A painting of a landscape. In the foreground, there is a field of small white flowers with green stems and leaves. A dark, textured tree trunk is on the right side. In the middle ground, a wire fence runs across the scene. The background shows rolling hills under a bright, hazy sky. The overall style is impressionistic with visible brushstrokes.

A Year of Growth:

Reflections, Connections, and New Horizons

January Edition
THE HORIZONS

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Editor's Note

Welcome to the first issue of the year, and also, a special one.

I keep thinking about how quickly time moves and how often we don't notice the changes until we look back.

The Horizons has officially been publishing for one year.

When we started, it was just an idea. A way to share student voices, to highlight what we were learning, and to create a space where curiosity mattered more than perfection. I don't think any of us imagined how much it would grow, or how many people would find their voice here.

This edition isn't just about sharing what we learned in 2025 or what the clubs have been up to. It was about the small moments that add up, the ideas that push us forward, and the things we didn't expect to learn along the way.

In these pages, you'll read about growth that didn't feel obvious while it was happening. You'll see students exploring big questions, from regenerative medicine to sustainability, and writing about them with clarity and curiosity. You'll also read personal reflections on rest, relationships, and momentum, lessons that many of us are still learning, even now.

What stands out most to me is how different each piece is, yet how connected they all feel. That's the beauty of a community like ours. We're not all on the same path, but we're all moving forward, sometimes slowly, sometimes with setbacks, and sometimes in ways we don't notice until later.

Thank you to everyone who contributed to this issue. Your voices are what make The Horizons a place where real conversations happen, where ideas grow, and where learning isn't just something we do in school.

HAPPY READING,

Saanjh Balpande, Editor-In-Chief

Lessons 2025 Taught Me (That I Didn't Want to Learn)

I didn't go into 2025 expecting it to teach me anything profound. If anything, I thought it would be a year of momentum. Of pushing harder, doing more, and finally feeling like I was "on track." Instead, it turned out to be a year of friction. Of getting sick more than once, losing motivation at inconvenient times, and being forced to slow down when I really didn't want to.

Somewhere between missed plans and half-finished to-do lists, a few lessons kept repeating themselves until I couldn't ignore them anymore.

1. Rest is not unproductive.

For most of the year, I treated rest like a moral failure. If I weren't working, I felt lazy. If I needed a break, I felt guilty. And when I got sick, I kept telling myself I should still be able to push through.

But the truth is painfully simple: you can't do good work unless you're functioning well, mentally and physically. Rest isn't something you earn after burning yourself out. It's a prerequisite for doing anything meaningful in the first place.

Once I stopped fighting the need to slow down and actually let myself recover, something unexpected happened. The motivation came back. Not because I forced it to, but because I finally gave myself space to breathe. Sometimes circumstances just don't let you work, and resisting that reality only drains you further. Letting go of guilt turned out to be more productive than any extra hour of strained effort.

1. You can only see the world through one lens.

Everyone walks through life with their own set of assumptions, shaped by their experiences and environment. The problem is that those experiences make up a tiny fraction of reality, yet they dominate how we think the world works.

If you only ever look at life through your own lens, you miss entire dimensions of understanding. The world isn't just what you've personally seen. Talking to other people, especially people who know more than you or have lived very different lives, exposes how narrow your default perspective can be.

This year, those conversations helped me realize that a lot of the guilt and pressure I carried wasn't inevitable. It was self-imposed. Things I assumed were "normal" or "expected" turned out not to be at all.

As Morgan Housel puts it, "Your personal experiences make up maybe 0.00000001% of what's happened in the world but maybe 80% of how you think the world works." That idea stuck with me because once you internalize it, it becomes harder to cling to your assumptions as absolute truth.

Relationships are inherently inconvenient.

This was the lesson I resisted the most. Relationships demand time, and time is always scarce. They require showing up when it's not perfectly efficient or aligned with your plans. They ask for small sacrifices that don't always feel logical in the moment.

But that inconvenience is the point. Relationships aren't built through grand gestures; they're built through choosing people over marginal productivity. Visiting your mom on a Sunday morning. Call a friend when you're tired. Saying yes when staying in would be easier.

More often than not, those moments ended up being more meaningful than whatever I thought I'd do instead. And when you stop making those sacrifices, you can't reasonably expect the relationship to stay intact. Connection isn't passive. It's maintained through effort, even when that effort feels inconvenient. Looking back, 2025 wasn't about optimizing my output or proving how much I could handle. It was about learning where pushing harder stops being useful, when listening matters more than assuming, and why showing up for people is worth the time it costs.

I didn't learn these lessons quickly, and I definitely didn't learn them gracefully. But they're the ones I'm carrying forward, whether I like it or not.

Written by Alexander Bonardi

Compounding Momentum

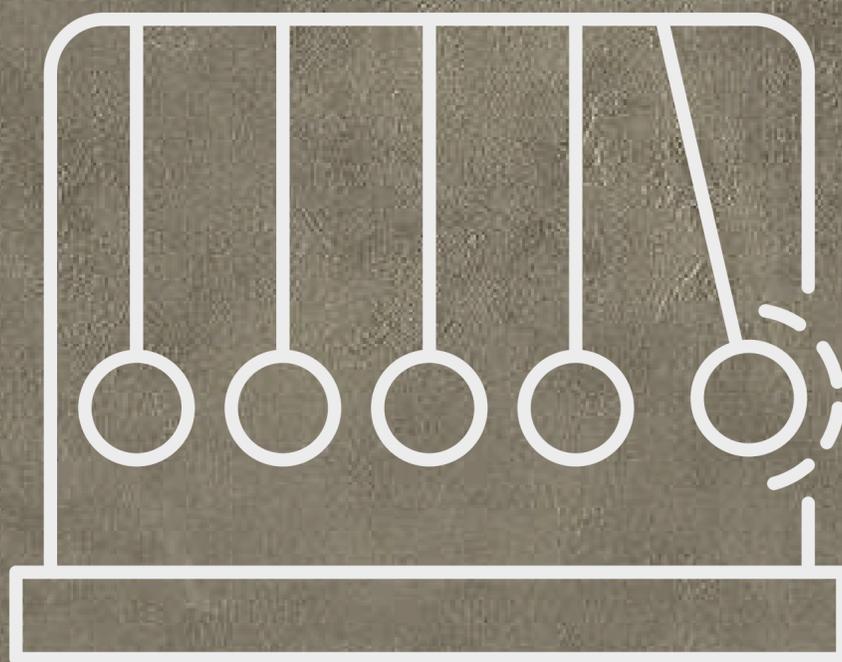
If I had to describe the mindset that quietly shaped my year, it wouldn't be ambition or discipline or even consistency. It would be compounding. More specifically, learning how momentum actually works.

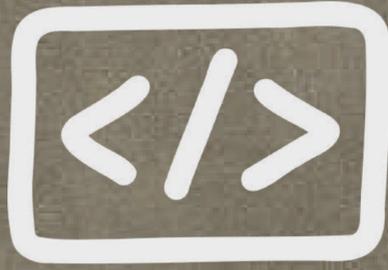
A lot of people in 2025 fixate on outcomes. They want the finished product, the title, the breakthrough. And when they hit the first real obstacle, or even just feel a little overwhelmed, they stop. Not because they can't do it, but because the gap between where they are and where they want to be feels too big.

It's like trying to cross a 500-kilometer road trip after filling your tank with one liter of gas. You don't get very far, and then you assume the problem is you, not the approach. (Unless you have a hybrid car)

What changed things for me was starting to think in terms of compounding rather than outcomes. The idea is simple: get better by 1% every day. Not reinventing your life overnight. Not becoming the founder of something in a week. Just moving forward, consistently, in small ways.

A year of that doesn't look impressive day-to-day. But over time, it adds up to something unrecognizable compared to where you started.





I remember when I first started coding. The very first thing I learned how to write was “Hi, Valeria.” Three lines of code. That was it. And I was absurdly happy. Not because what I wrote was impressive, but because it meant I had started. That tiny moment felt like the beginning of something bigger, even though objectively, it was nothing special.

That’s what compounding really looks like. You don’t fall in love with the result. You fall in love with the fact that you’ve begun.

To get 1% better every day, you need momentum. And momentum doesn’t require big moves. It can start at any scale, as long as it starts at all.

The easiest way I’ve found to build it is by breaking everything down. Every task, no matter how hard or easy it seems, gets chunked into something manageable. That way, you wake up each day knowing you moved forward, even if only slightly. That feeling matters more than people admit. It’s what keeps you going when motivation disappears.

Some days will feel like progress. Others won’t. And that’s fine. Not every day is yesterday. The goal isn’t perfection. Its direction.

Looking back, the biggest shift wasn’t in what I achieved, but in how I approached starting. Once I stopped demanding immediate results and focused on momentum instead, everything else became easier to sustain. That’s the mindset I’m carrying forward, because it’s the only one that actually compounds.

Written by Valeria Santos

Chitosan-Based Biodegradable Materials: A Sustainable Approach to Urban River Restoration

Freshwater systems make up only 2.5 – 3% of the world's total water supply, yet they are essential for sustaining life and human activity. Rivers, in particular, connect communities and environments, acting as vital lifelines for both urban and rural areas. However, rapid industrialization, population growth, and poor waste management have severely degraded these water systems. Pollutants such as heavy metals, oil residues, chemical dyes, and untreated wastewater are routinely discharged into rivers, reducing water quality and threatening aquatic life and human health. Urban rivers like the Pasig River highlight the consequences of long-term pollution and demonstrate the urgent need for sustainable and environmentally responsible water purification solutions.

My idea was a way to fight soluble pollutants with biodegradable adsorption materials. Seafood waste, such as shrimp shells have a compound known as chitin on them. When we put chitin through deacetylation (removing the acetyl group), it forms the compound known as chitosan. Chitosan functions as a coagulant, flocculant, and adsorbent by neutralizing negatively charged pollutants, binding them into larger aggregates, and adsorbing them onto its surface for effective removal from water. Its natural positive amino acid groups act as a secret in attracting negatively charged pollutants. The best part? Chitosan is both biodegradable and biocompatible, allowing it to break down naturally into non-toxic components while remaining safe for aquatic organisms and the surrounding environment.

Adsorption is a surface-based process in which pollutants adhere to the exterior of the material rather than dissolving into it. The surface area-to-volume ratio is an important factor in adsorption, as there should be a lot of adsorption sites present on the compound for contaminants to stick to. Chitosan's natural positive charge is an effective way to attract naturally negative pollutants. This process can be shown with an adsorption curve, which illustrates how the material gradually captures more pollutants as the water becomes more concentrated until all the available surface sites are full. This explains why chitosan beads are effective for cleaning water.

Chitosan uses its coagulation, flocculation, and adsorption to remove river pollutants. Firstly, it uses its positive charge to adsorb negatively charged river pollutants and make it stick onto the surface. Secondly, it neutralises the charges between it and the pollutants, causing it to lump together. Chitosan chains act like bridges, connecting small clusters into larger clumps called flocs. These flocs are heavier and either sink to the bottom or can be collected more easily. After floc formation, pollutants can be collected or filtered out, leaving cleaner water behind. Because chitosan is biodegradable, it breaks down naturally over time, making this method both effective and environmentally safe for river cleanup.

Raw chitosan powder is not suitable for direct use in rivers because it can disperse uncontrollably and may not remain in contact with pollutants long enough to be effective. To maximize the chitosan's efficiency we shape it into beads about 5–7mm thick to increase the contact surface area for pollutants, therefore increasing the adsorption rate. For river applications, the beads can be placed in plant-based mesh pouches or anchored floating modules, preventing them from dispersing uncontrollably while allowing water to flow freely through them. The material must also be stable enough to withstand slow or moderate currents until it adsorbs pollutants, but still biodegradable so that it naturally breaks down over time. This preparation ensures safe, efficient, and environmentally responsible deployment in polluted rivers.

While pure chitosan is effective and very environmentally friendly, its adsorption quantity is moderate, meaning it may not remove very high concentrations of pollutants as efficiently as enhanced materials like chitosan – biochar composites. The beads or gels can be structurally soft, which may cause them to break apart in fast-flowing or turbulent river sections. Pure chitosan also has limited reusability; once saturated with pollutants, it cannot easily be regenerated without additional processing. Additionally, in large-scale applications, deployment and recovery can be challenging if the beads are not contained properly, as loose beads could disperse downstream. Deployment in large or uncontrolled river sections can also pose challenges, as loose beads may disperse downstream, making collection and monitoring more difficult.

Chitosan × Biochar: Enhanced Adsorption Technology

Biochar is a porous, charcoal-like material produced by heating organic waste, such as coconut shells or wood, in low-oxygen conditions. Chitosan can be combined with biochar for more effective results by mixing them both while chitosan is in its viscous chitosan gel form. This combination leverages the strengths of both materials: chitosan provides biodegradability and positively charged functional groups that attract negatively charged pollutants, while biochar adds high surface area, structural strength, and additional adsorption sites. Together, the composite can remove a wider range of contaminants, including heavy metals, industrial dyes, and oil residues, more efficiently than pure chitosan alone. The chitosan – biochar beads or gels can be deployed in rivers using biodegradable mesh pouches, anchored in strategic locations to withstand moderate currents. Although slightly less biodegradable than pure chitosan, the composite remains environmentally safe while offering improved durability and reusability. This enhanced material is particularly suited for industrial discharge zones or heavily polluted rivers, providing a scalable, flexible, and sustainable solution for water purification. By building on the natural benefits of chitosan, the composite maximizes pollutant removal without compromising environmental safety.

Pure chitosan and chitosan–biochar composites each offer distinct advantages depending on the level of river pollution and environmental conditions. Pure chitosan is fully biodegradable and highly biocompatible, making it well-suited for light to moderately polluted rivers and environmentally sensitive ecosystems. It is effective at removing negatively charged pollutants such as dyes and certain heavy metals, but its adsorption capacity and structural strength are limited. In contrast, chitosan – biochar composites provide higher adsorption efficiency and improved durability due to the porous structure of biochar, which increases surface area and pollutant retention. This makes the composite more suitable for heavily polluted or industrial rivers, where contaminant concentrations are higher, and water flow is stronger. Although the composite degrades more slowly than pure chitosan, it remains environmentally safe and offers a longer operational lifespan. Each of these materials has its respective pros and cons, but together they can be an absolute game changer in wastewater treatment.



Environmental safety is a critical consideration in river purification technologies. Both pure chitosan and chitosan–biochar composites are derived from natural or waste-based materials, reducing the risk of long-term ecological harm. Chitosan is biodegradable and biocompatible, meaning it breaks down into non-toxic components that do not disrupt aquatic ecosystems. While the addition of biochar slightly slows degradation, the composite remains environmentally safe and does not release harmful byproducts into the water. The use of contained mesh pouches further minimizes the risk of material dispersion, protecting aquatic organisms from accidental ingestion. By avoiding synthetic chemicals and relying on natural adsorption processes, this approach supports sustainable water restoration while maintaining ecosystem balance. Overall, chitosan-based purification systems offer an environmentally responsible alternative to conventional chemical treatments for polluted rivers.

Freshwater sources are essential for both human life and aquatic life. In this article, we just went through chitosan-based solutions to tackle marine pollution through industrial soluble waste, such as textiles and dyes. While chitosan is highly biodegradable and easy to make, chitosan biochar composite has a larger surface area and therefore a higher adsorption rate and is more effective against heavily polluted waters. Together, these materials demonstrate how nature-inspired technologies can address real-world environmental challenges. With further research and responsible implementation, chitosan-based purification systems could play a meaningful role in restoring polluted rivers and protecting global freshwater resources.

Written by an Anonymous Student

Asking Better Questions

For a long time, regenerative medicine felt like one of those ideas that lived comfortably in the future. The kind you read about in headlines that promise breakthroughs “one day,” while real patients manage symptoms instead of cures. But the more I learned about direct cellular reprogramming, the more that the future stopped feeling abstract. It’s about convincing the body to heal itself by rewriting cellular identity. That possibility, of permanent repair rather than lifelong management, is what pulled me into the literature and refused to let go.

My current focus is on the direct reprogramming of cells of one type in diseased tissue to convert them into cells of a different type, thus regenerating healthy tissue. Imagine the fibrosis scar in the heart of a heart attack survivor being transformed back into healthy cardiac muscle. The potential this has to improve the health of many people permanently, instead of leaving them dependent on medication, is exactly why I find it so intriguing.

To solve any problems using direct reprogramming, I have to know what’s keeping it in research papers and not in San Francisco’s biggest startup labs. And how else to do that except by reading and taking apart the literature on the topic?

Literature reviews get thorny really fast because of the literal hundreds of papers covering individual experiments. How is a high schooler supposed to find the insightful few that they actually have the capacity to read? I might have had to skim 50 papers to find 15 that were actually intriguing.

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Qian et al. demonstrated the feasibility of using in vivo direct reprogramming for heart repair.
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14. Kulesa, H., Frampton, J. & Graf, T. GATA-1 reprograms avian myelomonocytic cell lines into eosinophils, thromboplasts, and erythroblasts. *Genes Dev.* **9**, 1250–1262 (1995).
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Ieda et al. identified reprogramming factors that could reprogramme mouse cardiac fibroblasts to cardiomyocyte-like cells in vitro.

Reviews are the last thing I expected in a references section.

Now that it's over, I can genuinely feel how much more fine-grained my understanding of direct reprogramming is. Instead of just having a broad overview, I'm asking the important questions and dissecting experiments from first principles to figure out what we could do better. I'll probably have the finished review up by February and then start thinking of what I can build here.

This review is about building the intuition to see where the gaps are and where progress keeps stalling. By tracing patterns across experiments, successes, and failures, I'm starting to see why direct reprogramming hasn't yet escaped the pages of journals and into real-world therapies. That clarity is exactly what I was hoping for. Once the review is finished, the next step isn't just more reading, but translating these insights into something tangible. If direct reprogramming is going to move forward, it won't be by repeating what's already known, but by asking sharper questions. That's where I want to begin.

Written by Mohammad Ali Khan

Bethany and Alana

Bethany

I wake up to the sound of my phone alerting me to a new message. It's either super early in the morning or really late, as it is still dark outside. I groggily reach out to grab my phone from the bedside. It's Alana.

Hey, are you up yet?

Let's go out.

Surfing

A smile makes its way across my face as I reply to Alana's sweet message.

Sure.

It's a date.

That's when I realise,

But we don't have a ride :(

Three dots appear as she types, and I eagerly await.

I can ask my dad to drive us there?

But we might not get any time alone if he comes with us.

I move my thumbs across the screen and type a reply.

Yeah, but at least I get to see you.

Be ready in 30 mins, I'll come pick you up.

I put my phone back on the bedside and get up to open the curtains, hoping for a little bit of sunlight, but outside is just as dark as it is inside. I start packing my beach bag with all the necessities and get ready at my dresser. Usually, I would never bother to do this, but today feels a little bit different. I brush out my blond shoulder-length hair and make two French braids. Alana always said this hairstyle suits me.

I grab my bag and head to the kitchen to wash some strawberries for a quick breakfast. Then I hear a knock, and race to the front door. Alana's here. "Ready?" she asks. I nod, trying to act like my heart isn't racing. I must smile without meaning to, because Alana's eyes flick to my face and soften.

"There it is," she says quietly, amused. "That smile."

"I was ready," I say, barely above a murmur, "until you said that."

The words hang there, and suddenly I'm painfully aware of my own face warming. I look away, hoping she won't notice how flustered I am. Her lips curve, like she knows exactly what she's doing. The moment lingers—quiet, charged—before a car horn hoots from the street. I inhale, grateful for the interruption.

"We should go," I say quickly, reaching for the door handle. "Before we miss all the good waves." Alana steps back just enough to let me pass, her smile still there as I climb in. Alana's dad, Holt, starts the engine, and I spend the entire drive trying to slow my heartbeat.

The beach sparkles under the sun, waves rolling like they're in on our little secret. The air smells like salt and sunscreen, and suddenly everything feels brighter. Holt barely gets the door shut before someone calls his name.

"No way—Holt?" He turns, squinting toward a guy carrying a board under his arm. Instantly, they're grinning like they've known each other since childhood.

"You surf here now?" Holt says, already halfway into a story. Alana glances at me, sunlight shining through her golden hair, excitement written all over her face.

"He's going to be a while," she says.

We drop our towels, kick off our shoes, the sand warm beneath our feet as we run toward the water. The ocean is sparkling, endless, and inviting. I stumble a little, and she steadies me, our eyes meeting. Her tanned skin glowed in the sun, and I couldn't bring myself to look away. Alana grabs my hand, her fingers warm and confident, sending a little thrill up my arm. I squeeze back without realizing it, and it all feels so natural.

"Last one in is paddling out alone!" Alana shouts, tugging me toward the water.

"That's cheating!" I protest, but she only laughs.

We run together, sand spraying beneath our feet, our hands still clasped. The water hits our ankles, then knees, then—finally—we leap in together. The ocean wraps around us, cold and exhilarating. Alana splashes me, and I retaliate without thinking. Water flies everywhere, our laughter echoing across the shore. She ducks under a wave, pops up behind me, and with a playful shove, dunks me under briefly before I come up sputtering and laughing. The hair from my braids slowly comes loose and sticks to my face. I wipe them away as she grins, victorious, and I can't help but smile back—her joy is infectious. She ducks under a wave, then resurfaces just in time to catch me off guard, water dripping from her hair, eyes locked on mine, she winks, like she knows exactly the effect she's having. Alana's hair fans across the water, sunlight catching every strand. She leans just a little closer, and I can feel the subtle brush of her arm against mine. We float like that, letting the world shrink to just the two of us—and for the first time, I don't feel nervous at all. Just... completely at ease. Behind us, faint and distant, Holt's voice calls,

“Don't go too far! I'll catch up in a minute!”

We grab our boards, which were floating nearby attached by a string to our ankles, and paddle out a short distance, taking turns watching each other try to catch the small waves rolling in. Alana goes first, popping up easily, riding a wave that looks promising—only for it to lose its strength halfway through and fizzles out, leaving her gliding to a stop. She shrugs it off with a grin as she paddles back. I try next, my heart racing as I push up, only for the wave to fade beneath me just as quickly. I fall back onto my board, laughing, water dripping from my hair. We exchange a look—half amused, half frustrated. Alana wipes the water from her eyes and glances past me, toward where the waves rise a little higher, a little darker. Then she looks back at me, with that familiar spark in her eyes.

“Bet you won't paddle out past that break,” she says, turning her surfboard, nodding toward the deeper water.

My heart stutters. I follow her gaze, nerves fluttering in my chest. “Alana...” I start, trying to be the voice of reason. I look toward the shore where Holt is deep in conversation.

“We really shouldn't.” Alana just smiles at me, calm and confident, like she could swim the entire ocean. She floats closer, lowering her voice.

“There are better waves out there,” she says. “Just a little farther.” The waves rock us gently as I hesitate, caught between the safety of staying close and the pull of her daring smile.

We paddle out to the much darker water. Then a perfect wave in shape and size comes our way.

“Watch this!” Alana shouts. I barely have time to respond before she’s paddling hard, catching the wave with effortless precision. She rises smoothly, unshakable, carving through the water like she owns it. I watch, breathless, as she rides the wave all the way in, then dives cleanly off her board—perfect, fearless. She starts paddling back toward me. I shift on my board, getting ready for the next wave—

And then—

Pain.

“Ah—!”

The scream rips out of me before I can stop it. Something grabs my arm. Hard. A crushing pressure that doesn’t belong in this world. I’m yanked sideways, my board jolting beneath me. Water explodes around my face, salt burning my eyes.

I can’t see—can’t think—only feel the unbearable force pulling me down. My body fights instinctively. I cling to the board with my other arm, knuckles white, breath shattering in my chest. The pain is blinding, absolute, like my arm isn’t mine anymore—like it’s being torn away piece by piece. Then—sudden release. I sob, gasping, barely keeping myself above the surface. Through the ringing in my ears, I hear Alana’s screams.

“BETHANY!” Alana is paddling toward me as fast as humanly possible, panic written all over her face.

“BETH!” I try to move. I can’t feel my arm. Horror creeps in, cold and slow, as I glance down at the water around me— a darkened, spreading bloody mess.

“No,” I whisper. “No—Alana—” She reaches me just as the truth crashes over me.

“My arm,” I choke. “Alana—my arm—it’s gone!” The words collapse as soon as I say them, dissolving into sobs that crash over me like the waves we were riding only moments ago. Her face drains so fast it’s like the sun has left her. She freezes—just for a heartbeat—before terror takes over. Tears streaming down her face. She looks where I can’t—where I won’t—and the sound she makes then, raw and shattered, terrifies me more than the pain ever could.

She looks around wildly, panic spilling over. “Dad!” she screams, her voice ripping through the air. “DAD—HELP!”

“No—no, no,” she whispers, hands hovering, afraid to touch me. “I shouldn’t have asked you to paddle farther out. I should’ve stayed with you. I should’ve—”

Her voice cracks, shattering completely. She shakes her head, frantic now.

“This is my fault. All of it.”

Holt is there almost immediately, cutting through the water with sharp, urgent movements. One look at me, one look at Alana’s face, and he’s already in motion. “Bethany, listen to me,” he says, steady but fierce. “Everything is going to be fine, you’re going to be just fine.” He pulls me closer to the board, moving with practiced calm. Alana clings to the other side, shaking, her hands gripping the board like it’s the only thing keeping her upright.

“I told her to paddle out,” she says frantically as Holt works, looping the surf cord around me with quick, careful movements. A make-shift tourniquet.

“I told her it was safe. I was right there—I was supposed to be right there.” “Alana,” Holt says firmly, tying the cord tight. “I need you with me. She needs you with me.” Alana nods, swallowing hard, and turns back to me. Her voice softens, breaking again.

“I’m here,” she says. “I’ve got you. Please—please don’t leave me.” They keep me steady as Holt signals toward the shore, shouting for help. Someone’s already called for an ambulance. Everything feels loud and far away at the same time. As they guide me out of the water, I catch one last glimpse of the ocean behind me—smooth, blue, impossibly calm. The water moves on as if nothing has happened at all. But everything has.

The sirens come soon after. Hands lift me. Voices blur. Alana never lets go, her grip tight and desperate, like she’s afraid I’ll disappear if she does.

“I’m sorry,” she whispers as they load me into the ambulance. “I’m so sorry.” The doors close. The beach vanishes. And everything goes dark.

Alana

I stop outside Bethany’s hospital room. I can’t make myself go in. The door is right there. One step. One hand on the handle. But my body won’t listen. My chest feels too tight, like if I breathe wrong, I just might cave in. I hear the machines first. Then her breathing. She’s alive. That should be enough. It isn’t. All I can see is the water. The way we laughed. The way I coaxed her farther out into the water. I replay it over and over, twisting every moment until it hurts worse than the last. If I hadn’t said anything. If I’d stayed closer. If I’d noticed sooner. If I’d been better.

“I can’t,” I whisper, to no one in particular. My hand hovers near the door, useless. “I can’t face her.”

Dad stands beside me, quiet in a way I've never heard before. He looks older here, shoulders heavier, like a stone slowly worn away by the waves.

"I was supposed to be watching you," he says finally. His voice is steady, but his eyes aren't.

"Both of you." I know what he's thinking. It's written all over his face. *What if it had been me instead? What if it had been his daughter?*

Inside the room, Bethany shifts. The sound pulls at something in my chest until I feel sick. She lost so much blood. The doctors explained it gently, like softness could make the truth smaller. They talk about recovery in careful terms. Physical therapy. Adjustment. Phantom sensations that might fade—or might not. She feels pain in an arm that isn't there anymore. And I did that.

Dad finally steps inside. I stay frozen in the doorway, watching from a distance like I don't deserve to be any closer. Bethany looks smaller in the hospital bed, wrapped in white and wires. Still here. Still breathing. I press my hand to my mouth before the sound escapes me. I want to apologize. I want to explain. I want to tell her I would give anything—*anything*—to make everything go back to the way it used to be. But all I can do is stand there, the guilt settling into my bones. So I wait. And I hope—desperately—that one day she'll let me say I'm sorry.

Bethany is sitting up when I finally walk in. She looks stronger than the last time I saw her—still tired, still healing, but here. Alive. The sight of her hits me so hard, threatening to bring up the tears I barely managed to push down. She looks up, and her face softens immediately.

"Alana," she says, like she's been keeping the name on her lips for weeks. I don't trust my voice. I cross the room in a few unsteady steps, my heart pounding, and she watches me like I might disappear if she blinks. She shifts carefully, then opens her arm—the one she still has—inviting me in. I hesitate, suddenly afraid of hurting her, but she nods softly. I fold into her embrace with care, pressing myself gently against her, and the moment she holds me as best she can, bandages and all, my heart breaks. I cling to her, my forehead pressed into her shoulder, tears spilling freely now. Weeks of fear, guilt, and silence crash out of me all at once.

"I thought—I thought I lost you," I sob. "Every second. I told myself it was my fault. That if I hadn't convinced you to paddle out, if I'd been closer—" My words dissolve.

“I’m sorry. I’m so sorry, Beth.” She tightens her grip on me.

“Hey,” she says softly, firmly. “Alana. Look at me.” I pull back just enough to see her face, her eyes glistening but steady on mine.

“I never blamed you,” she says. “Not once. It was an accident. A terrible one—but not your fault. Stuff just... happens sometimes, and we have to keep going.” I shake my head, tears still falling.

“Being away from you was the worst part,” I admit. “I didn’t know how to come back, if I was allowed to come back.” She smiles then—small, familiar, achingly Bethany. And that little dimple appears—small, perfect, like it was carved just for me. I could stare at it forever. I move closer and cup her cheeks, my thumbs brushing softly beneath her eyes, wiping away the falling tears. She leans into my hands.

“I hated it too,” she says. “I missed you every day, every minute, every second we were apart.”

Something loosens in my chest. The weight I’ve been carrying all these weeks doesn’t vanish, but it melts, just enough to let a shaky breath escape. I blink back tears, and a laugh bubbles up, small and unsure at first, but it grows as she laughs too. Her laughter moves me in a way nothing else has for so long. We’re still trembling, still holding onto each other like the world might fall apart if we let go—but the fear starts to fade, replaced by relief, by the quiet certainty that we’re here. Together. Slowly, our laughter and tears mingle, and for the first time in weeks, it feels like it might be okay. I laugh through tears. She does too. We’re both crying, both smiling, holding on like we never want to let go again.

Slowly, gently, I lean in. Giving her time—space to pull away if she wants to—but she doesn’t. She tilts her head just enough for our lips to meet—gentle, unhurried, full of everything we haven’t said yet. Her hand slides up and down my back in a steady, familiar rhythm—comforting, anchoring—and the tightness in my chest begins to loosen. When we pull back, I rest my forehead against hers. We stay like that for a moment, breathing each other in. The world feels impossibly still, and all I can do is hold her close, heart full of thankfulness that she’s alive, that we made it back to each other. For the first time in forever, I know I’m exactly where I’m supposed to be—and she’s exactly where I want to stay.

Innovations of 2025

2025 was a year of building. Not in the dramatic, world-changing way that gets written into history books, but in the quieter way that actually moves society forward. From household gadgets to life-saving medical devices, this year's most notable inventions shared a common theme: they made the world more capable, more accessible, and more efficient.

Here's a list of the innovations that stood out across the biggest categories of 2025:

Robotics and Automation

Robots continued to grow beyond factory floors and into everyday life. Household robotics became more practical and accessible, with devices like the EufyMake E1 UV Printer, which allows users to print textures at home, and the Unitree R1, an ultra-agile humanoid robot designed for advanced automation tasks. Meanwhile, HoverAir X1 ProMax brought robotics into creative fields, acting as a personal videographer capable of capturing high-quality footage with minimal effort.

Accessibility

This year showed significant progress in accessibility technology. Innovations like the American Printing House Monarch, a tablet that supports braille and graphics, and the Lotus Ring, a smart-home ring that enables easy control through gestures, expanded access for people with disabilities. Products such as the Tilt Grip Stick, an adaptive lip balm designed for easier handling, also highlighted the growing emphasis on inclusive design.

Aerospace and Space Technology

Space tech advanced quickly, with a focus on communication and exploration. AST SpaceMobile BlueBird worked on providing ultra-fast internet directly from space, while Firefly Blue Ghost and FireSat contributed to lunar exploration and early fire detection from orbit. The Vera C. Rubin Observatory continued to expand our understanding of the universe by improving how we observe the skies.

Agriculture and Food Production

Agricultural innovation focused on sustainability and efficiency. FutureFeed Asparagopsis Supplement targeted methane reduction in livestock, while the Innoeva Global Coffee Breeding Network aimed to protect coffee crops against climate threats. The RootWave eWeeder reduced the need for chemical herbicides, and tools like Scout Gen 5 helped manage vineyards more efficiently. The list also included climate-proof solutions such as Vanilla Vida's data-driven indoor curing, designed to stabilize vanilla production in changing environments.

Apps, Software, and Productivity Tools

Digital tools continued to evolve, helping people work faster and more efficiently. Adobe Podcast Enhance Speech improved audio quality for creators, while Buzzkill Notification Manager helped Android users focus by managing distractions. Public service access was simplified through Exygy CiviForm, and Pindrop Pulse for Meetings introduced deepfake detection in corporate environments. Meanwhile, Zown's Down Payment Boost Program made home buying more affordable.

Artificial Intelligence

AI remained one of the most active innovation areas in 2025. This year introduced several notable advancements, including Anthropic Claude Sonnet 4, a faster AI model for broad use, and DeepSeek R1, a low-cost challenger in the LLM space. NVIDIA DGX Spark brought AI computing power to desktops, and UiPath Agentic Automation connected multiple AI agents to handle complex tasks. Energy-efficient AI hardware also made strides, like Ambiq SPOT, an ultra-low-energy chip.

Consumer Electronics

Consumer electronics continued to focus on convenience and everyday improvement. Apple AirPods Pro 3 offered live translation capabilities, while 70mai Dash Cam 4K Omni improved road safety through advanced incident detection. Portable devices like The Light Phone III and Unihertz Jelly Star prioritize distraction-free experiences and compact design. Cameras like Camp Snap brought screen-free photography back into the mainstream.



Health and Wellness

Health tech expanded into more personal and preventive areas. In January, AI introduced a virtual continuous glucose monitor, while Teal Wand offered an at-home cervical cancer test. Whoop MG continued to develop wearable health tracking, and HerBrain provided accessible pregnancy information. Several products focused on everyday health, including Gob Earplugs, Egal Pads on a Roll, and Heat it, a chemical-free mosquito bite treatment.

Medical and Healthcare Breakthroughs

The medical category saw significant advances in treatment and diagnostics. Abbott i-STAT TBI provided a blood test for brain injury detection, while RapidAI Lumina 3D improved early stroke detection. Cellares Cell Shuttle accelerated cell therapy manufacturing, and Brinter 3D BioPrinted Tissue offered new possibilities for tissue replacement. Other notable inventions included Eisai and Biogen's Leqembi Iqlik, an at-home Alzheimer's treatment, and Sanofi Modulus, which shortened vaccine production time.

Green Energy and Sustainability

Sustainability continued to be a central focus. New energy storage and renewable systems like the Eco Wave Power Grid Connected Energy Array and Polar Night Energy Sand Battery showed the growing importance of clean, reliable power. Bloom Energy Server and Wärtsilä Energy Storage System improved grid stability, while innovations like Beko Solar Off-Grid Refrigerators brought sustainability into everyday household appliances.

Immersive Technology

Immersive technology pushed forward with new tools for virtual experiences. Google DeepMind Genie 3 advanced virtual world creation, and XReal One brought sleek AR glasses into the mainstream, making immersive technology more accessible to consumers.

Transportation and Logistics

Autonomous vehicles and smarter logistics continued to expand. PlusAI and Hyundai's Xcient Autonomous Truck brought self-driving big rigs closer to reality, while AutoStore and Gatik Driver improved warehouse and delivery efficiency. These technologies are changing the way goods move through cities and countries, quietly reshaping supply chains.

The Year's Overall Trend

The innovations of 2025 show a clear pattern: technology is shifting toward tools that improve everyday life, increase accessibility, and support sustainability. The most significant inventions weren't just the most advanced; they were the ones that made the world more functional, more inclusive, and more efficient.

If 2025 has taught us anything, it's that the future is not a distant concept. It's something being built right now, piece by piece, in ways that touch the lives of real people every day.

Written by Hari Rathan



One Year Later

If I could talk to myself from last year, I'd probably start laughing just a little. Not in a mean way, though — just because I remember how serious everything felt back then.

I genuinely thought I had to have everything figured out. I thought everyone was watching, judging, waiting for me to mess up. I was scared of saying the wrong thing, being the wrong version of myself.

But look at me now.

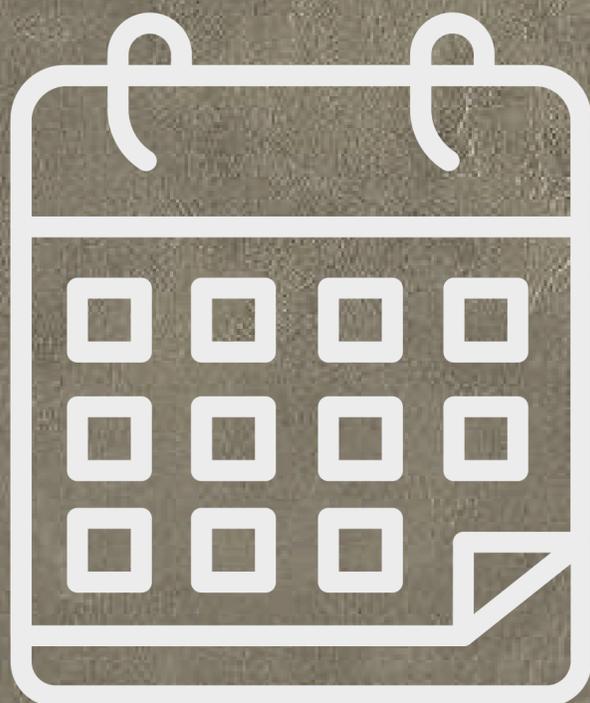
I didn't suddenly become fearless. I just stopped letting fear decide everything. I spoke up more. I tried things even when you weren't sure you'd be good at them. I learned that making mistakes doesn't mean failing — it just means learning faster.

Some things didn't turn out the way you expected. Some people changed. Some moments didn't last. And honestly? That hurt. But it also taught me what matters and what doesn't, who deserves me and who doesn't.

I'm still figuring things out. I still overthink sometimes. Okay, I was lying there, you caught me. Let me clear things up clears throat...I still overthink a lot. But I know I'm stronger than I was a year ago, even if I don't always notice it.

So if last year's me is listening — relax. You're doing better than you think. And one year from now, I'll look back at this version too... and realize how much I've grown.

Written by Tia Mohammed Saeed Mohammed Sallam



Small Changes

This year didn't feel special while it was happening.

Most days were the same—classes, homework, conversations, and deadlines. Some days were tiring, some were better, and some just passed without much thought.

But when I look back, I realize a lot actually changed.

I started asking questions instead of staying quiet when I was confused. Group work became easier. I learned how to manage my time better, even though I still struggle sometimes. I also learned that not understanding something right away doesn't mean I'm bad at it.

People around me changed, too. Friendships grew, some drifted, and new ones formed naturally. Teachers' advice started to make more sense once I experienced things myself.

Outside of school, everything felt fast—new trends, new technology, and constant changes. It was overwhelming at times. This year taught me that growth doesn't mean keeping up with everything. It means improving a little and learning from mistakes.

Nothing about this year was perfect. But it helped me grow—and that's something I'll carry with me.

Written by Aysha Rafiq Ahmed

One Year Later

A year ago, I didn't really think about growth. I assumed it was something obvious, something you notice immediately. But I was wrong. Growth isn't loud or clear. Most of the time, it's easy to miss.

This year went by quickly. Way too quickly. Between tests, school events that felt stressful at the time, group projects that never went exactly as planned, and random conversations that stuck with me, things slowly started to change. Nothing dramatic. Just small shifts over time.

I remember one group project where I almost stayed quiet the entire time, like I usually did. Halfway through, I finally shared an idea, even though I wasn't sure it made sense. It wasn't perfect, but the group listened and actually used part of it. That moment stayed with me more than the grade did.

I started speaking up more after that, even when I wasn't fully confident. I wasn't fearless—I was just less afraid than before. I also began listening more, instead of always trying to respond right away. It made me realize that everyone is dealing with something, even if they don't talk about it.

School stopped feeling like something I was just repeating every day. It started to feel more familiar, more shared. A place where people exchanged ideas, made mistakes, and figured things out together without always realizing it.

I also paid more attention to what's happening beyond school. News, trends, and technology don't feel distant anymore. They feel relevant, like they actually involve us too. It made me understand that our generation already has a role, even in small ways. And this year showed me that growth isn't about being perfect—it's about learning, trying, and noticing the little changes along the way.

Written by Wania Bader

New Horizons in a Shifting World

Introduction: If You Blinked, You Missed It

“The price of apathy is to be ruled by evil men,” Plato once warned. Dramatic, yes, but January did its best to prove him right. The year did not ease us in. It came in fast, loud, and globally coordinated, like the world had decided to hit refresh all at once. Borders tightened, alliances shifted, old disputes resurfaced, and places most people could not locate on a map suddenly mattered a great deal. If you blinked, you probably missed something important.

This is not a scare story. It is a reality check. The world is changing shape, and it is doing so whether or not we are paying attention. These changes are carving out new horizons, not somewhere far away, but right in front of us. The question is simple. Are we watching, or are we being carried along without a say.

January Was Not Boring, Just Complicated

At first glance, the news cycle in January looked familiar. In the United States, immigration enforcement and ICE raids returned to headlines, reopening long standing debates about borders, security, and human dignity. These stories did not appear with neat conclusions. They appeared messy, unresolved, and deeply tied to questions about power and belonging.

Beyond the United States, geopolitics continued its quiet reshuffling. Relations involving the US and Venezuela surfaced again, shaped by energy concerns, economic pressure, and diplomatic recalculation. Greenland, once treated as a frozen footnote, reentered global conversations because climate change and strategic positioning have a way of making distant places suddenly central.

If this all sounds overwhelming, that is because it is. But it is also revealing. These events point to a world in transition, one where old rules no longer explain everything. Think of it as a software update for global politics. Slightly confusing, occasionally glitchy, and impossible to ignore.

What These Shifts Actually Mean

Geopolitical events are often discussed as if they float above everyday life. In reality, they land close to home. Immigration policy affects communities. Energy politics affect economies. Climate driven attention toward regions like Greenland affects the future we will inherit.

The philosopher Hannah Arendt argued that politics is not about institutions, but about people acting together. That idea matters now. The changes we are seeing are not abstract forces. They are the result of choices, and choices can be questioned.

Finding Your Voice in the Noise

One of the easiest mistakes to make is assuming that your voice does not matter yet. That speaking up is for later, for experts, for someone else. History disagrees. As George Orwell reminded us, speaking the truth in times of confusion is a revolutionary act. Sometimes that truth is serious. Sometimes it is uncomfortable. Sometimes it comes with a joke sharp enough to cut through the noise. If the world feels chaotic, that might be because it is being run by people who are also figuring it out as they go.

Using your voice does not mean shouting online or pretending to have all the answers. It means staying informed, asking better questions, and refusing to be passive. Silence does not protect you from change. It only ensures you have no influence over it.

New Horizons Are Formed, Not Found

The theme of this newsletter, New Horizons, is about more than optimism. It is about responsibility. Horizons shift when power shifts. They expand when attention moves. The events of January show us a world renegotiating itself, sometimes awkwardly, sometimes urgently.

What feels distant today may shape tomorrow. Greenland's sudden relevance proves that. So does the persistence of debates many assumed were settled. The horizon moves closer every time the world changes, whether we are ready or not.

Conclusion: Do Not Drift

New horizons are not gentle invitations. They are challenges. They ask us to pay attention, to think critically, and to speak when it would be easier to stay quiet. For students, this is not a burden. It is an opportunity.

That is exactly why The Horizons newsletter matters. It is a student led publication, built on the simple but powerful idea that young voices deserve space. It exists to question, to reflect, and to respond to a world that often speaks about students rather than with them. In a time of shifting geopolitics and rapid change, platforms like this are not extras. They are necessary.

The world will not slow down so we can catch up. It will keep moving, creating waves of change that either carry us or leave us behind. The difference lies in engagement. Reading the news. Questioning it. Talking about it. Writing about it.

A horizon is only visible if you look up. The Horizons gives students the chance to do exactly that, not as observers on the sidelines, but as voices shaping the conversation. And in a world this restless, choosing to look, and choosing to speak, may be the most important decision we make.

By Shreya Maharaj Chettiar
Managing Editor HORIZONS

Managing Editor's Closing Note

As the final pages of this edition of *The Horizons* settle, I find myself looking back at a year that refused to be simple. We began 2025 chasing "momentum," that elusive, forward-rushing force, only to find that true progress often feels like friction. As Alexander Bonardi so poignantly reminded us in "**Lessons 2025 Taught Me**," we learned that **"rest is not a moral failure"** but a prerequisite for anything meaningful. This edition has been a collection of those moments where we stopped fighting the need to slow down and instead started finding our rhythm.

The beauty of this journey has been the sheer diversity of our collective voice. We've seen a stunning spectrum of thought: from the microscopic world of "**Chitosan-Based Biodegradable Materials**" cleaning our rivers to the "**Asking Better Questions**" Mohammad Ali Khan is posing to bring regenerative medicine to life. We felt the quiet power of Valeria Santos's "**Compounding Momentum**," where the simple joy of writing three lines of code became the foundation for something greater. Whether exploring "**The Power of Music In Student Life**" or the life-changing "**Innovations of 2025**," every contributor highlighted a central truth: growth isn't always loud. Sometimes, as noted in "**Small Changes**" and "**One Year Later**," it's just the small shift of finally speaking up in a group project or realizing that **"not understanding something right away doesn't mean I'm bad at it."**

On a personal note, my own path from an eager writer, constantly waiting for the next theme to drop, to joining the leadership as Managing Editor has been something truly magical. *The Horizons* is a creative sanctuary that proves our generation is already playing a vital role in the world. As Tia Mohammed Saeed reminded us in her own "**One Year Later**" reflection, we can look back at our past selves and realize we are **"stronger than we were a year ago,"** even if we didn't notice the change while it was happening.

We close this edition not with all the answers, but with better questions and a deeper appreciation for the **"inherently inconvenient"** beauty of showing up for one another. As we move forward, let us carry the optimism of 1% daily growth and the courage to see the world through more than just our own lens.

They say January is just the "free trial" of 2026, and now that it's over, the real work begins. Let's truly begin this new year by embracing the friction and the momentum alike. The horizon is always moving, but as long as we keep sharing our voices, we are building something that truly compounds.

UNTIL NEXT MONTH,

Shreya Maharaj Chettiar, Managing Editor

Thank You For Reading!

**A Year of Growth: Reflections,
Connections, and New Horizons**

Graphic Design By Lucas Gladun And Favor Kairu