

in vivo



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ISSUE 1

Cover Art by **Kelly Li, M2**



letter from the editors

Where does medicine reside?

Perhaps it lives with science: glass flasks and microbial models, ascending in size and scale to case studies and clinical trials, until statistically satisfactory outcomes find their way into journals and textbooks - first medical, then historical. Yet medicine is also a craft of sorts, and so it rents a room with other professions that call what they do “practicing”: lawyers, architects, musicians. From the recipient’s view, medicine lurks somewhere between terror and hope, fluctuates wildly, leaves an indelible impression. For the medical student, it is an evolving relationship. At times, our education is empirically detached, cold enough to see your own breath; in others, it is blisteringly intimate in ways we find ourselves unprepared for. We occupy a Schrödingerian state of being both amateur and authority, consumer and contributor, patient and (future) provider.

As a group of first-year medical and dental students, we chose to make sense of this evolving relationship through our shared love of the humanities. We created this publication, each page a uniquely adorned room, for medicine to reside in. It lives in our paintings and photographs that capture the dynamic exuberance of life within a static frame. It lives in our sculptures shaped by hands that pull sutures. It lives in our poetry and prose that explore the personal and the broader societal implications of what healthcare means, of what health means.

We chose the name In Vivo — Latin for “within the living” — because it is in each of our living experiences that medicine resides and flourishes. We hope that, as you view and read what our talented medical students and faculty have produced, you find space to share and reflect on where medicine lives with you.

Sincerely,
Yilong Peng and Emily Y. Yang
Editors-in-Chief

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table of contents

Affect Naeema Hopkins-Kotb	1	Wire Sculptures Deepak Suri	32
Touch Kelly Li	2	I swear you were here Mariam Dogar	34
The Broken Vertebra Rose Berman	4	the same thing Shahaan Razak	38
Four Carvings Robert Martuza	7	Untitled Avina Rami	40
A Brief Concession Cameron Hayes	10	At the Membrane Steven Criss	42
Untitled Anand Chukka	11	Twenty Years of Snarls Jacob Meyerson	44
White Coats, Cotton Shirts Clara Baselga-Garriga	14	The Temporary Brilliance of Life Liz Roux	46
Untitled Sophie Kim	16	Losing Time Priya Amin	48
Differential.py Sarah Wagner	18	on love Allysa Warling	51
Putting My Money Down Aldis Petriceks	20	I Believe in Doubt Robin Colgrove	53
the air we breathe Sophie Yu	22	Wait No More Mark Williams	54
memory Jill Jones	24	We Exist (Haiti) Mark Williams	55
Untitled Mika Jain	27	Shine Out Yilong Peng	56
Reflection Aditya Jain	28	Shimmer Jessica Sun	65
		What Makes A Life Jean Adomfeh	66

Affect

By Naeema Hopkins-Kotb

M2, Harvard Medical School

You believe with conviction that you cannot be helped.
It is my deepest conviction that I must help.
It seems we have reached an impasse.

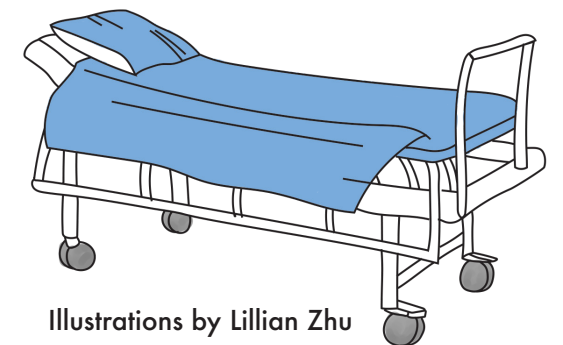
You point to your big toe. It is inflamed the way
a stubborn balloon is inflated, and yet you do not feel
the pain of its rebellion, "Can you feel this?...
or this?" This is not where it hurts.

Your silence tells me you cannot point to your pain.
You hurt where I cannot see,
where I cannot palpate or auscultate or percuss,
where pills and prescriptions have ventured in vain.

It is hollow where you hurt, still your pain enshrouds you.
I was taught to open my questions, and I think it has allowed
you to see right through me. Your few words color the sharp
walls of the clinic room with a dusky, immovable blue-gray cloud.
I almost shiver.

I struggle to look for the sunlight in your words. I was taught to
grasp at the dangling loose thread of your motivation,
and show you how to pull at it until the fabric of your cloud
unravels to reveal the hope of sunrise that was always there.

I think we agree that you look for your hope of sunrise here,
during evening nights in clinic in front of names and faces
on badges and white coats of people who feel like me,
like maybe you can be helped,
like maybe you're already healing.



Illustrations by Lillian Zhu



Touch

By Kelly Li
M2, Harvard Medical School

A reflection on what it has meant to start this journey in a pandemic.

Fed up by my umpteenth request for permission to inspect a different part of her body, my first physical exam patient declared to me with some exasperation that as a doctor, I had already gained the privilege to step into her personal space. This is not a sentiment I will ever assume, but it stood in stark contrast to what had become the norm over the course of the past two years.

Only 15 months prior, my graduation was celebrated onscreen instead of onstage. As my dearest friends moved across the country, I left them with air kisses instead of tight hugs. For 4 years of misaligned schedules and then travel bans, the grandparents that raised me were flattened into pixels no larger than my computer monitor would allow. And from thousands of miles away, I lost friends and family without a final touch to remember.

Yet now, somehow, I could lean in and listen close to a stranger's chest. I could peer deep into my patient's eyes. Now, my hands could meet theirs to press at their joints, and learn another pulse that for just a moment, felt closer than my own.

Indeed, there are still many times when I feel like I can't reach my patients, and still, my hands often hover, uncertain. But something about my stiff, scratchy white coat has afforded me the privilege to reach through these new barriers of isolation, and I will always be challenged to earn it.

Broken Vertebra

By Rose Berman
M4, Harvard Medical School

As a fourth-year medical student, I spend my days in the hospital exploring subspecialties and spouting phrases like “would that change management?” My evenings, however, are often spent in a different world. This world is one of yellow biplanes and orange dunes — a world of wind, sand, and stars. It’s the world of an airline called *Aéropostale* and pilots named Saint-Exupéry, Guillaumet, and Mermoz. It’s a world written in French, contained in books I’ve collected for the past eighteen years. And on a page deep in a book called *Wartime Writings*, there is a little drawing of a broken vertebra.

The drawing is by French pilot and author Antoine de Saint-Exupéry. He wrote many books about the meaning of flying and his adventures in the desert, but he is most famous for his last book, *The Little Prince*. He has been my favorite author since my father gave me a copy of the book for my eleventh birthday. I cried when I turned the last page and saw a single star hanging over lonely

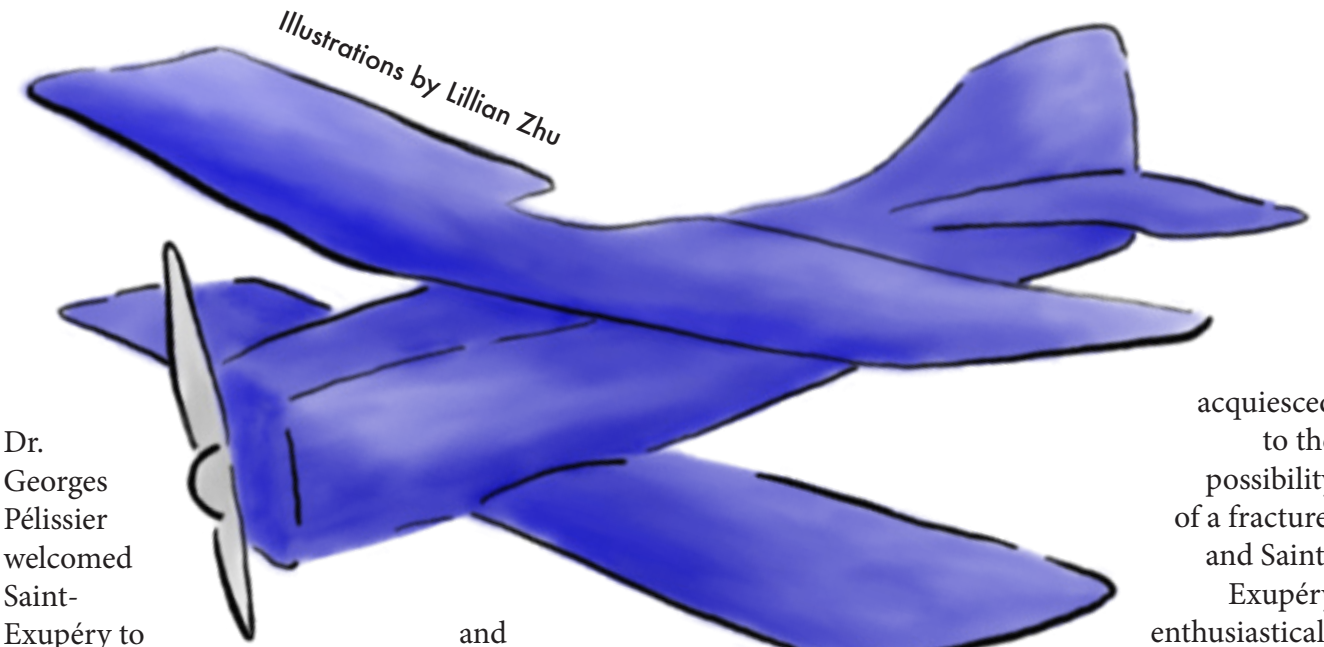
dunes. At the sunny kitchen table, I looked at the black-and-white image of the author’s face on the back flap and wanted to understand him, longed to know why he had written such a sad ending, wondered what he had meant to say.

This sudden connection turned into one of the driving forces of my life. I felt a link to Saint-Exupéry that I had never felt to another author; his native language was mysterious and beautiful, he was a pilot like my father, and his face on the book flap looked so kind and so sad. I began to collect books about him, his friends, and his airline. He never learned English, so I took French classes, watched French TV, and applied for an exchange program so that I could speak his language — so that I could understand him. As I grew older, I saw more clearly how complex Saint-Exupéry’s stories were. I saw so much of myself in his words, which meant something different to me each

time I came back to them; so often they reflected what was in my heart. And in medical school, as I began to grow into a doctor, I found myself returning again and again to the story of the broken vertebra.

I felt a link to Saint-Exupéry that I had never felt to another author.

In the fall of 1943, Antoine de Saint-Exupéry was living in Algiers. After two grief-stricken years in New York, he had finally obtained permission from the Allied air force to rejoin his reconnaissance squadron; Although he was well past the age limit at 43, they gave in to his persistence and a few letters from well-placed friends. But on one of his first flights, he sent the shiny new American airplane off the end of the runway. He was sent back to Algiers while the authorities debated whether he should still be allowed to fly. His friend



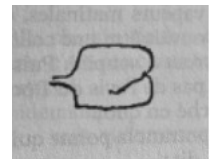
Dr. Georges Péliissier welcomed Saint-Exupéry to stay with him, and the writer who wished only to be a pilot moved into a bedroom upstairs.

The depression that he had felt for years now began to suffocate him. He thought about how the happiest days of his life were over — the days when he had flown biplanes through the skies of North Africa, delivering mail, presiding over a remote Saharan airfield and welcoming his comrades as they flew up and down the coast. He thought about his dearest friend, Henri Guillaumet, who had been shot down in a civilian airplane three years before. “Guillaumet is dead...tonight it seems as if I have no more friends,” he had written then. When people came to visit, Saint-Exupéry put on a cheerful face, sang French folk songs, performed card tricks that made everyone laugh. But when he was alone in his little room, he closed the blinds and lay in the darkness. His body ached from old injuries,

and he wrote, “I just want to rest. I want to be a gardener among the vegetables. Or dead.” He worked on his manuscript, which he felt he would never finish and predicted would be published posthumously (and it was, as a book called *Citadelle*). But he didn’t want to kill himself — he wanted to get back to the war. And die there, instead.

One night during a blackout, on the way to join Péliissier at dinner, he tripped on a short flight of unseen stairs. “There was a loud crash, which was me,” he wrote. In pages and pages of letters, he described the saga: Péliissier examined him and found no concerning signs, an X-ray showed no fracture, and a radiologist confirmed it. Péliissier told him he had a contusion and that the best treatment was to walk, but Saint-Exupéry was stubborn. He didn’t understand why the doctor wouldn’t tell him to stay in bed when he was in such pain. Another radiologist

acquiesced to the possibility of a fracture, and Saint-Exupéry enthusiastically illustrated this for his correspondent.



In fifth grade, when I first read this story, I didn’t know what to make of it. Why was he so fixated on the vertebra? Why was he so disbelieving of the doctors who were trying to help him? Wasn’t a negative X-ray enough proof? Why did he want to have a fracture? My tween self thought the story was a bit of a joke, a funny piece of trivia about my favorite author. But as I grew older, I saw how Saint-Exupéry’s depression must have influenced his perception of pain; I understood how much he was suffering. And when I became a patient with mysterious pain of my own, I understood that a fracture can be a comfortingly clear explanation — one that holds promise of healing.

In medical school, I began to think more about Pélissier's role. He wrote a memoir about Saint-Exupéry that was published in 1951, seven years after his subject disappeared during a reconnaissance flight at age 44. The doctor described how he had dutifully examined Saint-Exupéry many times, made sure he had access to the best imaging technology, and drawn on his medical experience to recommend — repeatedly — that his patient should walk outside, not lie in bed. "The only remedy is time," he told Saint-Exupéry.

But weeks and weeks passed, and Saint-Exupéry did not feel better. His back pain did not improve, he spent nights worrying about his family, he was desperate to fly again, and he longed so deeply for the past. Rolled up in his blankets, he tried to console himself by whispering *j'ai du chagrin à perdre haleine*. Grief takes my breath away.

Saint-Exupéry's little prince said, "What is essential is invisible to the eye; we can only see well

with the heart." But for all his medical knowledge, Pélissier never looked beyond his patient's words. He did not see how much his patient was suffering, did not grasp that the pain was more than physical, did not understand that there was so much underneath. He did not see that, deep inside, Saint-Exupéry felt he needed the doctor's permission to lie there in the darkness, because he couldn't do anything else. He needed his doctor to see with his heart, to acknowledge him.

Because of Saint-Exupéry, I work to refine this difficult skill. I try to hear what is underneath my patients' words and to sense what they need. So often, I've discovered, what they need most is simply my time. When one of my longitudinal primary care patients came in with a new symptom that she worried was a sign of cancer, I thought of Saint-Exupéry and his vertebra. I wondered what she was really afraid of, and I decided to let her speak instead of using my medical knowledge to bludgeon

her anxiety into submission. Her worries, I learned, stemmed from a sadness about aging, a sense of her own mortality that seemed to grow and grow. Symptoms that had not bothered her before now felt like threats that her body would betray her. Once she had shared this with me, it was easier to reassure her. It had never been enough to explain that her cold toes were unlikely to be caused by cancer — she needed someone to acknowledge the worry under the surface.

Although I cannot go back in time and offer Saint-Exupéry my listening ear, I offer it to my patients in his memory. When I come home from the hospital and spend time in his world of wind, sand, and stars, he reminds me not to get lost in the world of medicine and to always strive to see with my heart.

*Quotes and drawing are from Saint-Ex
Écrits de guerre: 1939-1944, Gallimard,
1994 (unless otherwise noted).*

Translations are mine.

Four Carvings

By Dr. Robert Martuza

MD, Professor and Chief of Neurosurgery at Massachusetts General Hospital

When I was 11 years old, my father died in an accident in the coal mines. My mother raised me and had bad migraine headaches. I became interested in the brain and, after seeing a TV show called "Ben Casey" decided to become a neurosurgeon and ultimately became the chairman of neurosurgery at Georgetown University and at the Massachusetts General Hospital. Clinically I specialized in surgery for complex brain tumors and my research dealt with defining the genes for the tumors of neurofibromatosis and developing genetically-engineered oncolytic viruses for the treatment of brain tumors and other cancers.

My love of sculpture goes back to high school days when I first saw Michelangelo's "Pieta" but it was only recently that I had time to pursue this art. I sculpt in clay, bronze and stone whichever is best to express the idea of the work. Being a surgeon, I am very interested in hands and try to incorporate them into most sculptures if possible. Hands are a lot more action-oriented than faces. Hands gesture, point, cut, shake, sooth, hold, comfort, throw, etc. Additionally, faces (and in particular areas around the nose, cheekbones, and eyes) immediately identify someone as being of Caucasian, African, Asian, or other descent and often as male vs. female. In contrast, hands are figurative and can be very emotionally expressive and yet somewhat abstract and more general than faces in that they can be anyone's hands.

More information and images of various sculptures of mine can be found at twelvelanterns.com but one of my personal favorites is called "Passion of a Surgeon". This series in bronze and marble is about the life of an academic surgeon (me) and deals with teaching, patient care, research, and ultimately retirement. It purposely has some religious overtones in that I have always looked upon neurosurgery as a mission, not as a business. Indeed, the mission of neurosurgery is quite lofty: to heal the sick, make the blind see (pituitary tumors; orbital meningiomas), the deaf hear (acoustic neuromas; auditory brain stem implants), and the lame walk (spinal discs and tumors). Thus, the background is from the Hebrew Scripture (Old Testament) in the shape of presumed tablets of the ten commandments of Moses and the foreground from the New Testament done in a style reminiscent of the Passion of the Christ as seen in the stations of the cross on the walls of a Catholic Church. He is whipped and cut, he falls and is consoled by the women, on Golgotha there is a moment of belief and disbelief, and finally after death, there is a rebirth or resurrection.



TEACHING

The first bronze is entitled “First Cut” and recalls the moment a senior surgeon put a scalpel in my hand and guided me to make a cut into human flesh for the very first time. This teaching event is seared into my memory and is one of the first steps in the making of a surgeon.



PATIENT CARE

The second bronze entitled “Consoling” shows the two hands of the surgeon holding a hand of a patient after the operation as he explains how the surgery went and what will happen next.



RESEARCH

The third bronze is “Believing” and shows two hands holding up a Petri Dish (the image is also reminiscent of the priest holding up a communion wafer). People often say that “Seeing is Believing” but in reality, in both art and in science the believing comes first. For example, I believed that viruses could be genetically engineered to kill cancer cells years before we could have others see the possibility of oncolytic viruses which are now in clinical use for cancer therapy. Similarly, the sculptures on this website were only in my mind many months or years before anyone could actually see them.



RETIREMENT

The fourth, reminiscent of rebirth or resurrection, is purposely done in white marble from West Rutland, Vermont. At some point, a surgeon must stop operating. Most surgeons fear this moment. In some it leads to depression. Many put it off as long as possible...sometimes too long and have to be told to stop. But this change in life should not be feared in that many of the same skills acquired by the surgeon over decades can be applied to other areas...for me, one such area is sculpting.

A Brief Concession

By Cameron Hayes
M2, Harvard Medical School

I regret to inform you
that your patient's life,
which lingered out of sheer obedience
and whirred a sad harmony of tired machines,
has finally come to its unnatural end.

To be perfectly candid,
when I first felt her draw near
and saw the tangle of cords
keeping what was left of her alive,
all I could feel was pity.

The thought that I might be bested
by primitive procedures,
intrusive adornments,
and desperate concoctions of chemicals
is the definition of human arrogance.

But I have to admit:
once I fulfilled the inevitable
and reflected momentarily on
the stubbornness with which you fought,
I couldn't help but be impressed.

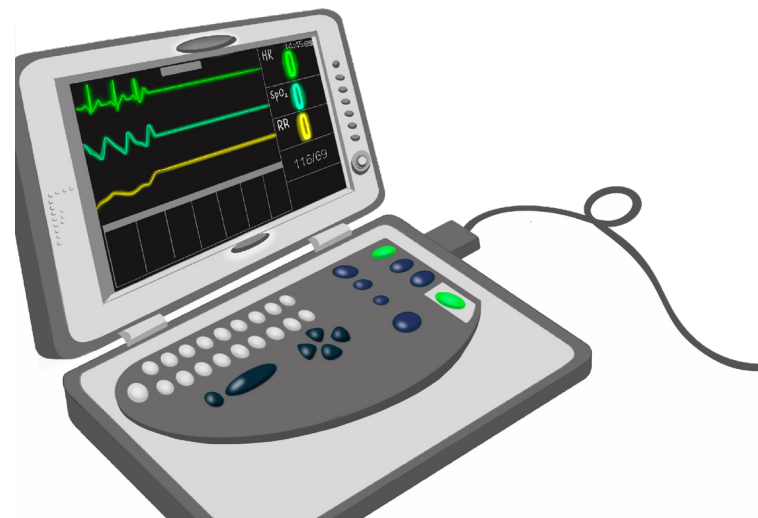


Illustration by Sophie Yu



Untitled

By Anand Chukka
M3, Harvard Medical School





White Coats, Cotton Shirts

By Clara Baselga-Garriga

M2, Harvard Medical School

In my daydreams before medical school, I'm embarrassed to say, I was always saving lives, or just about to save them. I was either holding a devastated patient's hand, promising them I'd get to the bottom of it, or rushing through the sterile hallways of a major hospital towards some kind of emergency, my white coat flying behind me. The white coat was central to these dreams — a necessary accessory that granted me access to the club of "saving lives." The white coat functioned both as a social symbol and slight humble brag, as an emblem of commitment to society and, on long nights spent memorizing amino acids, as a finish line. The sooner I stopped confusing phenylalanine from tyrosine, the closer I'd be to the white coat.

On a humid summer morning, the white coat materialized into a thing I could hold and feel, a thing I could hang in my closet. All of the first-year medical students gathered together in our assigned societies to try on our white coats one by one before the official ceremony. The moment the first student slipped their hands through the sleeves of their white coat, we clapped instinctively. A few people cheered. We were all strangers, watching each other acquire a piece of cotton and polyester. To us, that piece of cloth was deeply intimate, a shared dream.

Once we were all dressed in white, Dr. D'Amico, our advisor, instructed us to look around the room. Had we noticed that the room had become much brighter, the light reflecting off our white coats? Had we noticed how the sunlight spilling in was no longer absorbed by dark hues, but instead reflected off our coats?

That was the point of the white coat. It was an armor suit of hope, a mirror of light. The white coat came with a responsibility to bring light to the lives of those who were struggling.

I felt my arm hair brush against the cardboard-

like sleeves of my new white coat. I had goosebumps.

Weeks later, I saw my first patient. Seeing is a generous term, as my only job was to ask "what brings you here?" and some combination of "Thank you for sharing that with me," and "Is the pain constant or does it come and go?" But still, I was nervous. The night before that first patient interview, I practiced the "chief complaint" on the phone with my mother, while trying to figure out what I was going to wear the following day.

The white coat came with a responsibility to bring light to the lives of those who were suffering.

"Hi," I said on the phone, "my name is Clara and I am a first-year medical student. While I will not be directly involved in your care, I would love to ask you some questions. May I ask, what brings you in today?"

My mother laughed on the other side of the line. I got annoyed. She reminded me that these conversations were just like the ones I had in my day to day. I reminded her these were different: I had to use at least one empathetic statement throughout my interaction.

She was right, of course, the way mothers always are. My first patient interaction was straightforward, but not for the reasons she had anticipated. The moment I walked into the room with my white coat on and notepad in hand, the patient offered me their story. It was almost as if they too had already rehearsed their lines. It turned out that the white coat was not just a symbol of hope and light; it was also a symbol of power.

When the patient told me she had been in the

hospital for weeks because of a surgical complication that could have been avoided, and might have been avoided had someone listened, I said I was really sorry. When she told me she just wanted to go home to her four-year-old girl, who hadn't seen her in days and didn't understand what was going on, I said it again and felt cold.

A part of me wanted to ask more questions about that painful experience, and to acknowledge the smallness of being only half-listened to — a feeling I knew well. But the part of me in a white coat worried it might be deemed unprofessional for me to do so. I was even a little relieved I didn't have to share anything at all.

I realized then that, in my everyday interactions, I instinctively respond to others' openness about complex experiences by making the effort to open up as well. Vulnerability, for me, is a way of acknowledging another person's hurt, showing them they're not alone in it, and letting them know I trust them with my pain as well. Vulnerability begets vulnerability, and this exchange, when executed right, holds the promise of comfort, relief, and community.

In clinical settings, patients have no choice but to be vulnerable, while physicians don't have to be, and may in fact be discouraged from being so. I understand why this is: patients come to the hospital to seek help, not to hear about physicians' problems or make friends.

Yet, as I talked to my patient in her partitioned hospital room — her in a flimsy gown, and I in a sturdy white coat — I felt my inability to be vulnerable with her heighten our power imbalance.

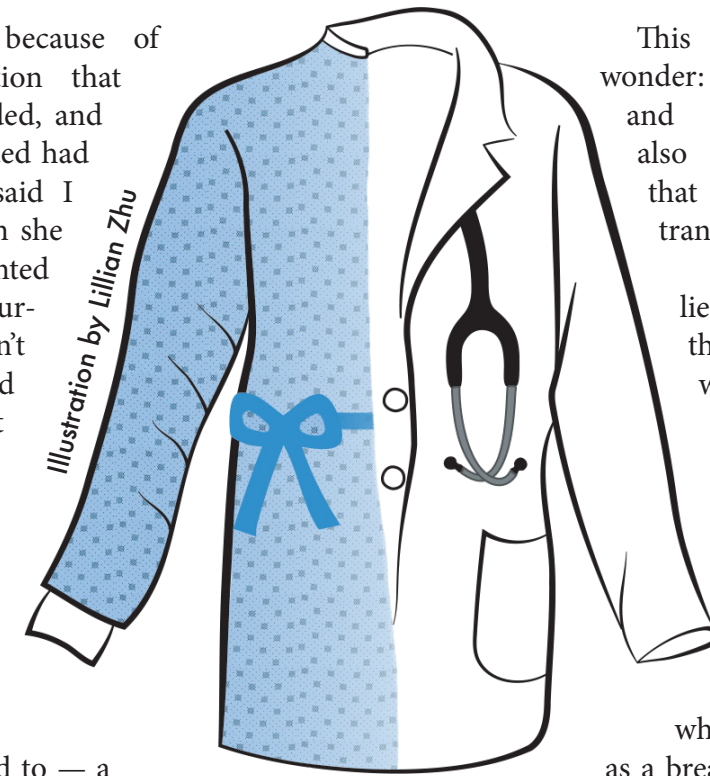


Illustration by Lillian Zhu

This tension led me to wonder: How can I convey hope and professionalism while also removing the distance that comes from a one-way transmission of vulnerability?

Perhaps one answer lies in letting patients wear their own versions of the white coat.

The white coat has hidden my sweat stains the first time I asked a patient whether they were sexually active and the wrinkles on the shirt I woke up too late to iron. The white coat hides my flaws as a breathing being, and enables me to show only the parts of myself that

I am most proud of. Patients, by the nature of the transaction, have to show the stains and tears their biology has accumulated and the buttons their organs have lost, but this does not mean we can't let them also wear the things they are most proud of. Perhaps, there's a way to carve out space for patients to express the positive things in their lives, to talk about their mischievous niece or the job they love and hope to get back to.

These days, I daydream about the white coat a lot less but I think about what I might say when I'm wearing it a lot more. On my walks to class, I brainstorm questions that might give patients an opportunity to present themselves in a way that highlights their joy and pride. Most times, when I try them out in person, they come out awkwardly or not at all, and I embarrass myself. But there's something rewarding, and almost fair, about having to own my naked attempts, covered only by a very thin paper gown of experience, with the people who are made to wear them for days on end. There's something gratifying about thanking patients for taking the time to teach me at the end of an interaction, and watching them crack a smile.



Untitled

By Sophie Kim

D2, Harvard School of Dental Medicine

Migraine and headaches have been part of my life for many years. At some points in my life the headaches never seemed go away and I started to forget what a completely clear head even felt like. And I know many others share the same experience. In undergraduate, I worked on building products to better understand and alleviate the disruption that headaches can create for so many individuals. In my user interviews one of the common themes was the frustration in communicating just how disruptive the state can be when it is so invisible to everyone else.

While I was walking through a hallway after taking some other portraits, I noticed a particularly strong leak of light hitting one of the walls. I immediately asked my model to stand in it and angled my camera to create a harsh division between the light and shadow. The model took a second to shade their eyes from the light and this is the moment captured in this piece. When I looked at the photo on the lcd screen the image immediately resonated with my experience with migraine, capturing an invisible experience by playing with light and shadow. I wonder if others will view this photo and feel the same way.

differential.py

By Sarah Wagner
M2, Harvard Medical School

```
1 import allMedicalKnowledge
```

```
—  
  
$ python3 diagnosis.py  
Traceback (most recent call last):  
  File "differential.py", line 1, in <module>  
    import allMedicalKnowledge  
ModuleNotFoundError: No module named 'allMedicalKnowledge'
```

```
—  
  
1 import preclinicalMedicalKnowledge  
2 import preclinicalInterviewSkills  
3 import patient  
4  
5 [HPI, PMH, familyHistory, socialHistory, ROS, physicalExam]  
  = preclinicalInterviewSkills.interview(patient)  
6  
7 differential = preclinicalMedicalKnowledge.generateDifferential  
  ([HPI, PMH, familyHistory, socialHistory, ROS, physicalExam])
```

```
—  
  
$ python3 diagnosis.py  
Traceback (most recent call last):  
  File "differential.py", line 7, in <module>  
    differential = preclinicalMedicalKnowledge.generateDifferential([HPI,  
PMH, familyHistory, socialHistory, ROS, physicalExam])  
Error: differential could not be generated with preclinicalMedicalKnowledge
```

```
1 import preclinicalInterviewSkills  
2 import patient  
3  
4 import upToDate  
5  
6 [HPI, PMH, familyHistory, socialHistory, ROS, physicalExam] =  
  preclinicalInterviewSkills.interview(patient)  
7  
8 differential = upToDate.search([HPI, PMH, familyHistory,  
  socialHistory, ROS, physicalExam])  
9 print("DIFFERENTIAL: "+differential)
```

```
—  
  
$ python3 diagnosis.py  
DIFFERENTIAL: ['tuberculosis', 'lupus', 'syphilis', 'EBV', 'lung malignancy']
```

```
—  
  
1 import preclinicalInterviewSkills  
2 import preceptorGuidance  
3 import patient  
4  
5 import upToDate  
6  
7 [HPI, PMH, familyHistory, socialHistory, ROS, physicalExam] =  
  preceptorGuidance.nudge(preclinicalInterviewSkills.interview  
  (patient))  
8  
9 differential = upToDate.search([HPI, PMH, familyHistory,  
  socialHistory, ROS, physicalExam])  
10 refinedDifferential = preceptorGuidance.refine(differential)  
11 print("DIFFERENTIAL: "+refinedDifferential)
```

```
—  
  
$ python3 diagnosis.py  
DIFFERENTIAL: ['rhinovirus', 'seasonal allergies', 'bronchitis', 'pneumonia',  
'tuberculosis']
```

Putting My Money Down

By Aldis H. Petriceks
M3, Harvard Medical School

“First,” I say, “the hyponatremia.” My attending nods.

“So, for this patient, I’m thinking that given her lack of improvement on intravenous fluids, we’re pretty confident it’s not hypovolemic and it’d probably be good to fluid restrict, but I guess there’s the question of how much — ”

“Hold on,” she interjects. “Tell me your plan. Not ‘I’m thinking.’”

“Oh — okay,” I stumble. “Yeah. We’ll fluid restrict to one-and-a-half liters and recheck serum chemistries tomorrow.”

“Much better,” she says. “Remember: commit to your plan. Put your money down. That way I know you’ve thought about it.”

This exchange offers two lessons about medical education, both involving the clinical colloquialism to put your money down. For the student, the interaction demonstrates the importance of confident, concise presentations. My plan for the hyponatremia was not wrong, but it was hedged heavily in the subjunctive, and my attending struggled to discern whether I knew the proper management for the condition. I had to learn, as all medical trainees must, to communicate confidently, not hide behind a comforting yet ultimately obscuring intellectual diffidence.

Far more interesting, however, is the lesson offered to medical educators. That lesson goes to the core of human intersubjectivity: we are primarily aware, in our own selves, of the subjective psychological processes that precede and follow our behaviors, but the reverse is true when we observe other people, whose objective behaviors arise without public access to their inner, subjective correlates.

W.H. Auden, the great twentieth-century poet and son of a physician, captures this phenomenon with characteristic acuity. In an essay titled “The Quest Hero,” he explores several aspects of the Quest

as a literary genre and portrays several challenges inherent in reconciling one’s inner life with those of others:

My subjective experience of living is one of having continually to make a choice between given alternatives, and it is this experience of doubt and temptation that seems more important and memorable to me than the actions I take when I have made my choice. But when I observe others, I cannot see them making choices; I can only see their actions; compared with myself, others seem at once less free and more stable in character, good or bad.¹

This dualism poses a dilemma for the clinician-educator who must teach and evaluate medical students: as an instructor I must rely on either objective data from the student—the confidently-stated plan from which I can infer that the student has thought about their patient’s problems—or a doubly subjective estimation of what is happening in the student’s mind. I can attempt to do both, but there is no logical framework that will tell me how to integrate these two perspectives in a meaningful manner.

**“Remember: commit to your plan.
Put your money down. That way
I know you’ve thought about it.”**

My attending, therefore, told me to “put my money down,” and so chose the former strategy to solve this dilemma and thereby teach and evaluate me. But is that all to the pedagogical story? Does committing to a plan — putting my money down — really demonstrate that I have thought about that

plan?

Medical students should, of course, be trained to communicate unambiguously to their colleagues and patients. But there seems an intuitive danger in the identification of confidence with thoughtfulness, and this danger is, I believe, emblematic of our human imperfect ability to assign subjective states to the objective behaviors of others.

This divide between myself and others, between subjective and objective, creates all kinds of problems in clinical medicine. When a patient arrives to the clinic with high blood sugar and tells me that they have not been taking their diabetes medication, I am tempted to make assumptions about their inner life: to assume, for instance, that they are not concerned about their health. I am less naturally tempted to imagine all the ways in which they are very concerned, perhaps striving anxiously to take their medications as prescribed.

The injunction to put your money down obviously differs from this scenario; but if there is danger in a purely “objective” reading of our patients, perhaps the pedagogical phrase has its own pitfalls. Medical students can think about plans, with great depth and creativity, without reaching any final commitment, and the absence of commitment does not necessarily indicate a

lack of serious thinking. Such absence does imply a lack of certainty, but that is a very different thing.

Does committing to a plan — putting my money down — really demonstrate that I have thought about that plan?

“Our quest for certainty is central to human psychology,” write Simpkin and Schwartzstein, “and it both guides and misguides us.”² It is revealing that these medical educators use the term quest in their essay, “Tolerating Uncertainty — The Next Medical Revolution?” For Auden, the Quest genre provides “a symbolic description of our subjective personal experience”; and by using this term to frame our desire for certainty, Simpkin and Schwartzstein imply that much of our quest to train (or become) competent clinicians is an experience in objective uncertainty.

This uncertainty has several implications in medical education. It reminds us of the importance of clear and confident clinical communication, while also judging such communication to be a nonspecific proxy for

clinical thinking. It means that we cannot totally infer the inner states of others based on their behavior, and if we want to know what our patients or colleagues are thinking, we will have to ask. And finally, it means that even our most confidently stated conclusions — about diagnosis, about treatment, about medical education, about ourselves — are subject to doubt and deeper questioning.

We will have to embrace this uncertainty if we are to avoid a whole host of cognitive biases in life and medicine. We will have to commit, albeit contingently, to our plans while remembering that they are plans, not Truths. “Certainty is an illusion,” Simpkin and Schwartzstein write. The money is a metaphor.

The Quest, however, is very real.

REFERENCES

1. Auden WH. *The Quest Hero*. In: *Tolkien and the Critics: Essays on J.R.R. Tolkien's The Lord of the Rings*. University of Notre Dame Press; 1968. (Original work published 1962.)
2. Simpkin AL, Schwartzstein RM. *Tolerating Uncertainty — The Next Medical Revolution?* *N Engl J Med*. 2016;375(18):1713-1715. doi:10.1056/nejmp1606402

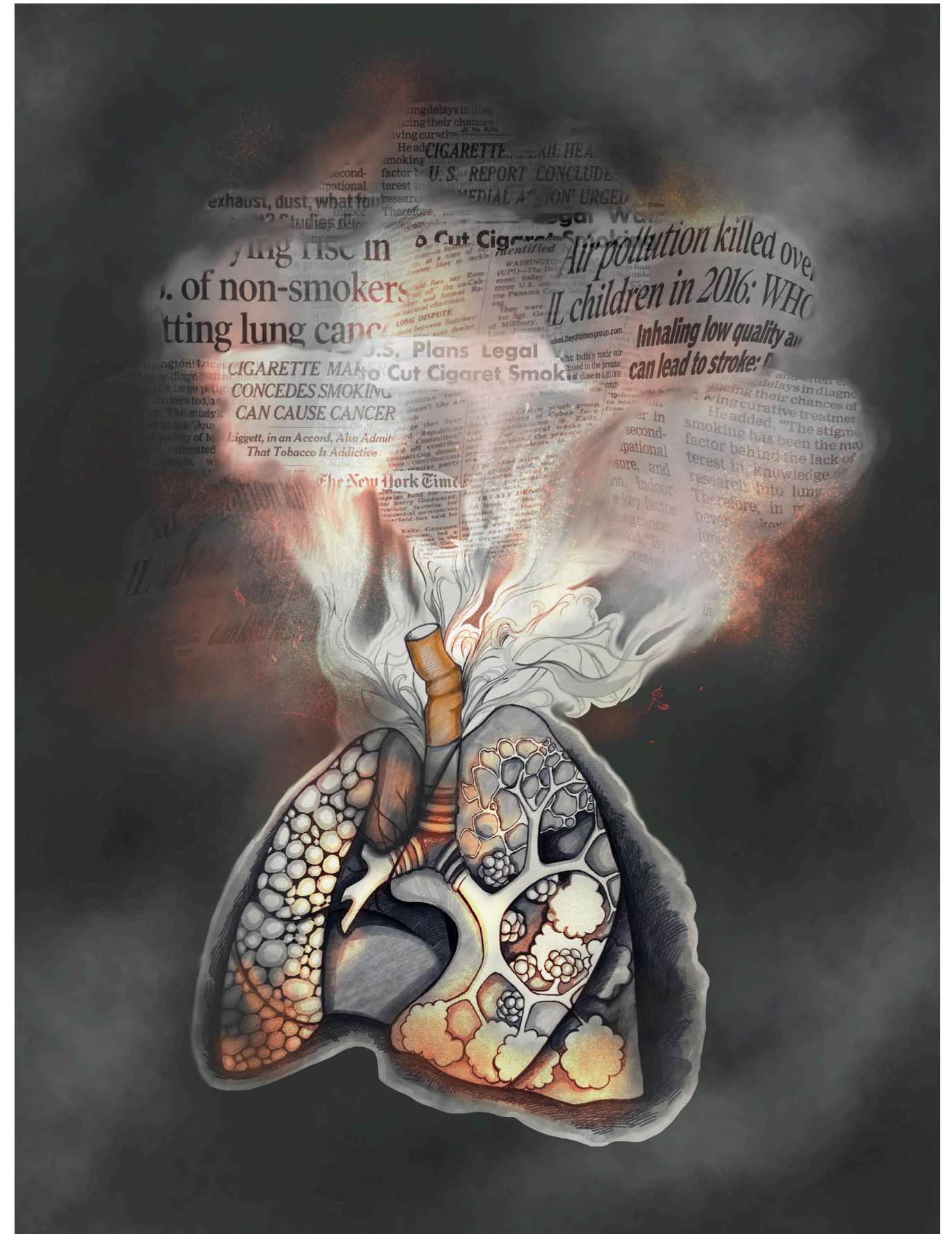
ACKNOWLEDGEMENTS

The dialogue depicted in this essay is a fictional rendering based on real interactions.

the air we breathe

By Sophie Yu
M2, Harvard Medical School

This piece was first inspired by the annual wildfires I experienced when living in Northern California. I distinctly remember the bleak gray skies that would persist for days and wondering how breathing this air long-term would impact my community's health. In one of our first-year medical school courses, as we began to unpack the underlying pathophysiology of lower and upper respiratory disease, specifically in the context of smoking, I began to think more critically about the air we breathe. Using visual art to combine the vivid images of gross anatomy specimens, the smoke-filled skies in California, and the articles I had been reading, helped me to engage with and process this challenging material.



memory

By Jill Jones

M2, Harvard Medical School

people die every day,
many people,
1000 feet, across the street,
from where I work—
on a big ward
in a big building
near my building.

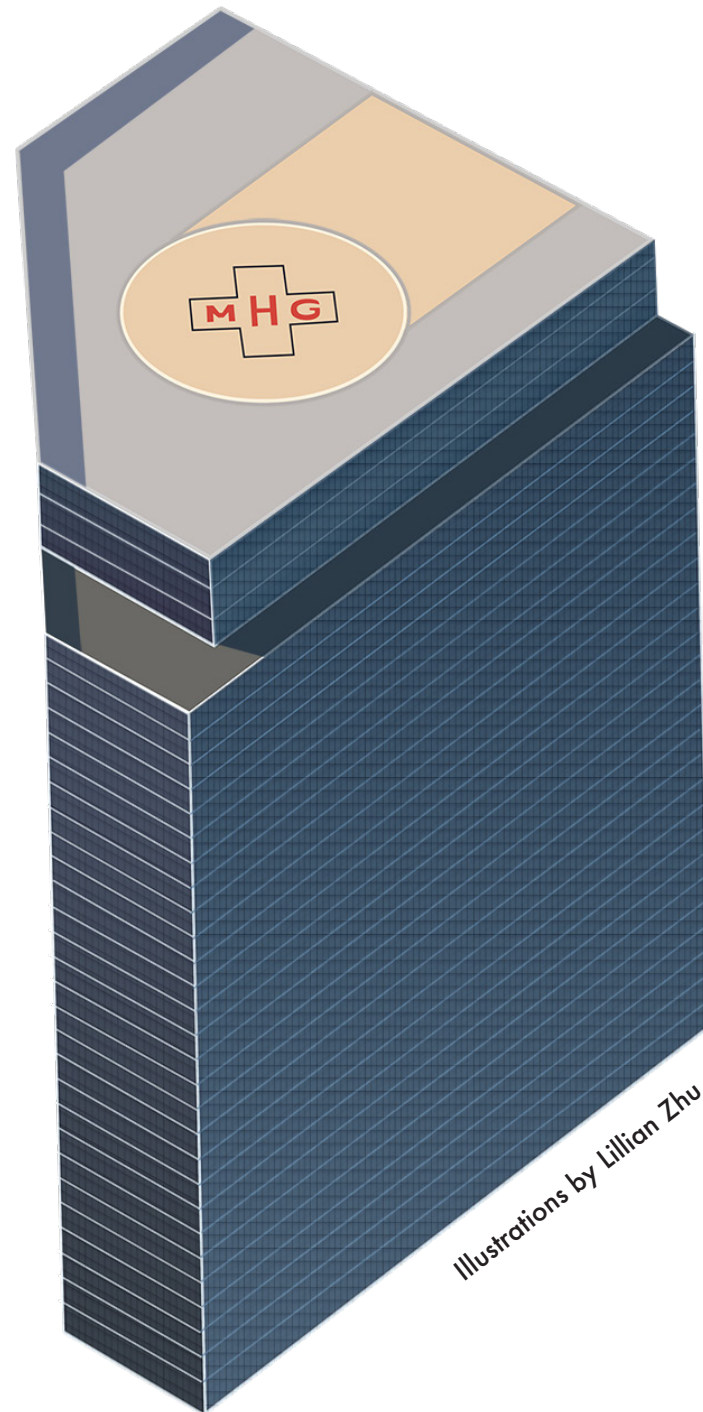
in my building, I make myself busy
on the 8th floor
of a tall, gray box,
with my crackly keyboard,
and my twisty pipettes,
and my chalky meetings,
and I take care of cells, also,
from dead people.

I nourish these cells,
and I put them into mice,
watch them birth horrible tumors,
and the mice also die—

I am so sorry for the mice—

as I sit
inside the Big Feeling
that these mice,
and these cells from People No Longer,
almost assuredly
have spirits too.

in any case,
I wonder if these cells' ancestors
know what we are discovering
about the smallest parts
of their beloved bodies,
helping others who lay dying
to be less sick of cancer
and grief



Illustrations by Lillian Zhu

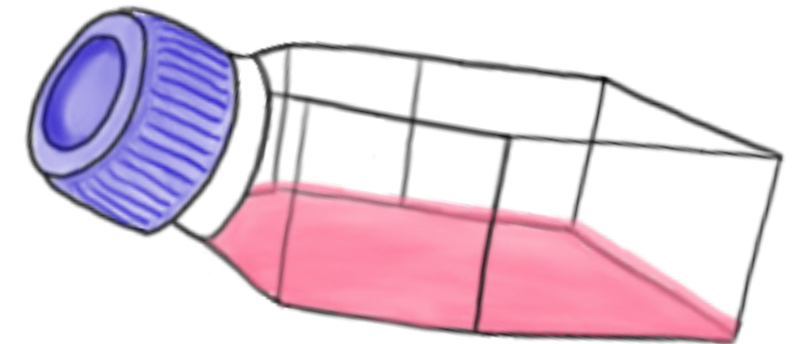
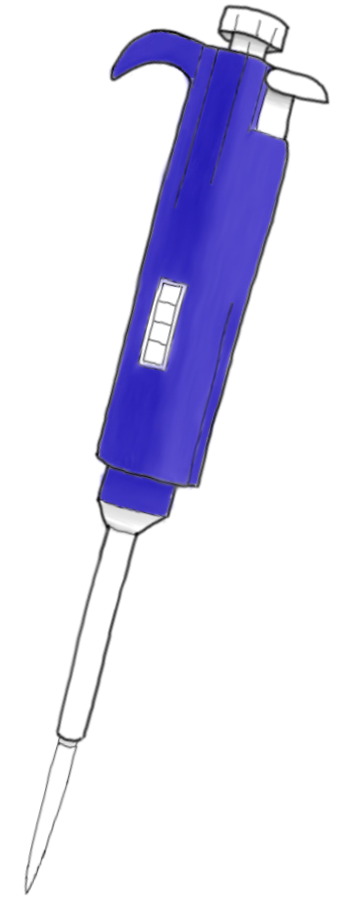
and the weight of the world just the same;
would they tell me
that they've resolved
this is a righteous,
reconciliatory afterlife?

these Cell Ancestors—
are they beside me,
in the walls of my tall, gray building,
on the 8th floor
where I am thinking
every day, all the time, and not enough
of These Dead and others—
in this building where their cells and I
just carry on—

in this building
where I wonder—
when I, too, leave for good,
Will someone take my cells,
and nourish them as I once did?,
and put them into mice,
helping others to one day
be less sick of grief
and the weight of the world
just the same—

in this building
where I wonder
whose fingers mine will be holding
as I transition—
and if at the end, I'll be strong enough
to squeeze back,
present enough to cry;
Will it be painful, dear,
will that love
from My Handholder
become my legacy?

and how long might my name,
the names of those who died before me,
who died 1000 feet from me
while I was finishing my coffee
across the street,
slip in and out of others' mouths



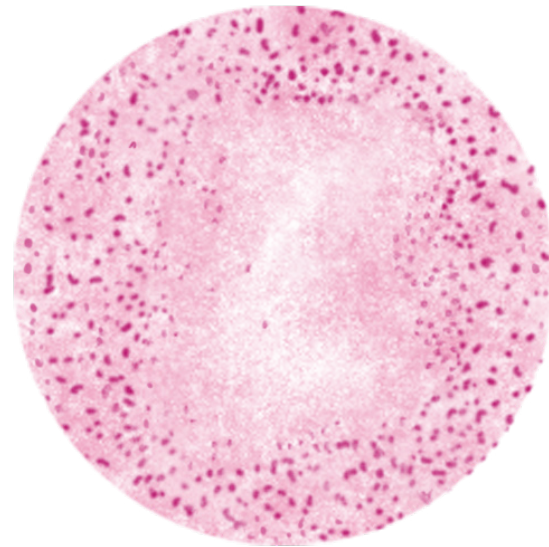
roll off of loved ones' tongues
like outrageous, untamable snakes?

and in the Building Across The Street Where People
Die,
will every door handle
which is 99.99% sanitized,
but 0.01% not fully clean,
remain touched
by the doctors who've knocked above it,
by the souls who've been wheeled past it,
by the parents, and the children, and the spouses
who've clung to it
in prayer, and anguish, and numbness?—
in any case,
I believe in that.

maybe someday a person
or a ghost of a person
from the Building Across The Street Where People
Die
which houses corpses, and ghosts,
and so much paperwork
about our Ideal Way to Go
will let me know
if this is all there is.

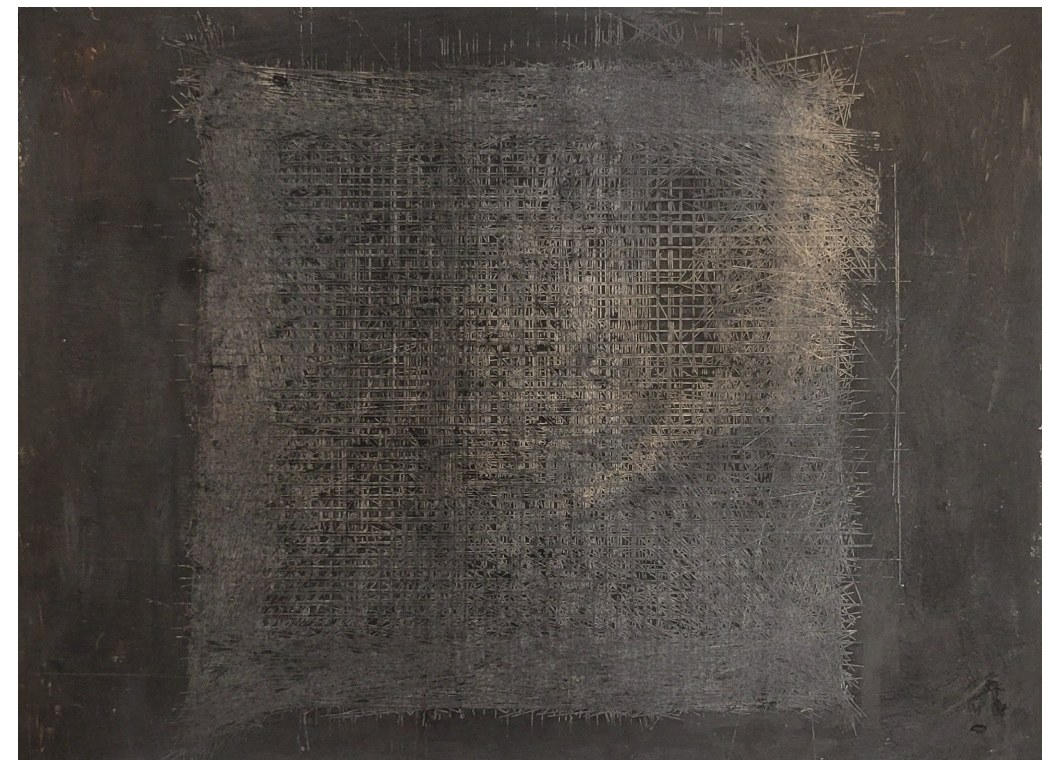
but in any case,
can you promise me
that when I join the caravan of Cell Ancestors,
if I end up
in the Building Across The Street Where People Die
and our memories together
are ripping through you like a wildfire—

for whatever room we're in,
you will break off its door handle—
which remains touched
by every doctor who's knocked above it,
by every soul who's been wheeled past it,
and by all others who've clung to it—
and please, my dear, hold it with me.



Untitled

By Mika Jain
M2, Harvard Medical School



Reflection

By Aditya Jain

M2, Harvard Medical School

Illustrations courtesy of DALL-E

These days all my vacations happen when I'm asleep. A beach in Aruba. A boat in Vienna. Beautiful places I had never visited but somehow could perfectly picture. More often these vacations took me to locations in my past. Memories that were as relaxing as any holiday. I suppose it's my own fault. I knew what I was signing up for all those years ago, when I told my college advisor I wanted to start on the premed track. And I have loved medicine, from the day I first opened a Netter's textbook to finally becoming a doctor a few months ago. Still...there are moments. Where reality with all its work and repetition falls away. When the dreams feel real.

"Medicine," the distinguished man with the bowtie bellowed, "is a revolutionary profession. For millennia humans have pleaded with nature. In the face of her unrelenting, unending march of evolution, we asked that our sick be saved, that our lives be long, and that our children be happy. Oh, how we pleaded. We never heard a response. Instead, we were punished for our genes, our lifespans were limited to as long as we could bear children, and we died." The man searched the sea of white coats seated on a green lawn in front of a school in the Northeast. I too was seated, excitedly polishing my glasses, staring at his usually kind face now unnaturally taut into grave significance. "Medicine is the hard-fought triumph of the individual. The declaration that I matter. I deserve to be saved. That my life has more value than my genes and that my joy and sorrow has worth. Our pleading has finally been answered. By each and everyone of you who has earned this title: doctor. So go forth, Class of 2022! Go forth and triumph!"

My arm swung across the bedframe and grasped at the nuisance rattling, buzzing on the

hardwood floor. Where was I? I put on and polished my glasses so I could read the pager. Urgent. New admit. I placed one arm in my coat, one arm on the door as I quickly exited the on-call room.

"Our patient is an elderly John Doe who presents with amnesia, confusion, and irritability. He is unable to remember his own name, age, identity, or information regarding family members or medical history. He repeatedly asks to be let go and does not remember how he arrived in the emergency room. There are no visible signs of head trauma or other injuries. He is oriented to person, place, and time, however he is unable to remember this information and must be frequently reminded who has seen him and why he is in the hospital. No other signs of any cognitive impairment."

"Great. Let's get an MRI scheduled as soon as possible. Anything else I should know?" My hand was already on the doorknob when Nurse Brown spoke again,



"Yes Dr. Ikari, it may be a few hours before we are able to get the MRI. But I wanted you to know that the patient's behavior seems a bit off? I don't know how to describe it but he just appears...sad. Sorry, that wasn't very helpful."

"No no Arianna, that is helpful. Thank you." I entered the room.

Think about when you last saw a family member you had not seen in a long time. A parent? Grandparent? Cousin? Maybe it was Thanksgiving at your mom's house and a stranger who claimed they used to change your diapers gave you a hug. Then you took a closer look and it happened. There was a spark somewhere deep inside in your mind. Recognition.

John Doe sat quietly in the patient room. He was dressed in a gown and he wore no shoes. His bright white hair stuck out in all directions, and he had a beard to match. His arms trembled with every breath. He wore large spectacles which magnified his dark circles and wrinkles. And in them, his eyes, deep blue like the sea, shone sadly, devouring all else.

"Good evening, I'm Dr. Ikari. May I ask what your name is sir?" He did not answer. I tried again, speaking louder this time. Still no response. Then, slowly, he pulled out a small cloth from his breast pocket and began polishing his glasses. He opened his mouth to speak. Recognition.

I paced across the on-call room. Surely it was impossible. I put the thought out of my mind — I needed to focus on the medical issue at hand. What was the differential for amnesia? Given that there was retrograde loss as well, perhaps it was post-traumatic? There was no evidence of physical trauma, but this still did not rule out emotional trauma. A transient global amnesia from ischemia seemed unlikely with no lab or EKG abnormalities. The timeline appeared acute, but we could not know for sure. Maybe this was part of a longer process — an odd presentation of Alzheimer's? Or maybe drugs. I remembered reading a case study of anterograde amnesia after glufosinate ammonium intoxication. We were still waiting on the tox screen. The weight of the differential felt suffocating. I knew nothing for sure. It could be anything or everything.

I checked the clock. We would be able to get him an MRI soon; maybe I could make a decision then. And if I still had concerns, I could always wake up my attending. I willed myself to relax. Deep breaths. In and out. I felt a little better. Yet in this calmer state, that crazy thought crept back into my mind. Recognition. Was John Doe...me? The way he polished his glasses. His hair. His eyes. Even in my own mind it sounded insane, yet I felt certain. I had no doubt. I knew my shape. I knew myself.

If this was a science fiction novel by the late great Isaac Asimov, there would only be three possibilities when it came to a doppelganger: time travel, clones, or robots. Luckily in medicine, a thorough physical exam is a part of every character introduction. No screams during his lab draws meant John was decidedly not a robot. That left time travel and cloning. I began pacing again; I could check in on him while waiting for his MRI. In fact I had to — there was doctoring to do.

Even in my own mind it sounded insane, yet I felt certain. I had no doubt.

As I entered his room I once again felt an air of quiet sadness. John had hardly moved since I left. Might as well do a neuro-motor exam. I walked towards the drawer with the reflex hammer. "Hello again. I'm your doctor, Dr. Ikari. Do you remember when I came to visit you earlier?"

"Came to visit."

"Yes! We had a brief talk about how you were feeling and I asked you some questions about your life. Do you remember that?"

"Do you remember?" John ran his left hand back through his untamed mess of hair, bringing his hand down his neck and under his chin, leaning forward to occupy a thinking-man pose. I felt my stomach drop. Recognition. Why? He seemed to be repeating what I was saying. Why? Was it a safety protocol for if a clone interacted with the original. Of course, I must be the original, everyone knows clones age faster. It all made sense. Unless! What if I was younger than I thought. What if my lifetime



of memories were really his, implanted in my head just a few days ago while I grew in a vat of blue fluid in a lab. Maybe my recent insomnia and struggles with sleep are a side effect of the memory implantation. And this residency program was just a cover; an artificial environment so I would think those side effects are a normal part of my job. It all made sense. Maybe he could tell me more.

"Can you tell me about what you remember sir, about your life? What's your name? How did you get here?" He perked up at the questions, his eyes suddenly lively, reminiscing, making firm eye contact with someone who was not in the room.

"My life. Well I must say I have had regrets. You don't get to my age without those -"

"And how old are you?" I interjected. He did not seem to notice, continuing to speak.

"I think out of everything, I wish I had spent more time with my mother towards the end. Y'know, moms... they're the first people we see. Soon we're crawling around, trying to make sense of this crazy world. And moms are always there. Watching. Looking down at us. And you try to understand 'what is this strange part of the world?' Eventually you get to thinking that it's another human being. And if they're a being, maybe you are too."

"Sounds like you really loved your mother," I interrupted again, leaning on the interview skills of medicine. "Do you know her name? Or anyone else in your family that we could reach out to?" John Doe glanced towards me. He seemed confused.

He was no longer speaking. Perhaps I had upset him somehow. It was quickly becoming clear that he could not (would not?) give me any medically relevant information. Maybe it was selfish, but I decided to change tack.

"That's an awfully nice beard you got there. Must have taken a long time to grow it."

"...thanks."

"I would love to grow a beard like that someday. Does it itch?"

"Does it itch? No, not really."

"Can you imagine if I did grow a beard like yours? Haha. We already have matching glasses. We would probably look identical, don't you think?" He smiled kindly, as if speaking with a young child.

"We would probably look identical. But I don't think it would suit you." I could not hold it in any longer:

"Are you me?"

"Are you me." He made a statement of a question. His mouth opened as if to speak again. But it closed and no further words were said.

Frustration is a corrosive feeling. It eats away at the good. I lay in bed in the on-call room. I needed an MRI to diagnose him, but there was still an hour to go. As a new resident early on a graveyard shift in the ED, he was luckily the only patient occupying my mind. I desperately wanted to help. And still, there was little I could do. My thoughts began to wander. Y'know, cloning seems a bit less likely now. Surely he would have recognized me too and, with my acting skills, there is no way I would have been able to hide that recognition from myself. And he kept talking about his regrets... was I his past?

I knocked on John's door and entered; a picture of calm, care-free confidence. "It's me again. Ready to tell me who you are?" It had been just half an hour, yet John seemed different somehow. As if he cared very little about where he was, his previous sadness replaced with an idle boredom.

"Scoff. Why do you care about me anyway?"

"I'm a doctor. It's my job to care about you. And it seems like you're unwell, sir."

"Maybe I am. But maybe I'm not. This me is not always the me I am. It's just a possibility." My heart began to race. Schizophrenia? PTSD? Or was

he admitting that he was a time traveler - another version of me?

"Tell me more about that."

"Well you see, it doesn't really matter to you who I am. Because you would never see me the way I see me. You just see a small part of me. Not the real me. You can't. That's just the way the world is."

"But I want to know you. I'm sure you have interesting things to say, stories to tell. It's why I became a doctor." I noticed his words were much smaller now, his speaking choppy.

"You only see a small part of me," he repeated, "and then what? You fill in the blanks. With what. With. With..." He trailed off, searching for the word. I had leaned in without noticing, entranced in his sudden openness.

"Me?" I asked.

He opened his mouth. Then he looked at me quizzically. Confusion flooded his face. Then lethargy. Then worry. He closed his mouth and said nothing. He wanted to tell me something — I believed — but couldn't. He was scared and I was too. And then that idle boredom appeared yet again. Uncaring. Finished. Done.

The nurse knocked on the door. The MRI machine was ready. Just like that, it was time to go. I reassured John Doe to the best of my ability, although he said nothing in response. And then he was whisked away, leaving me alone once again. Not time travel I whispered, to no one in particular.

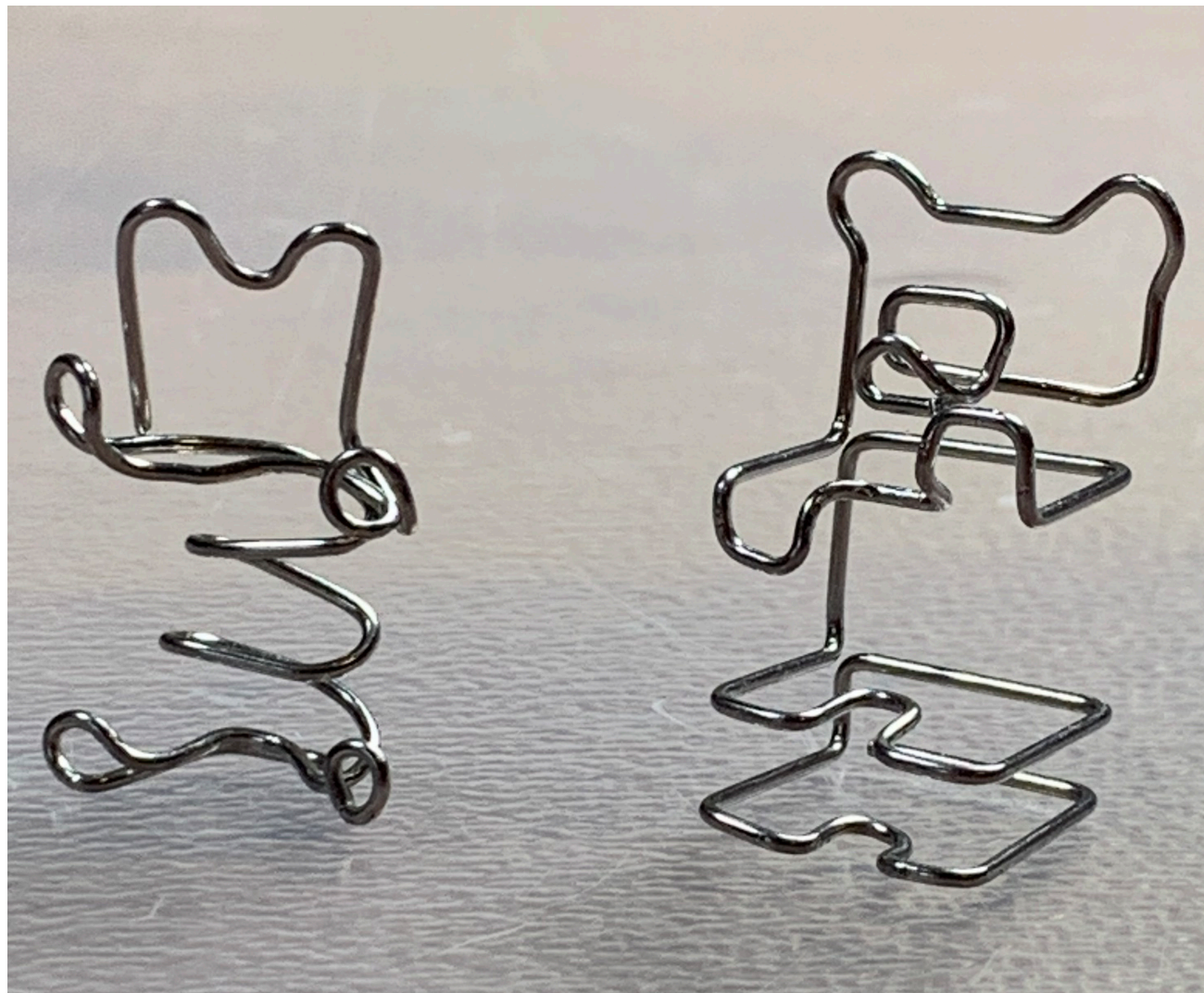
There are moments in medicine where things just click. Where every physician looks up at the ceiling, closes their eyes, and nods their head slowly - with enunciation. It happens when a patient describes their shortness of breath as "it feels like there's an elephant on my chest," or when your old attending explains the pathophysiology behind a rare clinical presentation. It's when you just get it. It had not even been an hour when radiology sent back their report on John Doe's MRI scan. As I looked it over I had one of those medical moments. The amnesia, acute decline, mood changes, mutism, echolalia, and now a clear-as-day knife-blade atrophy. Pick's Disease. Click. It's easy to forget the patient in these moments. The patient for whom we had no cure, no treatment. Yet the image of John

Doe came to me now and all the moments we had shared. He was a patient who could not understand me yet recognized me. And I tried my hardest to recognize him - to see him. Yet was only able to see his shape. And from that shape I could see myself. My patient. Me?

I went to visit John, now in the palliative care unit. When I entered the room his head turned towards me and his mouth opened as if to speak, yet no words came out. He seemed fragile - far from how I remembered him just a few hours ago. I came to his bedside and asked him a few questions: how was he feeling, was he in any pain, any discomfort? With each question his mouth opened and closed, as if operated by a mute ventriloquist, in what I believed was acknowledgement. Still, no words came out. I reviewed his chart. He had been started on anti-anxiety medication and mild painkillers. Hard to do much else with a patient who can no longer communicate. Still, we do our best. Soon his doctor came to check in on him as well. We stepped outside and she told me privately that he does not have much time left; palliative care docs get good at that. I decided to ask him one more question. "Who are you?" He looked at me. His mouth opened. And it closed for the final time.

I am lying in bed, alone in the on-call room. My pager dances across the hardwood floor. I pick it up. Urgent. New admit.





Wire Sculptures

By Deepak Suri

D2, Harvard School of Dental Medicine

I started making wire sculptures in high school when I opened my business of making orthodontic appliances. I take the same .032 or .040 inch stainless steel wire that I would normally bend into an appliance to maintain or create space between the teeth and instead bend the wire into small sculptures. I begin with pen and paper, drawing patterns without lifting my pen until I see something that I want to bring into the third dimension, and then I try to recreate that structure in an aesthetic manner. While I do find it enjoyable to have others recognize a physical product of my imagination and hands, I think the most value comes from the understanding of humility that art offers. Each piece is inevitably filled with inaccuracies and asymmetries on the scale of millimeters, but art is a space of observation where I can see those flaws without diminishing the value or creativity of the work while still acknowledging the potential for growth.

I swear you were here

By Mariam Dogar
M2, Harvard Medical School

Head on lap
Fingers stroking hair
It's not that I couldn't live without this
It's that I don't want to

**

In your eyes, the fear
The acceptance of the fight
The will for me to be at ease

In my eyes, headlights

**

Wigs. Poison. Mastectomies.
You present the plan
Like you're discussing the menu

**

Coming back to you is
The first sip of water after breaking a fast
I know
I've been away too long

**

34

If I memorialize a moment before it is over
Are you already gone?

**

Being around you is bittersweet

I want to hold your hand
But I don't want you to see how much this is hurting
me
When I'm with you, you never cry
When you think I'm not looking, I see your tears

**

Nothing these hands can do
Seem to have any meaning
Unless they're next to you

**

I keep wondering
Will this be the last?

**

"In the grand scheme of things
It's nothing
I am just dying a little bit faster than the rest of you"

**

35

It's hard to be weak
When you are strong
It's hard to be strong
When you are weak

**

“Some people are gone in an instant
I get to say goodbye”

**

It is not nothing

**

36

Why did we never say goodbye?

**

37

the same thing

By Shahaan Razak
M3, Harvard Medical School

day: three of ppsp
he: a young patient with colorectal cancer from dc
me: trying to make sense of what this disease
means, wondering
but, She had the same thing

She: helped raise me as a little kid in queens
imparting wisdom, on my world of green
the cousin, more a big sis
always love, always this
him: here, Her: i miss
even though, She had the same thing

both: diagnosed young, no signs in sight
fought for their lives, with all their might
he wins, She dies
why?
they had the same thing

because She worked too much to stop and look?
because She didn't have that paper that said She
read enough books?
did She pray to the right one? was it because She
was a woman?
what about Her immigrant status? but She spoke
the language, such madness
did they miss it because of Her weight? because
Her insurance wouldn't pay?
was Her money too light, Her gayness too heavy,
to make them stay?
marginalized of the marginalized, which label is to
blame?
does it matter? will the answer keep me sane?
no, because She had the same thing

day after day, i witness their personal stories, in
awe of their strength
smiling through struggle, lessons with length
seared in my mind, as a physician -
be that different kind of kind
the one that asks why with purpose, not as a cry
who brings people in, and is never too high
to learn, to grow
to continuously push the envelope
because She had the same thing

i won't choose who lives and who dies
my choice is in my actions, where my power lies
words of mine will soon carry newfound meaning
be conscious of the way i build my practice of
healing
wisdom from a fellow scholar, 'everything counts'
can i bear that burden?
yes, because She had the same thing

whispers: you're not perfect
these self-imposed boulders
you place on these naive shoulders
will make you crumble before you even begin
me: i don't want to go fast, or i would have gone
alone
i want to go far, so i will go together
standing on the shoulders of giants, arms locked
with this new wave of leaders
with one goal in mind
to leave it, a little better than i found it
in hopes that one day, the outcome would be the
same thing

Reclaiming My Voice

By Avina Rami
M2, Harvard Medical School

At age 10, I was sitting in my 4th grade classroom, intently focused on the endless stream of math problems that lay before me. In the midst of jotting down solutions, I felt a sharp pain in my right ankle as a shoe dug into it. I looked up to see a wide smirk greeting me, his eyes betraying a hint of malice as he delivered his second strike. And then his third. And so the cycle began—my silence feeding his appetite for sadistic pleasure. He continued kicking me every day for an entire month, neither of us uttering a word. With each kick, a part of me cracked, the years of my mother’s advice of self-defense gradually fissuring

with each blow.

I never spoke up in the classroom, both out of fear of dismissal and anxiety about his retaliation. Yet I wondered why he was targeting me. Whether it was my milky brown skin or my long, braided hair. If he felt threatened by a girl who could do math problems quicker than him. Whether he knew the power he had over me, simply because I was a young brown girl who had not yet learned how to use her strength. Eventually, I told my mom and the next day, my seat was switched. Years passed and I moved on, but I never forgot the first time that a man stole my voice.

From 9th to 12th grade, I attended a specialized high school focused on the life sciences. While taking the standardized courses common to most high-schoolers, I was also able to explore the dynamic fields of biomedical research, technology, and engineering. I felt excited and privileged to be able to explore my passions in-depth from a young age, but oftentimes found that others could not separate my intelligence from my appearance.

At age 15, I was finishing up a lab experiment in my chemistry class. As my partners and I were removing our gloves and lab coats, I caught one of them staring

at me. He took a few seconds before opening his mouth and loudly inquiring, “Why do you have more hair on your arms than I do?” Immediately, I felt five other pairs of eyes on me. Deeply ashamed, I hurried out of the classroom and spent the next ten minutes staring at myself in the bathroom mirror, picking apart the pieces of myself that I once found beautiful. Once again, I found myself defenseless, unable to highlight the parts of myself that mattered more than the amount of hair on my arms. At that impressionable age, I felt obligated to conform to his conventional standard of beauty—that afternoon, I went home and shaved off every strand of hair from my arms and legs, erasing every perceived flaw, one by one.

At age 20, I was feverishly typing on my computer, operating on a few hours of sleep. During the previous couple of nights, I stayed up until the early hints of dawn, drafting a manuscript for my lab. Bright-eyed despite my lack of sleep, I walked into lab and anxiously handed my draft to the graduate student I worked with. His head nodded in affirmation as his eyes slowly scanned the pages, taking in my hours of work. I prepared myself for criticism, but just as I opened my mouth to ask for suggestions, he walked away. Bewildered, I watched as he brought my paper to his colleagues and delivered the words, “Look at this manuscript that I wrote.”

Together, the rest of his

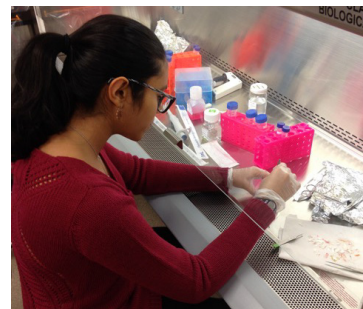
colleagues read my words under the false assumption that they were written by someone else. As they scanned the pages, I stood in disbelief as he began to receive compliments for the paper. As the initial incredulity faded into pure anger, I slowly backed away and left the lab. I felt betrayed and resentful, somewhat at him, but mostly at myself for not utilizing my voice in the moments I needed it most.

At age 25, I was a first-year medical student, taking interviews and conducting physical exams on patients in the hospital under the supervision of another medical student and my preceptor. I walked into the patient’s room—feeling a mixture of nerves and anticipation—and began asking the patient about his symptoms. My preceptor, dissatisfied with the questions I was posing, interrupted and began asking a barrage of his own questions. The patient, catching on to my lack of training, started to attack my skills. “She doesn’t understand anything. She doesn’t know what she’s talking about.” He would repeat these statements every 5 minutes, as I quietly continued performing the physical exam, silently begging for my preceptor’s support. With each attack on my intelligence and continued silence from my preceptor, the pit in my stomach grew larger. As a first-year medical student lacking the entire breadth of clinical training, I understood where the patient was coming from. At the same time, with

each demeaning statement that was made, I grew less and less confident in my ability. By the end of the interview, I was close to tears, determined to respect the patient and his beliefs in sacrifice of my own dignity.

I felt betrayed and resentful, somewhat at him, but mostly at myself for not utilizing my voice in the moments I needed it most.

As we exited the room, I felt years of resentment rise within me, a blazing fire fueled by the collective injustices of my past. All my years of feeling powerless were catching up to me, and I felt a spark from within. As my preceptor, partner and I sat down for our routine feedback session, I averted my preceptor’s eyes, yet my voice never wavered. “That patient was overtly sexist, and you could have done a better job supporting me in that room.” He initially attempted to dismiss my concerns and desperately searched for validation in the eyes of my male partner, to little avail. Eventually, he conceded and apologized, agreeing that he could have done more. I went home that night feeling drained from countless years of self-suppression in the face of sexism, yet proud of myself for gathering the courage to advocate for what I deserved. For the first time in 25 years, after repeatedly being silenced, I finally found my voice.



Courtesy of Avina Rami



At the Membrane

By Steven Criss
M4, Harvard Medical School

All of our learning about cell membranes includes neatly formatted diagrams with clear layers, channels, and receptors. It must actually be pretty chaotic, right? This is an attempt to capture a bit of that chaos at the membrane.

Twenty Years of Snarls

By Jacob Meyerson
M2, Harvard Medical School

I woke up this morning
Ow
Legs hurt
Do not want to do anything

Damn it

He needs fresh towels
or else he'll blow up

Quick
Quicker!

Grabbed the towels
and delivered them

to a snarling face

A moment of calm
as I sit in the recliner
How have I done this for so long?
How do I take my power back?

I drive to the doctor

Check-in,
Sit down,
Wait
wait
wait

Can I have students with me, she asks
All I see
is a wave of white coats

I feel interrogated
as they alternate questions
while typing, poking, and prodding

Eventually,
She closes her computer
stops checking boxes

Looks at me,
listens

then tells me I'll be okay

I crumble
It's overpowering

As twenty years of snarls
all come out at once

The Temporary Brilliance of Life

By Liz Roux

M2, Harvard Medical School

The sun never sets during Alaskan summers, and I had never felt more alive. A tundra of glacial streams and mountains pierced the sky. Raw, unyielding. No human belonged in this wilderness, and yet we persisted, each trudging step carrying us deeper into humility.

Today was my day to shine, a bright-eyed kid from Florida leading a motley crew across two mountain ranges, a forest of willows, and a surging river. No vestiges of oceanic bliss here, far from

my roots in a harsh and novel land, but I radiated nonetheless. The alpine was a new home offering a most precious gift: a connection to my mother for the first time since cradling her dying frame last year.

I extended my arm, flush and grizzled from the affection of mosquitos, and pushed through the remaining willows. An iridescent river flowed before me, coursing with vitality. I exhaled with a grin. And then a rustling to my left, a growl reverberating through my spine, and the

world lurching to a halt.

A male grizzly bear stood twenty paces away. I had never seen a creature so wrathful and beautiful. It reared on its hind legs and warily sniffed the air. Deep auburn eyes locked onto mine as the bear slammed onto all fours and broke into a run.

A moment in eternity. I and that enigmatic animal grappled amid an indifferent world for the right to carry on unperturbed. With terror hardened by inevitability, I willed myself a final glance at magnificence, muscles

rippling beneath a sheen of mahogany fur. I barely registered deploying my bear spray. It erupted in a yellow haze, striking the bear square between the eyes before dispersing around me in a cloud of intoxicating agony.

I crumpled to the ground and hefted my backpack on top of me as my final salvation. The bear, agitated by the spray but only angrier for it, crashed into me as a torrent of claw and tooth. The sun blotted out by the domineering shadow. Its weight forced my breath out of me, and with it my soul.

I felt the unbearable lightness of my own existence, bereft of a shattered body, drifting up towards the sky. I gazed down upon a tangible world to see a sixteen-year-old girl huddled before the mercy

of Nature incarnate. Blood oozed from her elbow, head lolling with each thunderous strike from the bear. Her eyes flashed open for a moment, craning for that effervescent Alaskan sun, and locked onto me.

*A moment in eternity.
I and that enigmatic
animal grappled amid
an indifferent world
for the right to carry
on unperturbed.*

Urgency.

Emanating from within my very existence, a dire need to choose: continue drifting towards the peace of my mother's embrace, or return to the fervors of the flesh. The bear struck again, slashing the backpack in two, and the

girl's eyes rolled white.

I felt nothing, then everything. A searing pain in my elbow, the weight of the world pressing me into the earth. Another cloud of agony as the people accompanying me sprung into action deploying more bear spray. The pressure ebbed away. Sunshine on my brow. I could finally rest.

—
It's still a bluebird of a day as I begin to stir. A rush of the river behind me, people working feverishly in the foreground, wrapping my elbow in gauze, mutters of laceration and infection and my god it cut her down to the bone. The world spins and the sun shines and hearts beat nonchalantly and I...all I can think of is the temporary brilliance of life.



Courtesy of Liz Roux

Alzheimer's

bright,

quickening.

shines

on darkened

pond. this

cool light.

evening.

see—

the trees

bloom

quietly.

park bench.

Reading,

a grandfather

and his small
granddaughter.

Lines

conjure

a history: this cost to

summon

memory.

Losing Time

tinyurl.com/priyaamin



Scan QR code to
watch

Video by Priya Amin

M2, Harvard Medical School

Poem by Miriam Huettner

The malleability
of two

events concurrent
or one

juxtaposed on another:

leaves rolled
into

images

by an invisible
hand,

training wheels unused

as bicycle presses
down onto

pavement creating

heat of

friction.

Feathery cheeks dimple
in fatherly pride

of progeny's
cyclical
triumph. Societies of

histories
filling up in his

chest.
Stories tell of worlds
spanning ancestry's

smile.

When
memory makes home in

transmission

The second relives what the
first forgets—

Inner
eye curves
inward.

Amnesia to

extend.

on love

By Allysa Warling
M2, Harvard Medical School

“the opposite of a gun is wherever you point it.”
says a line from the poem i read after
19 children were murdered in a school shooting yesterday.
“there was yet another mass shooting targeting
children and educators at an American school campus.”
says the NBC News anchor. yet another.
see something enough times and you begin to believe it.
(not a lone wolf, but a pack,
a pattern
of attack).
say something enough times and you begin to believe it.
Uvalde. Parkland, Santa Fe.
Sandy Hook, misery.
all the way back to Columbine,
in my home state of Colorado, in 1999
before i was even old enough to understand.
“the definition of insanity is doing the same thing over and
over again and expecting different results.”
says a quote
often misattributed to Einstein.
“there is no way to stop this,” says Politico’s
headline, headline, headlines.
the definition [ready] of insanity [aim] is doing the same thing [fire]
over [fire] and over [fire] again [fire].
see something enough times and you begin to believe it.
(not one man, but many,
no broken homes,
just fractured
society).
there is nothing else we can do. nothing else we can do
for you.
say something enough times and you begin to believe it.
throw away life enough times and you’ll forget to
retrieve it.
“good morning, doctor”, says the medical school security guard
each time i pass his desk on my way to class,
or to take a test.
good morning, doctor.
i am not a doctor yet but funny how last week

i caught myself almost in the belief

that i'd assumed the role already.
say something enough times
and you begin to believe it.
say something enough times and you'll think
you've already achieved it.
and one day it is true
i'd like to use
my hands to heal.
but the same country that nurtured me and mine
gave someone else's hands the time
to buy a gun and fifteen hundred rounds of ammunition
[ready]
[aim]
[fire].
and
there is nothing else we can do.
say fifty-two
u.s. senators,
and countless
mayors cops governors ceos
presidents and deans.
in the same way they tell me
we can't house the woman who
sleeps
on the sidewalk
outside of Boston Children's Hospital
with a thin blanket that she keeps
as my peers and teachers and i
walk blithely by
on our way to class.
and
one day i'll hold a patient's hand in mine
who's uninsured and missed care for years
or skipped expensive meds for want of food,
and make the same pronouncement:
there is nothing else we can do.
there is nothing else we can do
for you.
[thanks]
[anyway]
[doctor].
but how am i supposed to believe it?
equity. safety. love and care for all.

I Believe in Doubt

By Dr. Robin Colgrove

MD, Professor and Infectious Disease Specialist, Beth Israel Deaconess Medical Center

I believe in doubt. I believe in the limits of faith, and in maintaining some skepticism regarding even one's own most deeply held convictions. I believe that being sure is not the same as being right.

I say this not just to turn a clever phrase, steeped in Socratic irony. Rather, I truly feel that we suffer on balance from too much rather than too little faith. I have faith in my friends and loved ones, and I do believe this sentiment enriches life and nourishes the soul. In the wider context of the world, however, my experience has been that too much belief clouds rather than illuminates the mind. Uncritically held conviction more frequently blocks real progress in understanding and overcoming the key challenges of life.

In the wider context of the world, however, my experience has been that too much belief clouds rather than illuminates the mind.

In my professional life as a physician and scientist, I am all too often proven wrong. I do my best to understand and

to render thoughtful analyses, but sometimes I am mistaken. There is no escaping this fact: my diagnoses and hypotheses are all neatly transcribed for anyone to read and to notice where subsequent events have shown me to be in error. Looking back, I can see places where I felt certain I knew the answer—but where reality showed otherwise.

Having more than once been certain but wrong, sometimes in very serious matters, has made me try to preface every assertion—at least in my own mind—with the caveat: “But I’m only human. I might be mistaken.” I truly wish I could persuade more people to adopt a similar stance. What I see more often, though, is that otherwise smart and reasonable people block off parts of their minds, where emotionally important fixed convictions reside protected against reason and thoughtful criticism.

On a personal level, this can lead simply to foolish ideas about harmless topics. (I hesitate to give specific examples, since most of us hold at least a few silly notions; and I find that people generally stop listening when called out on their own beliefs.) In more serious subjects, though, certainty in one's own rightness and in the wickedness of those who disagree has given people

latitude to be horribly cruel to one another. From small, individual acts of malice, to genocide-scale slaughter of the helpless, few human traits are more toxic than the tendency to let certainty trump decency and to let conviction override compassion.

...few human traits are more toxic than the tendency to let certainty trump decency and to let conviction override compassion.

In the biomedical areas where I work, uncertainty is appropriate. We are dealing with systems far more complex than we understand, perhaps more than we are capable of understanding fully. Even here, though, many people retreat into the false comfort of a pretend assurance, protecting themselves from the anxiety of doubt by denying the extent of our ignorance. Rather, I wish we could embrace this complexity, using our partial and imperfect understanding to navigate ways forward.

Only in this way, I believe, can we face the world as it is and treat one another—in all our differences—with true kindness.

Wait No More

By Dr. Mark Williams
MD, Professor and Nephrologist
at Joslin Diabetes Center

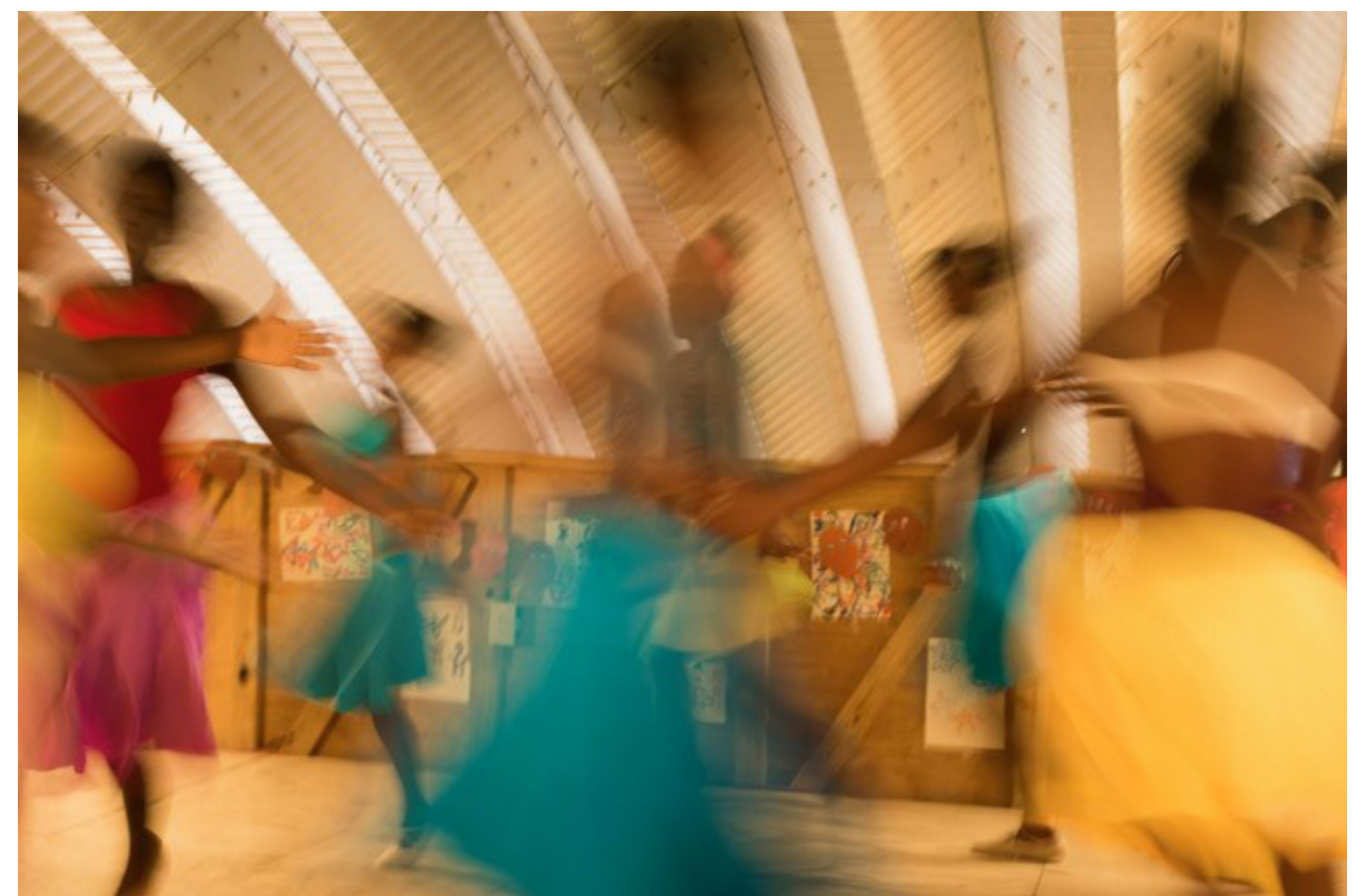
Reading a patient's body language is a learned asset for a physician. Doing photography has taught me how to see the world better. It felt like this afternoon train in Grand Forks, North Dakota, would never end - the camera captured a similar feeling from the couple waiting to cross from the other side just as the caboose finally passed.

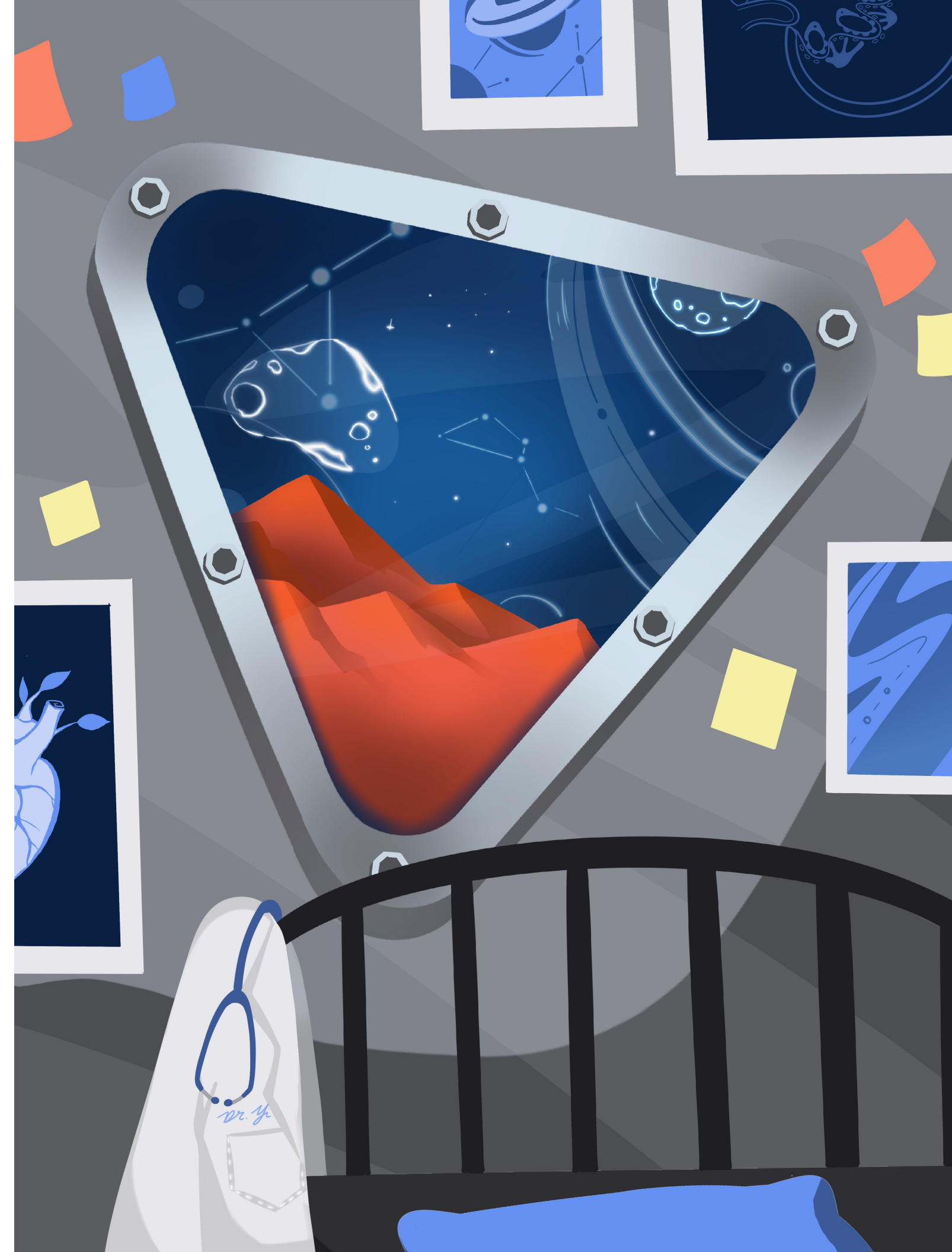


We Exist (Haiti)

By Dr. Mark Williams
MD, Professor and Nephrologist
at Joslin Diabetes Center

Like a doctor with stethoscope, I have been told that to be a good photographer I must always have my camera ready. During a brief stay doing medical missionary work in tumultuous Haiti, I enjoyed an afternoon dance recital at the local grade school in Leogane (the epicenter of the earthquake of 2010, six years earlier). I will never forget the sunny, colorful spirit in the room. Looking carefully, you see a hand to the left that seems to invite you to be a part of it.





Shine Out

By Yilong Peng

M2, Harvard Medical School

Illustrations by Sophie Yu

Phoebe often saw my patients, and I hers, even though our respective contracts technically forbade it. Even though each of the mining companies we worked for only staffed around a hundred workers per shiftship, there were times we needed a consult, another pair of hands for a procedure, or just someone to bitch to at the end of the day. No matter how small the community, some professions you just need two of: locksmiths, barbers, physicians. We covered for each other whenever one of us was indisposed or just wanted a change of scenery. Phoebe liked to practice with a view of Earth outside her wall port; sometimes I could predict when my pager would ping based on where we were in our orbit cycle. I liked her patients well enough; they weren't much different from mine. Some of them — usually the men — started to reserve concerns for when I came around; after the fiftieth inquiry, I typed up a report for both of our ships explaining that I couldn't prescribe Viagra because: 1) neither companies' medication policy covered it and 2) it was contraindicated against the microgravity and would lead to them passing out. Besides, it wasn't in the best interest of any

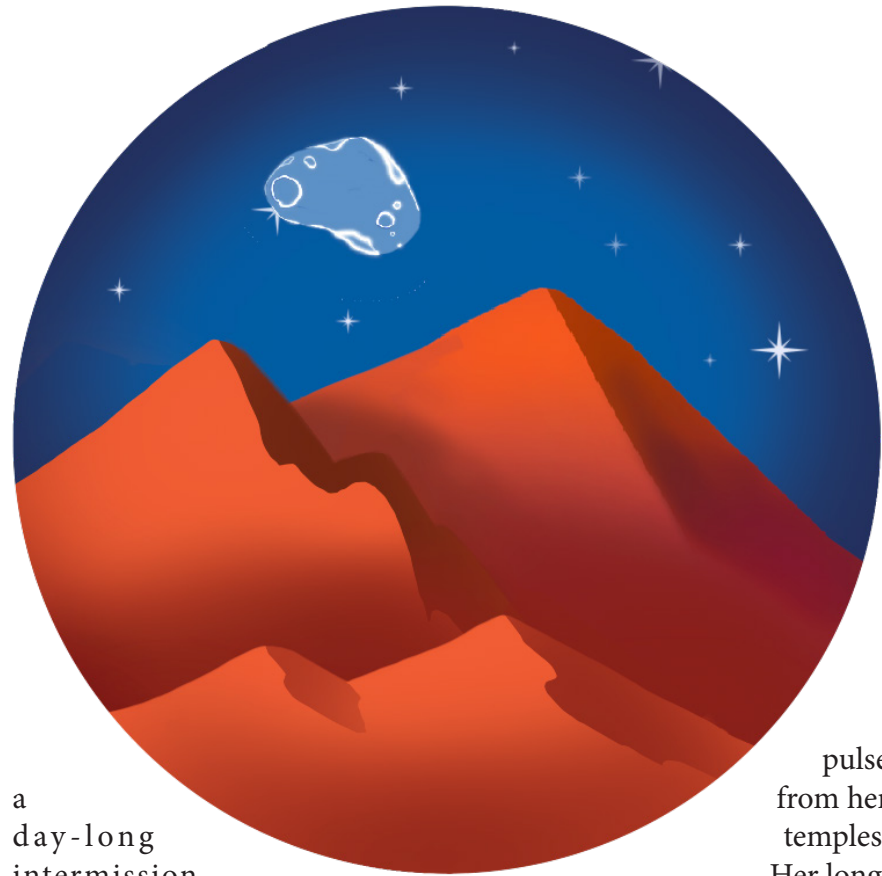
company to encourage those kinds of extraterrestrial extracurriculars, what with all the health risks if anything were to go wrong.

We had our agreements and disagreements, Phoebe and I. She hated that I let the patients, both mine and hers, call me Damien. She insisted on being Dr. Pavor, convinced that misogyny had tracked her all the way to Mars and damned if she was going to let anyone dismiss her efforts as the first female physician in space by calling her by anything less than her full title. Her patient notes read like overly-clipped fingernails. She was on birth control like most of the other women, but still got these horrible cramps every month when they cycled the magnetic shields that put her in a bunk and had me working doubles, bouncing between our shiftships in the ping-pong shaped transporters usually reserved for miners and their ore shipments. We came to practice medicine similarly. During one of our performance reviews, I was commended for my 'rational, professional approach' while she was condemned as 'distant, at times unempathetic.' "Fuck 'em, right?" she had laughed it off with me over a bottle of Merlot — the

company I worked for grew its own grapes — before crumpling and tossing both of our reviews into the trash. Later, when she thought I wasn't looking, she fished them out and placed them side by side, scrutinizing from one to the other like a radiologist comparing x-rays. It was the second time I ever saw her cry, her face blotched like the rocks.

No matter how small the community, some professions you just need two of: locksmiths, barbers, physicians.

I was covering for her today, her viewport granting me a lovely starscape of Moon. The first patient was running late. We were in month four; the shiftship crews operated on six-month cycles, just long enough to get you missing people when they left, all synchronized around the same time. Twice a year, all the long-term personnel would descend to the planetary greenhouses and watch those ships disappear like thespians behind a black curtain,



a day-long intermission, then their roles reprised by understudies who themselves would grow, perform, be replaced. We were the constants in a world of floating variables. I had been with my company for three years, Phoebe with hers for five. We never talked about our Earth lives. It wasn't happiness and fulfillment that drove people into the arms of the red planet.

Finally, the patient showed up. Her name was Asapha; thirty-seven years old; worked as a social dynamics facilitator (read: HR); unremarkable medical history; had seen Phoebe once back in month one for treatment of standard space nausea. It must've cleared up because she'd gained a little weight since then. She was short and precise and wore her hair so tight I could read her

pulse from her temples. Her long, billowing dress undulated like a jellyfish with the fluctuations of gravity. We exchanged pleasantries and then she vomited. I tried not to let this influence my first impression of her. She whispered fervent apologies as I silently wiped off my shoes and we moved into the other exam room.

"Did the nausea come back?" I asked, my pen halfway to my pad to scribble down an order for Dramamine. She sniffed. I looked at her, really looked at her, for the first time: the ill-fitting bra, the weight shifting under her feet, weariness, wariness. One lens shattered and the other dropped into place. "Oh."

"Can you do something about it?"

"How long has it been, do you know?" She set her mouth

and didn't answer. "I need to know, so we can be sure and figure out what our options are."

"I have two boys waiting for me at home. I know what it feels like by now. Unless you're just really wanting me to piss in a cup." The ship lurched and a moment later her stomach followed. At least she made it to the trash receptacle this time. Her voice echoed from its depths. "Two months. Maybe three." She rose and washed her mouth out over the sink. Moon, a voyeur, lingered, adding soft light and softer shadows.

"Well, the nausea should get better soon," was the only thing I could think to say.

She laughed, acidic as vomit. "And a whole host of things are about to get a lot worse." Then she repeated her question. "Can you do something about it?"

"I need to talk to Phoe — to Dr. Pavor." The rest of my training kicked in with one foot out the door. "Did you mean for this to happen?"

"Do I look fucking stupid?"

"Are you worried for your safety? I have — well, not me, but someone who works here, maybe, we can file an anonymous report."

An ozone-charged silence. I didn't look at her. Why was it that my heart was the one racing? Then she said, "I think you better go get Dr. Pavor." When I left, something like shame rising from my shoes, she was sitting on the exam table, face out to space, her arms folded across her belly in a way that seemed neither learned nor instinctual.

Phoebe was in her office

working on a research grant. Space medicine — Space everything, really — had become the hot new topic once we'd begun conquering the final frontier in earnest. Turns out most of the plumbing in our body was designed to operate under a strict nine-point-eight meters-per-second-squared; whoever bioengineered the first positive-gravity spacesuit was going to be fabulously wealthy. Maybe Phoebe thought it could be her. Most of the medical research was being conducted on the Moon bases by Stockholm-skimmers-to-be, but she insisted there was still something to be learned from our distant outpost. I never offered to help and she never asked. Everyone needs a hobby. Anyhow, Phoebe was working on the grant when I came in. She was an ambitious sunflower growing towards some light source neither of us could see but she alone was able to sense with some organ I didn't possess. Five years of micro-gravity had lengthened her spine, slimmed her limbs; five years of space medicine had stretched her patience, something she hadn't arrived on Mars with a surplus of, by her own admission. She listened with intense eyes as I recounted the encounter.

"How sure are you?" she asked.

"She seemed pretty sure. What are we going to do, Phoebe? The next shiftships aren't due for another two months. She needs things we don't have — supplements, what supplements do we have? An STI screening. What if she develops diabetes? Or radia-

tion sickness?" I was pacing now. "Christ, imagine the press if this gets out. The USSC will force a recall, maybe an investigation." Temptation socked me in the nose and I stumbled, looking at the cloud that had become Phoebe's head. "Are you smoking in here?"

"Can't smoke in front of the patient." She tracked my eyes. "Relax, I took the batteries out of the smoke alarm the first week." The room reeked of the past. "Not your ship, not your patient. So, relax."

"Surely you're not thinking of managing her care alone."

"Course not."

When I left, something like shame rising from my shoes, she was sitting on the exam table, face out to space, her arms folded across her belly in a way that seemed neither learned nor instinctual.

I tried to follow her instructions, breathing deeply. Maybe the secondhand smoke would calm me down. "You have a plan."

"Making it right now." She pointed me towards her textbooks, stacked like pancakes in the corner. "Go pull me a list of everything we'd do for an emerging second-trimester on Earth."

"Don't you have digital copies? Okay, okay," I acquiesced under her glare. Another thought set my heart off. "What if she

doesn't want to keep it?"

"She's going to have to."

"That's not what I asked."

A smoky sigh. "Go read. Please."

Half an hour later, I'd scrubbed the rust off most of my med school neurons and was feeling much better about the whole thing. It still promised to be a logistical disaster, but the medical part should've been manageable. Phoebe reviewed my list with me, nodding along approvingly. "We can do that. And that, along with ultrasound. I can call her back in tomorrow."

"Oh, about that..."

"You left her in there? She's probably clawing at the wallpaper by now." Phoebe decapitated her second cigarette and rushed out the door with me flapping behind, apologizing to the other patients waiting in the small hallway of a lobby, past the first exam room whose smell was starting to seep through the door, bursting into the second. Ms. Asapha was not in hysterics as predicted. A forced calmness seemed to have settled over her.

"About fucking time. Give it to me straight, Dr. Pavor."

"We're going to do an ultrasound to confirm how far along you are. Most of the tests they ran to clear you for spaceflight are pretty close to what we would have done for prenatal screening. Water under the bridge either way. Our job for the next two months is to keep you healthy. We can get you extra food. Make sure to stay as deep indoors as you can whenever they cycle the shields." Phoebe placed a hand

on the other woman's shoulder. "Forgive me for having to ask so directly, but do you know who the father is?"

She nodded. Slowly, like she had meningitis.

"Do you want to tell us?"

Left first, then right.

"Does he know?"

She shrugged.

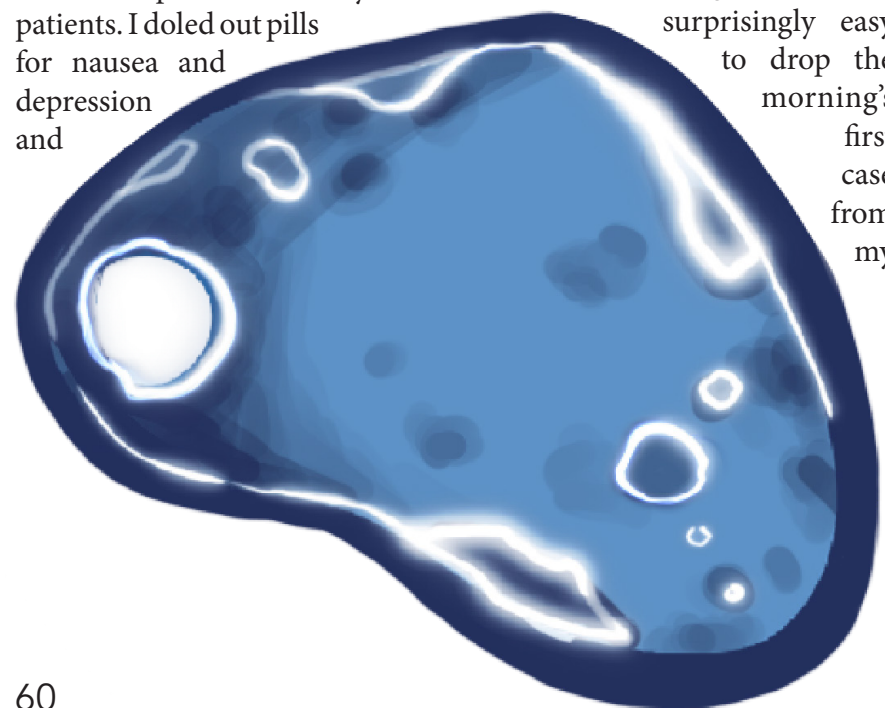
"While you're here, we might as well get a physical exam. I'll keep anything sensitive off file." Phoebe turned to me. "Dr. Ormido, why don't you start working on our backlog out there?"

It was a long day. I scrubbed the first exam room clean and finished with the rest of her patients in there, trying to emulate her overly-truncated writing style and signing off with her name. Then I pinged down to Mars and ponged back up to my ship, making sure to exit the transporter when nobody else was there to question the nature of my travels or my return. The afternoon passed with my own patients. I doled out pills for nausea and depression and

early radiation sickness for the miners who neglected to wear their protective gear properly, heard a lot of complaints while listening to some of them, relocated a shoulder, took away feeling from a bothersome knee, reassured a woman her sporadic fevers and spine

chills and nightmares that soaked the bed likely weren't serious while worrying the whole time that they were, but we didn't do the tests for cancer because we couldn't deliver the treatments for cancer, and the company didn't believe in testing for things that we couldn't do a damn thing about anyways. I sent her off with analgesics and a topical ointment and an antiperspirant and prayed that she would last the two months until her feet touched terra firma and some other unfortunate physician could deliver her the news, and that she might never suspect the deliberate neglect I had handled her with. These kinds of things that made it

surprisingly easy to drop the morning's first case from my



mind. It wasn't until I returned to my room and saw the message waiting from Phoebe that it all came flooding back: 'NEED TO SEE YOU TOMORROW.'

I wrote back: '?'

A few minutes later: 'WAS CHECKING GRANT ALL DAY. AS YOU KNOW: 'AND?'

'FEELING UNDER HIGH PRESSURE. OTHER HIGHS AND LOWS. COULD USE SOME HELP.'

I knew what it meant but refused to internalize it just yet. Unlike barbers and locksmiths, physicians excel at compartmentalizing. I slept poorly that night and was up early the next morning. Thankfully, I had no prescheduled patients for the day; I hung a sign on my door saying I'd be back for the afternoon. Tobacco and alcohol-based cleanser clashed in the hallway outside her office. Phoebe was inside, coming undone. A phalanx of spent butts guarded her desk.

"Christ! Did you sleep here?"

"Pre-eclampsia, Damien. Elevated liver, low platelets, a bunch of other things I don't know if she's even feeling yet. Almost textbook presentation, if only it didn't show up eight weeks before it was supposed to."

I bowed my head, realized I'd worn the same shoes from yesterday, still stained. "We have to flag for aid before she gets too sick to make the trip back."

"She doesn't want to go back. Doesn't want to terminate either, guessing that was going to

be your next inane suggestion."

"Look, I read all the same dossiers on patient consent that you did, Phoebe, but a forty-year-old with first trimester pre-eclampsia on Mars isn't the time to start worrying about ethics committees! It's your judgment, your medical license on the line. Make the right call before it's too late."

"At least you can get one thing right. My patient, my call. What if I call?" She laid her head back down in her arms. "She gets fired. They run a DNA test and yank hairs from every man on this ship until they find the accomplice. At least he might get severance. The company won't fly ever again. Even if they do, they'll probably enforce some male-only personnel decision. You've read Lord of the Flies?"

"Get some sleep," I begged. "This isn't you."

"We can keep her alive for two months. Won't be pleasant, sure. We'll have to keep it all undocumented." She began to gnaw on an unlit cigarette. "When the ships change shifts, they'll take her back with all the others. Earthside, she'll claim to have hidden it from me, from everyone. They'll probably still fire her. But she gets good medical care to keep her happy and healthy. She gets her baby. Company gets to control the narrative. A few non-disclosures and the USSC is none the wiser."

Fear plucked my throat. "I can't be a part of this."

She shoved me against the door and something erupted. It was a terrifying crescendo of

emotions, each of us feeding on and feeding off the other. We yelled terrible, terrible things. In grasping for emotional ammunition, I realized I only knew the mundane about Phoebe. Our rubber words led to bruises, bleeds, but nothing more. The worst thing she called me was a coward. I wondered if she meant it and if she was right. After we finished, Phoebe lit another cigarette and told me she was leaving after this shift. I composed my face to what I thought was the appropriate level of dismay to process this news.

"Not just because of what's happened. Five years is just too long for a single job. If you want a career. I'm told that's something on the table for women these days."

I nodded, pretending to understand. "I'll miss you."

"So you don't have to worry about me if I do this. Now will you help?"

Help, it turned out, bore very little difference from what I'd already been doing for her. She saw Asapha whenever there was a shared opening in both our schedules. During these times, I stood guard outside her two clinic rooms, a bouncer in an ill-fitting white suit, and redirected anyone who came in for an unscheduled visit. Phoebe had made it clear I wasn't needed to be a part of Asapha's care. The natural inquirer in me found it difficult to abstain. Could I help my natural empathic tendencies as a physician, having sworn to the same credo as her? My post shifted gradually closer to their

exam room until I could hear the rasp of the blood pressure cuff, the click of the penlight, the burbling creek of words rising and falling with the indistinctiveness of flowing water. Whenever I heard the clank of the exam table — the agreed-upon signal — I had three seconds to fall back into the second exam room before Asapha walked out. Espionage engendered something strangely enticing for me. Four weeks passed like this without incident. I took to a calendar, crossing off each day like a child counting down to summer holiday. It would be summer on Earth when the new shiftships arrived.

She shoved me against the door and something erupted. It was a terrifying crescendo of emotions, each of us feeding on and feeding off the other.

Whenever I saw Phoebe, an artist had taken to her likeness: erasing lines from her hair, going over the ones on her face. She refused to share anything about Asapha with me but a monosyllabic prognosis: "Good." It was when "good" became "fine" and "fine" became "don't you have patients to see later?" that I began to grow worried.

One unremarkable morning, with five weeks to go, the main shield generator on Phoebe's ship gave out. After much cajoling, my

company decided the good PR of helping out a fellow capitalist in crisis outweighed the cost of sparing some of our engineers to help them fix the problem. It was a convenient excuse for me to be with Phoebe, handing out extra rations of thyroid-shielding iodine and radiation medications which none of us were confident worked but took anyway, something about any placebo in a storm.

"All that radiation can't be good for the fetus," I said one day after we'd retired to her office, partly worried myself and partly to test how worried I could get Phoebe to be.

"Gave her my iodide and pills. Already installed double paneling in her room last month. And it's baby."

"Sorry?"

"She calls it 'baby.'"

"But it's not a baby yet."

Phoebe huffed. I left feeling like I'd said something wrong.

With four weeks to go, I arrived on a late evening to perform my usual duties and bumped into Asapha. We each leapt for cover. I was supposed to be here. I composed myself. "Hello, Ms. Asapha, wasn't it? How are you today?"

"Nice to see you, Dr. Ormido." She was wearing a shirt that would've been too tight even before, now it was positively lurid. She planted both of her hands on her hips as if daring me to say something.

"Phoebe must be running just a few minutes late. Let me go check in her office for you."

Phoebe was in her office, on

the floor, curled up in the corner like a lonely orange slice floating in a pale punch. "It's whatever stupid hack job your company did on the shield," she hissed at me. "Saboteurs. Been ever since they left."

"I think it's just you," I said. "I'm fine, Asapha's fine."

She made it halfway upright before collapsing again. "You saw her?"

"I can cover for you, just this once."

"No."

"I got it, Phoebe. Make sure the door's locked, nothing written down. What if she needs something?"

"No," she insisted. "Tell her to reschedule. A couple of days."

When I returned, Asapha was sitting in the exam room with the door propped wide open, letting the world into her belly. How could she afford to drop her guard so brazenly? It would only take someone walking by for some extra sleep meds to see her and blow our scheme wide open. I rushed inside, shut the door, locked it behind me, all before turning to address her look of alarm. If this was how she conducted herself on the rest of the ship, it was a wonder we hadn't already been caught. Maybe we had been. Paranoia crawled its eight legs across the nape of my neck. God, how did Phoebe do this day in and day out?

"Is Dr. Pavor coming?" asked the patient. She was breathing heavily, too much weight on her wrists. Her skin was an unpleasant shade.

"She's not feeling well today.

She actually asked me to come in and do your exam."

Asapha retreated like a flower un-blooming. "I can reschedule for Dr. Pavor."

"Phoebe said she wants to keep you on the same schedule. There were some concerning values on your last exam that she wants to make sure we follow up on aggressively, for your health. And for the fetus."

Paranoia crawled its eight legs across the nape of my neck. God, how did Phoebe do this day in and day out?

"Dr. Pavor's said everything's been fine."

"As I'm sure it has been. She says you've been taking very good care of yourself." I unhooked the blood pressure cuff from the wall. "If it helps, I don't think I need to take a look down there. I just want to check some numbers and ask some questions about your pre-eclampsia."

"My what?"

"Pre-ee-clamp-see-ah," I said, sounding it out for her. "Your hypertension."

"Dr. Pavor hasn't said anything sounding like pre-what-ever-the-fuck-you're-saying. She just told me it's normal for my blood pressure to go up on account of all this extra weight I'm lugging around. Had it with my other kids too."

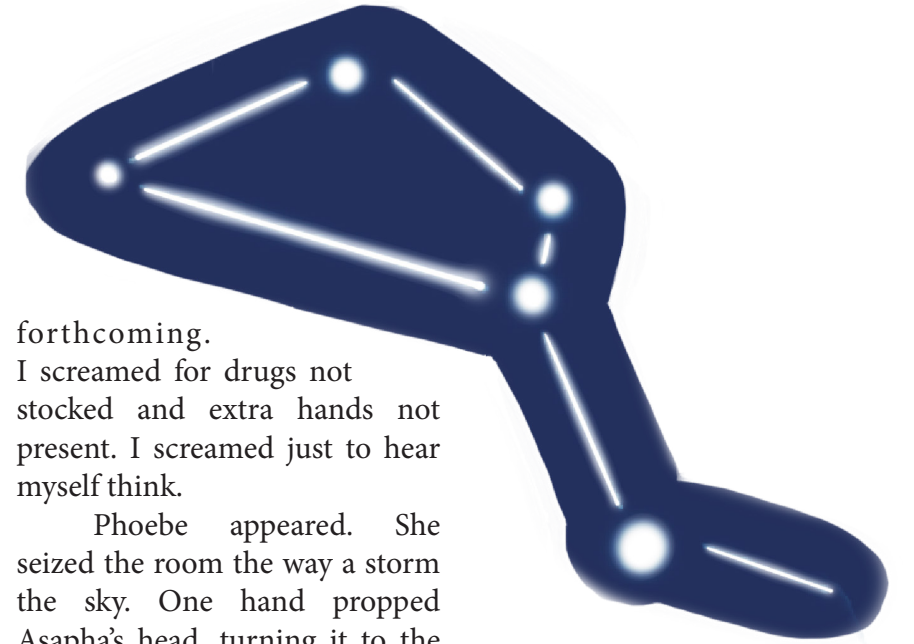
I unhooked the stetho-

scope from my ears. "You don't know what you have?"

"Can you stop talking to me like I'm a goddamn idiot? A baby — that's what I'm having, a baby. And I know it was a stupid thing to do but I'm making the best out of it, aren't I? Following all of Dr. Pavor's to-do's, eating spinach until I can see it in my face, coming in just so she can pat me on the ass and tell me everything's going to be fine."

I was barely listening to what she was saying. I took her blood pressure once, twice, again and again, watching the number escape into digits I'd only seen in the emergency room. Terror gripped me. I couldn't compose myself. Asapha pulled herself further onto the bed and placed her hands across her swelling again. "What is it, doctor?"

"Stay here," I mumbled. My lips felt numb, like I'd been at the bar all night. As I turned to leave, her body hit the floor. The impact sounded wet, like fresh-caught tuna smacking the bottom of a fishing boat. The impact was wet — for a terrifying moment I thought her water had broken, but it was too early for that and the liquid that ran out was the wrong color. She'd rolled off the table and landed on her back. Her head knocked a jazz beat against the floor. Then she vomited, frothy green running down to join the yellow, the stench of death. Some of it rose and fell back into her airway and she began to choke like someone thrashing the life out of a cymbal, a horrific din that obliterated all thought, all rationality. I screamed for help not



forthcoming.

I screamed for drugs not stocked and extra hands not present. I screamed just to hear myself think.

Phoebe appeared. She seized the room the way a storm the sky. One hand propped Asapha's head, turning it to the side; the other pulled the sheets off the bed to give her a dry space to work on. She spared me a simple glance. "Breathe." To Asapha, "I'm sorry. It's almost over. Breathe with me if you can." We both followed her, our trio settling back into a workable rhythm. Asapha's flailing slowed and her limbs fell out of the air one by one like birds struck by lightning. We placed needles and lines in her and used what fluids we had to resuscitate her. Once she was more conscious, I told her what Phoebe should have. To restore a shred of Phoebe's credit, she made no move to stop me.

"You had a condition called pre-eclampsia which has now progressed to eclampsia. This is life-threatening and beyond what we're able to treat here. We need to call you a medical evacuation immediately."

"There's one more option," Phoebe interrupted.

"With all due respect, Dr. Pavor, this patient is past the point of other options."

a horizontal elevator, all glass and crystal, that pushed us through like bubbles out of a syringe.

President Kasei Akahoshi was the on-site leader for Phoebe's company. His office would have been luxurious by Earth standards. It smelled like all the things I hadn't realized I'd been missing: dirt from the pots; found within, the plants themselves, green and rich with vitality; petrichor from an artificial waterfall that fed a floor pond of miniature koi. A chandelier imitating the cosmos twirled for our benefit. Phoebe and I sat side by side on a wine-leather sofa, careful not to touch one another. President Akahoshi waited until we were settled before indulging himself in a dramatic turn of his throne-like chair. He was old in a business where few men were and had fought hard to keep himself appearing young in recognition of that fact. After we had finished taking care of Asapha, we had sent him a message last night with her name and both of our signatures, requesting his earliest audience. Now we sat before him, two doctors whose lifetimes summed together still did not eclipse his. It was impossible for him to be an unintelligent man. He knew what we were here to speak with him about. I spoke first, without preamble, like Phoebe and I had practiced.

"I have the list of medications she needs, Mr. President. None of them are expensive, and none are specific to anything that will raise suspicion. If she gets these, she'll be healthy enough

to leave with the rest of the crew next month."

Now Phoebe took over. "When we arrive back on Earth, I can continue to care for Asapha. She's agreed to give birth outside of a hospital system and grant you full custody of the child afterwards."

We had much more to our argument prepared, but President Akahoshi raised a gnarled hand and we both fell silent. He spoke like he was unfolding a crumpled piece of paper. "Do what you will." Then he dismissed us to prepare for his meeting with some investors.

The package arrived the next day, a billion-dollar rocket carrying a thousand-dollars' worth of pharmaceuticals safe for both Asapha and her fetus. I was in the room when Phoebe gave her the first dose. Her blood pressure plummeted back to normal. Asapha cried then; Phoebe later, out in the hallway. I never saw either of them again. I'd thrown away my half-completed calendar and so the end of the final month caught me by surprise. I'd been meaning to send Phoebe a message, arrange some sort of fitting goodbye not just for this case but for all the ones we'd shared for the three years I'd known her. Half finished drafts were scattered around my room. Sappy, resentful, timidly neutral, falsely intimate; none of them lived up to what our relationship had been. Once or twice, I went down to the surface of Mars, intending to take the next transport pod up to see her like

I'd done a hundred times before, but the events had stripped my taste for such visits like a virus; if she felt more up to it, then she was free to visit me, which she never did. There was a fight we were obligated to have if we met and perhaps neither of us wanted to fight anymore. The faux peace left me turning over the pieces of maybe's: maybe if Phoebe had told her, maybe if Phoebe had told me, maybe if I hadn't told her. Maybe she died in the elevator; maybe she lived with all none the wiser. Maybe we called the USSC and raised all of hell to save a life-and-a-half. Maybe if she had kept it in her pants, or President Akahoshi in his. Maybe if Phoebe or I, Phoebe and I and everyone else we were technically forbidden to collaborate with, had joined together to push for more coverage for the improbable, the impossible, especially the impossible. Maybe we all kept our heads down and got on with it.

I never saw either of them again. I'd thrown away my half-completed calendar and so the end of the final month caught me by surprise.

I laid in the greenhouse and watched the shiftships flee the planet of war. Reinforcements arrived by morning. They sent me up and I went to go do my job.

Shimmer

By Jessica Sun

M4, Harvard Medical School

I painted this piece during the summer of 2020 as a study of my surroundings during the height of the COVID-19 pandemic. It had been years since I had spent extended time in my hometown. Perhaps it was the lack of evidence of human life during those few months, but the forests and wildlife that summer were wilder, greener, freer than I ever remembered. This piece reflects a process of observation and re-discovery that many of us likely encountered in 2020.





What Makes a Life

By Jean Adomfeh
M4, Harvard Medical School

Life is

The curve of a smile on a child's lips,
The crinkle at the corner of each eye,
The warmth that floods a heart
At the sight of a long-missed friend.

The fragility with which we move,
Mindful that
Anyone could,
At any time,
Shatter
And require repair.

At the boundary of the ancestral world,
We stand,
Redirecting those who have arrived early
And comforting those who pass us by,

Gaffers in their lives.

Illustration by Sophie Yu



behind the scenes of an *in vivo* photoshoot

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