students, to lead my own research lab. Because my future feels less secure now? How can I plan for anything in my life if I’m not sure where I’ll be after next year?

I’m not a particularly proud person. I’m insecure about my abilities, my wording, and my identity. But I want to leave Wisconsin on my terms, and to do that I’m going to have to grind, grit my teeth, and learn. I have to figure out what I was missing, why I wasn’t able to learn enough for my first prelim, and what I can do to pass next year.

This burden feels heavy, like a large weight resting on my shoulders. If I don’t pass, what does that say about me? What does that say about other minorities in science?

Gilbert

P.S. Have your insecurities gone away? (better question)

***I don’t belong here, let me start over***

***I wanna sleep so wake me up when I’m older***

*atlas* by Keshi

I think this song fits how I’m feeling: wanting to cry all the time, strained by feeling constantly overwhelmed, with a small hint of just wanting to be better. Keshi alludes to these feelings by using the titan Atlas, known in Greek mythology for being condemned to hold up the sky. Having an immense and what feels like impossible weight on your shoulders and having to live with it forever. These lyrics play in the second verse, and I feel them constantly pulsing through my head. *These thoughts are heavy, burdensome, painful. I don’t want to fail. I don’t want to feel like I just have a second chance because I’m a minority. I don’t want to feel like a token student in this very white state. I just want to do science and learn. How long will I have to live with these feelings of failure? I have to live with this failure forever. Will these feelings ever go away?*

And the spiral continues on a never-ending loop. I think I’m going to sleep for awhile before preparing for what might be the most learning intense year of my life.

Gilbert

Dearest future me,

*I sincerely hope that this letter finds you in a good space, and that no burden in your life is too heavy to bear. Please take care of yourself.*

A few months ago as I was waiting for the bus, I had this dark notion. My head felt heavy and everything appeared to go black. I could feel that my eyes were open, yet things looked motionless, grayscale. Intrusive thoughts flitted in and out while I waited for the bus.

*You’re tired. Things in life aren’t great. Is trying this hard worth it. What if you just stopped trying?*

But wouldn’t my friends and family be disappointed?

*No, no one would care. You could stop now, give up, what’s the point.*

I want to end this on my own terms.

*You still can. You don’t have to leave. Just step forward. Don’t think. Move.*

But.

*Move.*

The street?

*It won’t take longer than a second.*

Oh the bus is here.

I’ve had bouts with depression in the past, but this time was different. Life felt hollow, empty. It felt like I was stuck in a dark room, and all I could see was a door with light popping through the cracks. I’ve wanted to disappear before, but never to the extent that my inner suicidal ideations were so clear. These thoughts were relentless until one day as I was preparing to start my day with a walk through the farmers market, I found myself unable to move. My mind was awake, my inner voice telling me to move. But my body wouldn’t listen.

It’s a scary thing: to be able to think “Move”, “get up”, “go over there” while your body lies motionless and unresponsive. I lost my desire to spend time searching for new things to do, lost enjoyment in spending time with friends, stopped eating because I’m too focused on work, and my mental health continued to fade as I was losing my motivation to live. My therapist couldn’t fix my issues, but she helped me recover from being a shell of myself. I was able to state my feelings, rationalize and reflect on my thoughts, and start putting myself back together. My journey back to myself began with her advice: “Take risks”.

Irony is a funny thing. To think that risking my mental health is the motivation to keep me here to pass my prelim because that feels riskier than just leaving. I know that’s a bit morbid, maybe a little sick that I can abuse my mental for success, and it’s ironically comical that this is what’s motivating me to keep going. But I’m alive. And it’s time to put in the work to learn some science.

Gilbert

P.S. What’s the riskiest thing that you did last year?

***You build it to a high to say goodbye***

***Because you’re not the same as them***

*I Always Wanna Die (Sometimes)* by The 1975

My body stopped listening to my inner voice. Although deep within me I felt these feelings of wanting to die, to disappear, something within me felt that it wasn’t right and resulted in outright rejections of simple thoughts of movement.

My limits are being tested here, mentally, physically, emotionally. But I’m still here. I’ve never acted on my intrusive thoughts, and I hope that it continues this way. But the risk is there. Outside of the obviousness of the song title and the lyrics alluding to suicide, the sounds of this song are what really resonate with me. The strings fill me with hopeful melancholy, accentuated by the strain in the singer’s voice.

Dear future me,

*Did you ever think of how you could impact humanity as a child?*

With the world currently ensconced in a global pandemic, with minorities being abused and killed in a time of global strife, why is understanding how proteins interact important?

*If we could understand how these viruses interact with proteins at the membrane, could we engineer proteins that prevent this from happening?*

As a student of the sciences, it’s truly bizarre to know that I’m living through this piece of history, and it’s given me a lot of perspective while preparing for my prelim. For anyone studying virology in this time they get to see the applicability of their research in real time. But for someone generally trying to understand the forces that impact membrane protein folding, could my research ever help anyone?

*But how do you engineer proteins to prevent this? Well, you’d have to have a really good understanding of the forces causing proteins to interact. By simulating the knowledge we have of these forces in a computational model, we can get closer to understanding how to influence these interactions in reality.*

Maybe those thoughts are what I needed to really be zoned in to take my prelim. I’ve learned a lot about membrane proteins, about biophysical forces, and about why interactions are different inside versus outside of membranes. I’ve learned to question what I don’t know about a subject, reading papers critically and marking any paragraph, sentence, word that I can’t fully comprehend in my brain. I find that information, usually with more things I don’t know, and continue to go further, like peeling away layer after layer of an onion until I reach the core bit of knowledge that should stick with me to feel like I understand.

*We can then test these simulated models with an experiment to can see how well our current understanding is (the predicted simulation) to what we want to understand (the experimental results)!*

Know what you don’t know. With this credo that my professor preached to me in the back of my mind, I joined my mentors on a zoom call, pitched my research to them, and after 40 minutes of defending my research my prelim exam was over.

*No one has explored the extent of the effect of van der Waals packing, this force that occurs between atoms in close contact, in membrane protein structures. Is it a strong force in membrane protein interactions? My research is focused on understanding how impactful it is.*

I passed…*But did I really do that much better? Was I that much more prepared?* Yes and yes*.* But unfortunately, all this learning and digging has taught me to search for more questions: *What don’t I know?* With the police brutality and empowerment of the Black Lives Matter movement happening right now, *did I pass because it would look bad if one of the few black people in the program gets kicked out for failure?*

Gilbert

P.S. What are 5 things you’re excited to do in the next 5 years?

***Time has come, take it all in***

*5 Year Plan* by Chance the Rapper

A black background with a black square

Description automatically generated with medium confidenceA PhD is usually 5 years, but who can plan for failing a prelim OR for a global pandemic. The chords in this song remind me of a sunshower: a sprinkle of refracted sunlight, dancing on your skin. It’s like a prescription of hope for the future. And when Randy Newman, the singer of *You’ve Got A Friend in Me* sings these lyrics, it resonates nostalgia. Even if a plan doesn’t work out completely, even if you can’t exactly predict how things will go, you can still appreciate what happened because you’re around to do so. It makes me feel an optimism for the future in which I will feel nostalgic about the present.

I deserved to pass this time, but my feelings of my identity driving my success still weigh heavy on me. There are a lot of things that I still don’t understand about my project, but I’m now trusted to take it to completion, and that’s what I’m going to focus on despite my inner doubts. My research isn’t the biggest thing, and it likely isn’t going to be used for anything impactful. But just the fact that it’ll be a small bubble on the expansion of human knowledge is enough for me for now. And hopefully I can be some sort of example for other minorities to show that these degrees in higher education are possible.

Dear reader,

A video game screen capture

Description automatically generated

Hi! Thanks for indulging me and reading through these letters. I appreciate you taking the time to share a bit of my journey with me and thought this would be a nice place for a break. Graduate school has been quite a pensive and emotional journey, one that has taught me many things. There have been times when I’ve been completely lost and broken by the PhD, and others where I’ve been excited for what’s to come.

*Into the Woods* by Mree

Yet, despite how different those feelings are, I’ve found myself closing my eyes and finding respite in listening to this song on repeat. To me it channels both the fear of walking through a foggy set of woods as well as the excitement of the discovery waiting ahead. Whether you’ve read through and identify with me in some way, are just curious and wanted to understand a graduate school experience, or if you’re a random person reading this for entertainment, thanks for being here now. I hope that wherever you are on your own journey that you’re able to find solace and happiness.

You’ve made it to the middle stages of my journey. The next few years of graduate school blurred together. It’s like the pandemic slowed time for me while I was in grad school. And then as if no time passed, stores began to open up, mask mandates ended, and people started to gather again. 3 years of anguish, struggle, and stress passed by and I finally reached a stage where I did enough research to graduate. I’m not that great of a student, it takes me longer to feel confident that I know enough about a subject to talk about it, and I’ve never been good with languages so learning multiple coding languages took quite a bit to get to a place of comfort. But despite all of my shortcomings, I’ve somehow been able to continue this journey and reach the highest height of learning. I hope you enjoy the rest of the story. The triumph is coming! But there are still a few more lessons to learn along the way.

Thanks for reading, I’m sending much love and support your way,

Gilbert

Dear future me,

It’s been six years now, and my time here is finally coming to an end.

At my most recent committee meeting, I was given the acknowledgement of my mentors that I’m close to finishing up: “We can see the story forming, and we think you’ll be able to graduate next spring or summer.”

Experiment after experiment failing over and over again, I can’t help but attribute this to myself.

Do you remember the last time you had a mental spiral? One of those times where your thoughts began in one place, start looping into another, and then another, and another, until it feels like an infinite abyss of issues, problems, conundrums that you need to work out in your head? I’ve been really bogged down by this experiment, my computation doesn’t seem to match the experiment well, I really need to take a look and make sure that everything is working properly, but if I take that time when am I going to be able to organize my data for my thesis, fine I’ll just do that this weekend, but when do I get to reset, relax myself and do something fun, I still need to go grocery shopping, is eating even worth it this week, do I even have money to spend on eating, why did I choose such an expensive place to live, what am I going to do after I graduate, how will I make money to live, I have no marketable skills.

*What is even the point of this PhD*?

Pensive, contemplative, unrelenting, I spiraled further into some uncharted territory: what is my relationship with my PhD? We’ve built this intense relationship, where it can do no wrong to me and I’m always at fault. Experiment after experiment, failure after failure, I always attribute it to myself. I do whatever I can to reach the needs of my research, I give it all the time that I have at the detriment to myself and my other relationships, I don’t allow personal needs like hunger or sleeplessness to prevent myself from focusing on the research. For the last 6 years, my science, my project, has been my life. But now that I’m getting close to the end and it’s starting to treat me with respect, is it wrong that I can’t even feel good about the fact that I’m finishing up?

*Why does it feel like I’m being pushed away?*

Gilbert

P.S. When was the last time you had your heart broken?

***'Cause is it really love if it don't tear you apart?  
Now somethin' is different  
You're sayin' you're all in  
But I think I like you better when you're breakin' my heart***

*When You’re Breaking My Heart* by Gatlin

I knew I had my best data, that my research felt like it was concluding something interesting. Yet all I could think about was leaving. I just kept thinking *should I quit now?* The work, the learning, and the chase of it all is what kept me here. With the chase reaching it’s climax, *why am I still here?*

In this song, Gatlin realizes that she loved the chase of a relationship more than the person. For awhile now, I’ve given up on my future. I don’t even think about it anymore. I don’t know if I want to teach, to support and mentor students, or even remain in science. All I’ve been focused on is chasing this PhD. Rather than allowing me to fall deeper in love with science, all the work I’ve had to do for my PhD has led me to question my love, my passion for anything at all. It’s like I’ve fallen into this trap of doing, but I can’t remember my excitement at the joy of discovery, the passion for finding knowledge in the unknown. Those questions from years ago start ringing back and forth in my head: *Do I belong here?*

A fire in the sky

Description automatically generatedDear future me,

I didn’t realize that the end of this journey would lead to such an intense and paralyzing period of everlasting burnout.

[Burnout](https://www.psychologytoday.com/us/basics/burnout): a state of emotional, mental, and physical exhaustion brought on by prolonged/repeated stress.

I picture burnout as that once unwavering fire, that indelible passion inside me gradually fading away. My fierce zeal for science, the beautiful, complex system that naturally formed life, in discovery within an academic space, feels like it’s nearing an end. … (something clever about kindling and using everything you have for it here. And you’ve run out of things)

It feels like I’ve already given a lifetime worth of energy to this endeavor called PhD. My body is perpetually tired, mind incessantly ailing with doubt, anguish, distress. Another sleepless night. Hours pass and I continue to be useless, thinking of all of the things that I have to accomplish to graduate, yet being unable to do any of it. Everyday feels like I’m searching for something: *what’s the one thing that will pull me out of bed?*

Too many goals, temporary objectives, efforts to maintain content and find solace in the chase.

*Today I’m going to analyze this set of data, I’m going to write this part of my thesis.*

But an insurmountable frustration begins to set in. The goals shrink as the hours in pass, but so does my willingness to do anything.

*I’ll prepare for my presentation next week, maybe take out the trash, go grocery shopping, do laundry for the first time this month, clean the kitchen, wash dishes from the fried rice I made 2 weeks ago, feed my cat, eat SOMETHING, shower, brush my teeth.*

This overwhelming feeling of powerlessness forces me to abandon that teeny glimmer of hope that I would make it to work today. Only one goal is left.

*I just want to get up and leave the comfort of my bed.*

It’s 3 pm and I’m ready to start my day. I’m alive…*but am I well?*

Gilbert

P.S. …

***And we keep doing these things, not because they're guaranteed to make us feel good  
But because failing to do them?  
Guaranteed to make us feel bad***

*GOOD MORNING SUNSHINE* by The Narcissist Cookbook

At a time when I just needed something, ANYTHING, to feel good about, I discovered this song that immediately resonated with me. Some days it’s hard to get out of bed, difficult to motivate myself to do even the most inconsequential things. But I’m not alone. Many people succumb to declining mental health, and we find ways to work through it as best as we can. Even with all these anxieties bogging down my mind, I find a way to tell myself that I’ve done enough each day. It gets me through, has kept me productive, and is bringing me closer to the end of grad school.

Geez future me,

What does it even mean to be organized? Knowing where you put something so you can find it in the future? Or being able to give something to someone else and them being able to fully follow what you’ve done?

One of the most important characteristics of science is reproducibility. After spending years to test, refine, and now explain my data, it’s important to put it into a format that allows it to be repeated. My paper is being submitted for publication, and with it I need to put effort into making sure my computation is reproducible.

But wow is there a lot of code to parse through. From designing protein structures to analysis to finalize my data, I’ve written thousands of lines of code. So. Many. Programs. I’ve been in the thick of it for years, writing this code, making these programs, but it’s time to craft some detailed organization.

Will it be perfect? No. What would perfect even be for organizing code, files, and data? With only a single coding course during my entire graduate career while learning 3 coding languages, I’ve had to discern the most efficient way to organize it all. If there is a universal, perfect, pristine way to do it, it surely would have been nice to learn that early on.

But I think as individuals we all have different ways to organize. There is no perfect. Improving over time, discovering the best ways to share, I appreciate the … improvement.

Besides, it’s not like anyone actually goes back to look at old notebooks and theses and old bits of data anyways…right?

Gilbert

P.S.

WELCOME TO SOUL, PRESENT by Q

Organizing code is a vibe. Fixing seemingly nondescript identifiers, adding in # COMMENT TO ELUCIDATE THE BELOW LINES, while making scripts simple to run and self-explanatory. The electric, …

Dear future,

Recently my mind has felt hazy. It’s been constantly active, thinking of new ideas and wanting to work. I’ve been frantically working to finish up final experiments, cleaning up my data and code, writing my thesis. But I’ve reached a point where … it was too full. I close my eyes to sleep, but the thoughts keep ringing around, drowning out my tinnitus. 12:19. I readjusted, pulled the sheets a little closer. I don’t enjoy sleeping tight. It feels restrictive and reminds me of being unable to force my body to move. 3:13. I stare at my eyelids, no rest or reprieve. I firmly understand what it means to have a restless night.

Insomnia is for me is like the optical illusion of circles that appear to move. It seems to originate from stress, but then the amount of effort to sleep is stressful. It becomes a hypnotizing cycle that perpetuates itself with less sleep and productivity on my mind thoughts.

*Why aren’t I writing right now? Couldn’t I be finishing up some experiments?*

Instead of sitting in bed and doing nothing, I succumbed.

*If I can’t do anything else right now, might as well get some work done in lab.*

Have you ever worked odd hours? When the traffic lights are blinking yellow, and you’re one of the few beings filling the silence in the air? Throughout my graduate career I’ve had a multitude of unorthodox workdays, typically when things are going wrong. But recently, I’ve noticed I feel more steady. Less anxious about getting data before a major meeting, and despite how tired I’ve been, confident that I’m going to do my experiments well. From taking an hour to mentally prepare to do an experiment to 5 minutes. I’m not sure if it’s just knowing there’s an ending to this research or something else, but it’s allowing me to look back on these days a bit more fondly. To appreciate the stillness, and to truly cherish the freedom of graduate school. I’ll miss taking days to think and test different ideas, to decide how and when to do experiments, to be able to leave lab as the sun begins to shine on the lakes.

Gilbert

P.S.

***You don't cross my mind, you live in it***

*Off Day* by Lyn Lapid

A couple of letters ago, I mentioned that I would miss the chase, miss the ways that I’ve been forced to push myself past my limits just to learn. But I’m beginning to realize that the enjoyment has been a bit more than just the chase. This environment has pushed me towards discovery: time to allow my brain to acclimate to the idea of working at the boundary of human knowledge, allowing me to excise biases in pursuit of truth. It reminds me of the days when I was a kid and I would stare at the sky, allowing thoughts about everything to freely flow in and out of my mind. I feel like graduate school harnesses this latent ability, allowing for deeper exploration within our understanding of anything you find interesting.

This song feels like it bundles you up in a freshly washed blanket on a snowy winter day. A blend of tranquil and reassuring warmth. I’ve questioned myself and my capabilities for the past 7 years, but I’ve finally made it to a place of what feels like mutual respect. After that rough spell at the start, we’ve kind of figured each other out. You’ve lived in my mind, balancing out how I’ve treated myself to make it through. Pushed me to grow by finding comfort outside of my comfort zone. Pulled me out of the ebbs of 36-hour water diets, to the flows of buying Babcock ice cream as a reward for accomplishing tiny goals I set for myself. You’ve been that warm blanket for me, and I never expected it to be so comfortable. Which means it’s probably about time for me to move on.

Dearest future me,

What does it mean to have a PhD? (this one could just be the ending, reflecting on my journey, realizing that I don’t care about the actual degree itself, that it’s all about the learning I did along the way)

P.S.

Wallflower by mxmtoon

Dear future me,

Sometimes I feel robotic.

In my first 3 years of graduate school, nothing worked. All of my experiments went poorly, and I had to get accustomed to the idea of things always failing.

*Phew. It’s going to work this time. Otherwise I’ll just do it again, no problem. And it’ll definitely work next time.*

I would always think that the first experiment would fail, and I’d be successful the second time. But that’s not how it worked.

*Okay third times the charm. I’ll just change this one thing that I did. Otherwise, fourth or fifth is pretty good too.*

But I’ve finally reached the point in my graduate career where I’m confident. Either my experiment will work well because I know exactly what I’m doing, or I’ll be able to figure out the reason it didn’t work within a couple of tries. I’m no longer anxious about having to do them and the potential of messing them up. I can plan 2 or 3 experiments around one another, able to do things well and efficiently.

And today I think I’m starting to understand why: I’ve done this same experiment 100s of times, getting better with my hands and my thought process while doing it. Although this isn’t all that my PhD is built on, this experiment is one of the most fundamental parts of my research. So here is kind of how it works:

Autopilot by Tiffany Day

Gilbert

Dear future me,

University of Wisconsin-Madison finds itself on an isthmus: a strip of land between the two lakes Monona and Mendota. Comprised of about 50000 students and 25000 staff, 3 out of every 10 people you see in and around the city are affiliated with the school. I had never visited Wisconsin before I first arrived here to interview for my PhD program. I quickly learned to love cheese curds, spicy cheese bread,

When I first arrived here to interview for grad school, my hosts took us out for a night walk around the city. The showing us what types of things you can do in Madison

But on this particularly night, it was cold and quiet, and they took us for a walk on the frozen lake. I stared into the darkness and then closed my eyes, the only differences being the chill against my eyeballs and the phosphenes on the backs of my eyelids.

The end of my PhD journey has been extremely isolating. lI actively choose to work, to write, to think about research. There is nary a thought of allowing myself time for anything else. And a lot has changed in the last 7 years. This year, the lake is frozen, but due to global warming the temperatures haven’t reached the same chilling, biting cold, and it’s not safe enough for many of the winter activities of the past. I won’t get the opportunity to relive that moment on the lake before I leave, but that memory sticks out to me. I couldn’t have imagined the path that a PhD would take me: from failing my prelim, to developing an algorithm that creates membrane protein structures, from feeling like I knew and understood myself, to wanting to have more time to really learn about my needs and desires. From knowing basic biochemistry to becoming what many would consider an expert in my field.

***Beware of people that say that they know everything about a subject  
Because, people that think that they know everything  
Are the ones that know nothing***

*Even If It’s Lonely* by Hazlett

But if graduate school has taught me anything, it’s that I don’t know much at all. I’ve poured so much of my mental energy to learn the intricacies of how membrane proteins fold, that I know how little I know about it. My PhD doesn’t mean that I’m an expert in a scientific field, but rather that I’ve become an expert in how to learn and discover things that I didn’t know before. As you’re reading this, I haven’t yet defended, the thesis isn’t submitted, and I’m not even sure if my committee will award me my PhD. But I know that I’ve learned … on this journey, and I’m ready to move on to something else. Ever since I became a biology major, I wondered if I actually loved science. And I think when I came to graduate school, I knew that I did. I wanted to become a professor that minorities could look up to, to be able to teach others how to learn, to inspire the curiosities of the next generation. But years later, I can feel that desire fading away.

Can you imagine knowing that you loved something, and then wondering years later where the love went? Time is a fickle thing. Like any relationship, you need reminders about why you fell in love in the first place. Graduate school for me was a grueling experience. As I’m sure many former graduate students understand, constant failure, trying an experiment again, failing, and learning to finally find an answer is extremely demoralizing. It takes a special kind of person to continue that journey. And right now, I don’t know if I’m it.

For now, I’ve used up all of my passion and determination.

***I’d rather be free***

*Escapism* from Steven Universe

My relationship with my PhD has me thinking about how to regain that kind of love: when will I be inspired again, not by some external force like graduation, but by an intense drive and passion to learn? I’m not yet sure what I’ll be doing next, or if I’ll even want to be in science. But I recall something my dad told me when I was a little boy: “If you put your mind to it, you can learn anything.” Thank you PhD for teaching me how to learn at the highest level. I’m not the smartest or most brilliant person, and this journey wasn’t anywhere near a perfect PhD. But I think it was perfect for me because it made me grow into the person that I am: a tryhard, a thinker, and someone who now knows I can make a difference somewhere, someway if I just put my mind to it to learn enough.

Gilbert

How often do you feel useless?

Over the final few months of my PhD, I found myself feeling lethargic, unmotivated, and lacking any desire. I want to wake up. I want to work. To write. To do experiments, catch up with friends, to graduate. But instead I find myself in bed until late in the afternoon, doomscrolling, hoping to see something that will allow me to get up to no avail. My mind is foggy, I try to speak but no words come out, just sounds of aching, reptilian like. I want to graduate. So why can’t I get up?

For months now I’ve worked on the good habits that I’ve learned from: giving myself breaks, reminding myself that I’m doing well, taking things one day at a time, remembering to eat, focusing on one task at a time. But when getting up is the one task, and I’m frustrated that I can’t do it, the spiral begins again.

But today I’ve found a trick: temperature. My bed is made of metal, and the contrast between the warmth of the sheets and the cold metal bed frame is enough to jump start my day. I’m up, I’m awake, and I can’t be disappointed in myself for these days. They suck and make me feel like complete garbage, but I’m trying everyday and the end is near.

**New letters:**

Wind tempos-seeking beauty in the mundane; random sounds in nature, in science, etc. Collecting the sounds of science, wanting to use them in some way; maybe this could be the song about frisson? Weirdly enough, I think most of my learning coincided with after failing my prelim. Like I was able to realize how I was learning and how to learn things a bit better

Lost in the world-verbatim. I’ve learned that I know so little about so many subjects, let alone the one that I have expertise in. Why not take one of the best closing songs of all time and end with it? You’re my questions, you’re my truth. So many relevant lyrics in that first bar.

Worth it-I don’t know if I’m worth it; passing prelim? Finally getting good data?

**Welcome to soul, present-the day I learned that I just need to be better organized in my coding and finally found a decent way to do it.**

Forever-maybe to replace pride is the devil: talk about how it feels like a year lasts forever. The build up comes, then slows down, comes up again, peaks, then slows, then reaches a new high. I figured out so much in that time: how to be myself, how to feel more confident in my science, how to code something well. Maybe talk specifically about how getting to a structure that seemed to work took forever to do, and felt like forever as well? I still remember the first day my code worked. Bring back that memory here.

Outside-I feel like I want to include it. There’s something there, but I can’t grasp the words as of yet

Song-realization that I don’t share of myself enough and let people know enough how much I appreciate them. Because I’ve been so bogged down with work that I can’t potentially give them the time that we need for growth in a relationship. I cherish all of the people near me and that spend time with me, chat with for fun or for serious, and anyone who takes the time to spend with me. How do I make this known here?

Song-may fit with the previous: my data and my thesis are not more important than my life

**Wallflower-when I realized that I don’t care about my own personal successes in science, and that I’m okay with the fact that I may have reached my limit of passion and love for science. It’s okay to change, and it’s okay to be different. Comfort in my being without caring what others think.**

Other writing options:

That weekend I spent almost x hours commenting and organizing my code for the future…probably with that psychedelic song by Q, welcome …soul or something

**First day my design program worked**

* Details:
  + Days I would lay on my floor, imagining how atoms move and then crying because I’m unsure if I understand things properly

Admissions committee

SciMed

Finally a short list of the pros and cons of a PhD that I came up with

Pros:

* Learn more then you probably ever imagined could be learned
* Become a foundation for creating new knowledge
* Hone your ability to learn and know what you don’t know
* Freedom to work at your own pace and on your own time schedule

Cons:

* Low pay and LONG hours

Channel of negative thoughts. Sometimes it flips on and every channel is it

**Key questions:**

* How does it feel to almost receive a PhD as a minority in stem? What would you say surprised you the most about the experience?
* When did you most feel like an imposter?
* What did you learn from yourself whenever you burned out?
  + Kind works of encouragement for myself are needed/talking to myself through my problems and issues

**Guidelines for my writing**

* I think after here, it’s about getting punchy titles that work well with my song choice. It would be nice if the titles were tied to lessons of the stories that I aim to tell. This first example below is more of a lesson than a story, so I’ll have to change that around a bit.
* One thing that I’ve found myself not doing well is SHOWING the story. I think my memory right now is hinging on an experience rather than actually drawing out a specific portion of the memory. Draw out that first and then expound upon it.
* I think I figured it out. I’m going to picture I’m writing to TA, the person who I’ve wrote the most letters to in my life. I think that voice will flow out a bit more freely.
* And finally, end it with how the song fits by describing and picturing the sound (close your eyes, listen, and sing along)

Burnout must be written about:

* This feeling of wanting to do things but being unable because too many things are going on in your mind
* Feeling of failing people (friends, family, lab mates, pi) because you’re unable to do the things that you want to do
* Culminating in tears, long stays in bed, restless nights of sleep, insomnia, banging head against the wall
* There are so many things to do to get closer to the end, and deciding what to do first is draining because organizing it all is draining because then the end is closer and closer but also feels farther. Like you can see the light at the end of the tunnel, but when you put all the things up that you need to do, it just feels like that light is getting farther away and it prevents you from doing anything

Other things could write about:

* Being in the middle of black lives matter and stop Asian hate

My favorite PhD Comics shorts:

A cartoon of a person in bed

Description automatically generated

That time I thought I left the Bunsen burner on and would burn down the entire building and I couldn’t sleep at all because of it

<https://phdcomics.com/comics/archive.php?comicid=1991>

A cartoon of a person walking towards a building

Description automatically generated

Every. Single. Time. <https://phdcomics.com/comics/archive.php?comicid=1965>

A comic of a person with her hair pulled back

Description automatically generated

<https://phdcomics.com/comics/archive.php?comicid=1975>

Citations

For better or for worse: https://7esl.com/for-better-or-for-worse/

Kary Mullis quote: https://www.youtube.com/watch?v=xd4De47ldYs&ab\_channel=NobelPrize