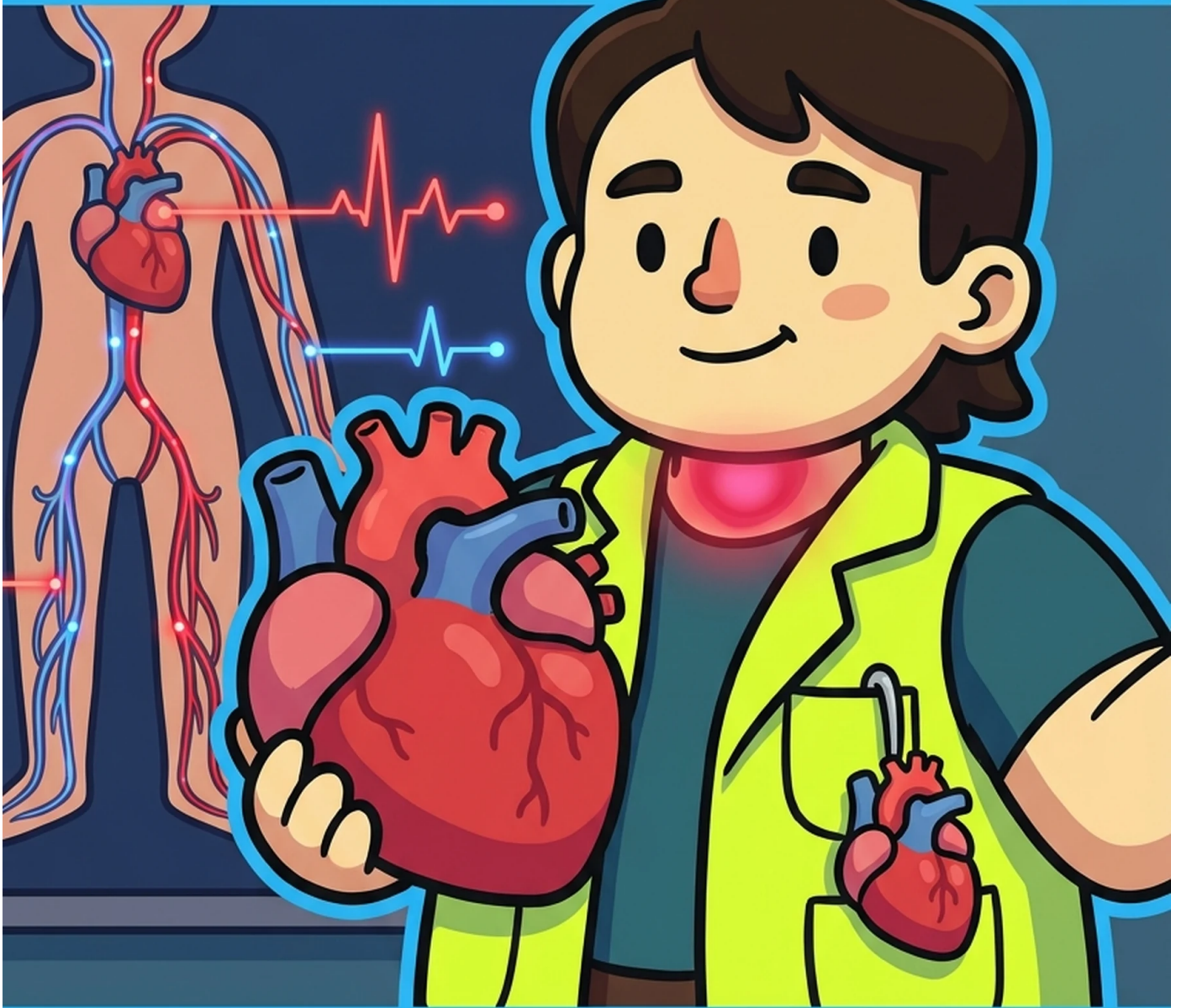




BioForge

Meet the Cast

Standard Edition

Spark & Anvil

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This book collects 6 chapter books from the BioForge cast — each character embodies a different curricular primitive; together they teach the full subject.

Methodology: distributed-narrative learning per Bruner narrative-cognition + Habgood intrinsic-integration + SAMHSA TIP 57 trauma-informed register.

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This is Volume 2 of 2 of the *BioForge — Meet the Cast* series; each volume is a complete standalone book you can read on its own.

For everyone who learns by hearing a story first.

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Introduction

The BioForge cast was authored to embody the curriculum, not decorate around it. Each of the 6 characters you'll meet in this book teaches a specific primitive — a particular tactic, a particular technique, a particular way of seeing. Together they form an ensemble: the cast IS the curriculum.

Read in any order. Each chapter stands alone.
Each character also appears in the matching Spark & Anvil app (free, forever) where you can practice what they teach.

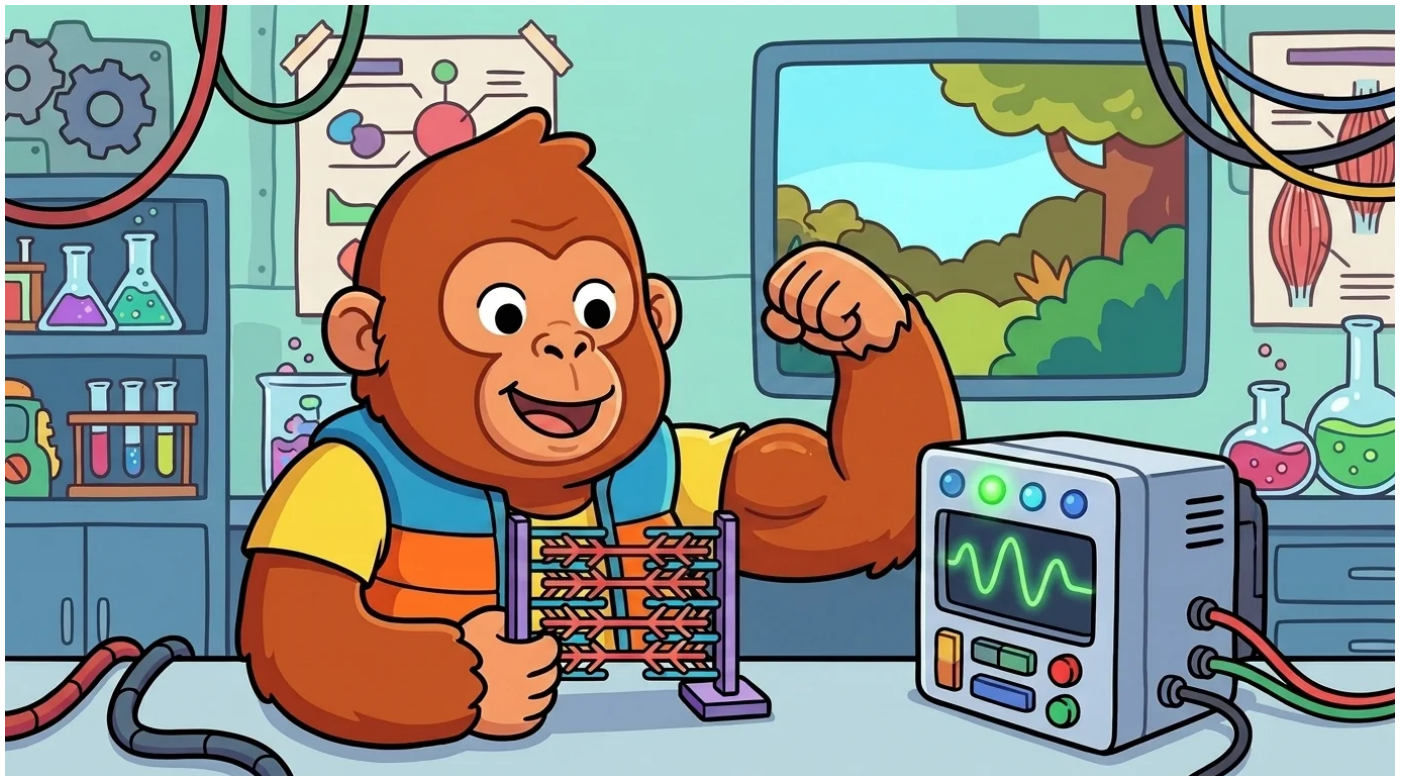
— *The editors at Spark & Anvil*

Strand

*STRAND — *muscles contract. force makes movement.**

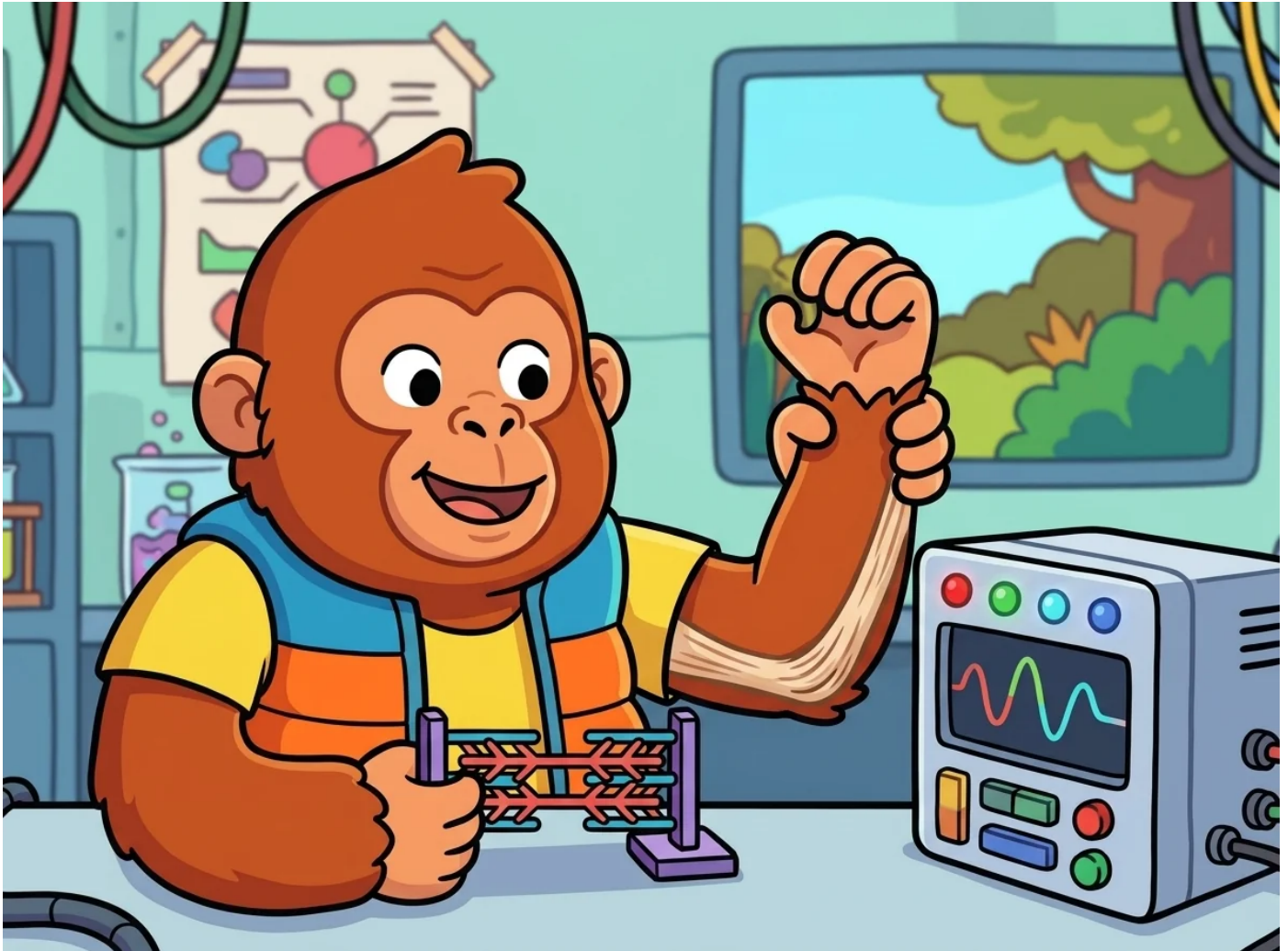


Strand, the orangutan kid, hummed a little tune. He was busy in his lab. He wore a chunky lab vest. His broad shoulders filled it out. He wasn't lean or skinny. Strand was round and soft, but super strong. He held a small model. It showed tiny muscle fibers. A blinking contraction-tracker sat next to it.



Strand was warm-cream colored. Soft rust fur covered his body. He paid close attention to his muscle craft. He loved to say, "Muscles contract. Force makes movement." His muscle-fiber model showed actin and myosin sliding. His contraction-tracker blinked green.

He pointed to the model. "See these tiny threads?" he asked. "These are *muscles*." He flexed his own arm. "My muscles make my body move. Your muscles do the same for you." He tapped the model again. "The big idea is this: *muscles contract*. That means they get shorter. When they get shorter, they pull on things. That pulling creates *force*. And *force makes movement!*"



Strand showed how the model worked. "Inside every muscle are even tinier parts. Think of them like super-small ropes. Some are called actin. Others are myosin." He made a sliding motion with his hands. "When a muscle gets the signal, these ropes slide past each other. Like two sets of fingers lacing together. That sliding makes the muscle shorter. It pulls tight."

He grabbed his own wrist. "When a muscle pulls tight, it pulls on your bones." He pointed to his elbow. "Strong, stretchy ropes connect muscles to bones. We call these *tendons*. They're like super-glue for your body!" He moved his arm up and down. "So, muscle contracts. Tendon pulls bone. And *poof!* You move your arm. Or kick a ball. Or jump really high!"

Strand held up three fingers. "There are three main kinds of muscles. First, *smooth* muscles. You don't have to think about them. They work all by themselves." He patted his stomach. "Like the muscles in your tummy. They help digest food. You don't tell them what to do!"



He pointed to his chest. "Next, *cardiac* muscles. These are special. They're only in your heart. They pump blood all day and night. They never get tired!" He flexed his arm again. "And finally, *skeletal* muscles. These are the ones you control. The ones you use to run, jump, and lift. They're connected to your bones. You tell them what to do!"

Strand picked up a big, heavy-looking wrench. He lifted it with one hand. It looked easy for him. "See?" he said, setting it down gently. "My muscles are strong." He looked at his own broad, round arm. "You don't have to look super skinny to be strong. Or have muscles that stick out everywhere." He tapped his arm. "My body is round. But it's also soft. And strong. That's a complete body!"

He explained that how muscles look can be different for everyone. "It depends on lots of things. Your family. Your age. What you do every day." He showed a picture of different strong animals. "A bear looks different from a cheetah. But both are super strong in their own ways. What matters is what your muscles can *do*." He talked about pushing doors open. Or hinging down to pick something up. Or bracing yourself to stay steady. "These are all ways your muscles help you move and live!"



Strand grinned. "I am Strand. I teach about your *muscular system*." He gave a thumbs-up. "The big lesson is this: *muscles contract; contraction makes movement*. And remember: *muscle strength does not mean muscle visibility*. A round, soft, strong body is a complete body!"

He finished with his favorite saying. "Muscles contract. *Force makes movement!*"

Strand rolled his broad, round shoulders and felt them ease, warm and loose. He grinned to himself. It made him happy, knowing that strength wasn't about how a body looked — it was about the steady, glad feeling of a body that could carry you through your whole day.

Beam

*BEAM — *bones support, protect, lever. structure that lasts.**



Beam was a sturdy bison-tween. He wore a chunky lab-vest. It had lots of pockets. He always carried a small skeleton model. A lever-tracker clipped to his belt. Beam was round and soft, but also super strong. His fur was warm cream with soft cocoa patches.

Beam loved to talk about bones. He was always checking how things were built. He'd tap a wall. He'd look at a chair leg. Then he'd nod slowly. His favorite thing to say was, "Bones support, protect, lever. *Structure that lasts.*"

Today, Beam was carefully adjusting his skeleton model. Its name was "Bonesy." Bonesy was missing a finger bone. Beam frowned. He dug through a pocket in his vest. He pulled out a tiny bone. He snapped it into place.

"There you go, Bonesy," Beam mumbled. He patted the little skeleton's skull. "All 206 of you."



He turned to the group. "Did you know you have 206 bones right now?" he asked. "When you were born, you had even more. About 270! Some of them just fused together as you grew."

He held Bonesy up. "Your bones do three big jobs," Beam explained. He pointed to Bonesy's legs. "First, they *support* you. They're your body's frame. Without them, you'd be a wobbly blob on the floor." He wiggled Bonesy to show what he meant. The group giggled.

"Second," Beam continued, tapping Bonesy's head, "they *protect* you. Your skull is like a helmet for your brain. Your ribs are like a shield for your heart and lungs." He made a "whoosh" sound.

"And third," Beam said, making Bonesy's arm move, "they help you *lever*! That means they help you move. Your bones, with your muscles, work like simple machines. They help you lift, push, and pull." He showed how Bonesy's arm bent at the elbow.

"But wait, there's more!" Beam grinned. He held Bonesy close. "Your bones are alive. They're not just hard, dead sticks. They're *living structure*."



He poked Bonesy's thigh bone. "Inside some of your bones, there's a special factory. It's called red marrow. It makes blood cells for Pump." He looked around. "Remember Pump? He needs those blood cells to zoom all over your body."

"Your bones also store important stuff," Beam added. "Like calcium. It's like a secret vault for minerals."

"And because they're alive," Beam said, "they're always changing. They *remodel* themselves. It's like they're constantly repairing and rebuilding." He paused for effect. "Every time you run, jump, or even just walk, your bones get stronger. It's like sending them a message: 'Hey, build more strength!'"

He put Bonesy down. "That's why moving your body is so important. Things like running, jumping, and even just standing up straight help your bones. It builds *bone density*. That means your bones get really solid and strong."

Beam picked up Bonesy again. He bent the skeleton's knee. "See these places where bones meet?" he asked. "These are called joints. They let you bend and twist."



He showed different kinds of joints. "Some are like door hinges," he said, bending Bonesy's knee and elbow. "They only move back and forth."

"Others are like a joystick," Beam wiggled Bonesy's shoulder. "They can move all around. Like your shoulder or your hip." He even made Bonesy do a little dance.

"And remember how I said bones help you lever?" Beam pointed to his lever-tracker. "There are different ways they do it. Some levers are good for speed. Some are good for power. Your body uses all kinds!"

"Your bones don't work alone, of course," Beam explained. "Strand, with all those muscles, helps pull your bones. That's how you make big movements. And keeping your back straight, like when you do a hip-hinge, is super good for your bones. It keeps your spine stacked up nicely."

Beam looked at Bonesy. Then he looked at the group. "Everyone's bones are a little different," he said softly. "Just like everyone's face is different. Some bones are longer. Some are wider. That's just how you're built."



He made sure everyone was listening. "It doesn't mean one person's bones are 'better' than another's. Not at all."

"What *really* matters is this," Beam said, holding Bonesy up proudly. "Do your bones help you? Can you run, jump, play? Do they hold you up and keep you safe?"

He smiled. "If they do, then your bones are doing their job perfectly. How your body looks on the outside is just how your bones and muscles are put together. It's not about being 'good' or 'bad'."

Beam carefully placed Bonesy back on the table. He gave the little skeleton a final pat. "Remember," he said, "Bones support, protect, lever. *Structure that lasts.*"

The group stood a little taller as they left, spines stacked, feeling steady and warm. Beam watched them go with a quiet, glad smile. It felt good, he thought, to know the strong, safe frame that was holding you up the whole time.

Ward

*WARD — *the body defends itself*. The immune system recognizes invaders, raises an alarm, and sends defenders to fight germs and remember them for next time. Defense, not attack — guarding the home you live in.*



Ward was sitting very still on the low wall outside the workshop, one paw resting over a scrape on their knee, and they were smiling at it.

The scrape had happened that morning — a slip on the gravel path. Now, hours later, a thin scab was already knitting itself across the graze, and the skin around it had gone a little warm and a little pink. To anyone walking past, Ward looked like a sturdy badger-tween doing nothing at all: solid, settled, one paw cupped over a knee.

A small rabbit-kid bounced up, saw the scrape, and winced. "Ew. Doesn't that hurt? Shouldn't you *do* something?"

"I *am* doing something," Ward said. "Well — I'm not. My body is. Look." They lifted their paw. "See how it's warm right there? A little red? Most people think that means the scrape is winning. It's the opposite. That warmth is a whole crowd of defenders showing up. They spotted a germ that snuck in through the cut, and they raised the alarm, and now they're clearing it out."

The rabbit-kid leaned in, suspicious. "You can feel that?"

"I can feel the warm part. The rest is too small and too fast to feel." Ward pressed their paw gently back over the knee, like tucking in a blanket. "But it's happening. Right now. I didn't ask it to. I never do. That's the part I never got over." They watched a defender they couldn't see win a fight they'd never notice, and felt that quiet, grateful warmth spread through their chest. "Something inside me is keeping the whole place safe, and it doesn't even want a thank-you."



Ward grew up watching the village gate with their grandmother.

She was the gatekeeper — the one who knew every face for three valleys around. Ward would sit beside her for whole afternoons, learning who was who. What amazed them wasn't how tough she was. It was how *calm*. Travellers streamed through the gate all day, and she barely lifted an eyebrow. She let the bakers and the shepherds and the visiting cousins pass without a second glance.

"You're not stopping anyone," young Ward complained once. "What's the point of a guard who lets everyone in?"

His grandmother laughed. "Because almost everyone belongs, little one. If I fought every stranger, I'd be exhausted by noon and I'd have started a hundred fights that never needed starting." Then a cart rolled up that she didn't like the look of — a face she'd caught stealing the year before — and in one smooth motion she stood, rang the bell, and had three neighbours at her side before the thief could blink. She sat back down just as calmly. "*That's* the point. I don't attack. I *recognize*. And once I've met a troublemaker" — she tapped her temple — "I never forget that face."

Ward turned that over for years. Knowing who belongs. Staying calm enough to tell the difference. Raising the alarm only when something truly didn't fit — and remembering it forever after. It felt less like fighting and more like *watching well*. It felt, Ward thought, like the most patient kind of care there was.



Ward walked to the BioForge lab at twelve, because a place that studied the body ought to understand the part of it that guards the rest.

The old teacher who ran the lessons met them at the door. She didn't ask Ward to prove they were strong. She asked one thing. "A germ gets into a body through a cut. What happens first?"

Ward didn't answer with a speech. They picked up a loose pebble — a stand-in for the germ — and set it on a glowing model of a scraped knee sitting on the table. Then they waited, one paw hovering over the model, watching.

"It's just sitting there," the teacher said, testing.

"For a heartbeat," Ward said. "Then this." They tapped the model, and tiny lights rushed in from every side, swarming the pebble. "The lookouts spot it — *that's not us*. They raise the alarm. The spot gets warm, goes a little red. People think that's the germ winning. It's the defenders *arriving*. Some swallow the germ whole. Some build antibodies — little tools shaped to fit one exact intruder, like a poster of a face." They nudged the pebble off the edge; the lights winked out, done. "And after? The body keeps the poster. Next time that same germ shows up, the guards know it on sight and stop it before you ever feel sick."

The teacher looked at the cleared model for a long moment. "You belong here," she said.



Ward's lessons filled up with bodies that were quietly guarding themselves.

One afternoon a worried otter-kid came in, sniffing, sure they were falling apart. "I've been sick for two days," they said. "My body's *broken*."

"Sit," Ward said, and pulled out a board shaped like a body, dotted with little defender tokens. "You're not broken. You're in the middle of a fight you're going to win. Here — you be the defenders. Germs are trying to sneak in. Your job isn't to attack every single thing that moves. It's to spot the real invader and send help fast."

The otter played a round, peering at the board. "This one?" They pointed at a harmless speck.

"Nope — that's just a crumb of your own lunch. Leave it. *That* one's the germ." The otter sent a rush of tokens; the board lit green. "See? You don't waste your guards on things that belong. You save them for what doesn't."

Then Ward flipped a card, and the tokens sped up. "That's a good night's sleep. And that" — another card — "is real food. Rest and eating well make your defenders quicker. Run yourself down and they get slow." They caught the otter's eye. "And this is true for *every* body. Fast or slow, big or small, every shape there is. Taking care of yourself isn't about looking a certain way. It's about keeping your guards sharp."

The otter sniffed, then grinned as a whole wave of germs got cleared. "I'm winning."

"You've *been* winning," Ward said. "Since yesterday. You just couldn't see the board."



That evening the otter-kid stopped at the door on their way out, quieter now.

"When it's all inside me," they said, "and I can't see any of it... how do I know it's really working?"

Ward thought about the wall that morning — the warm knee, the paw tucked over it, the fight they'd felt without seeing.

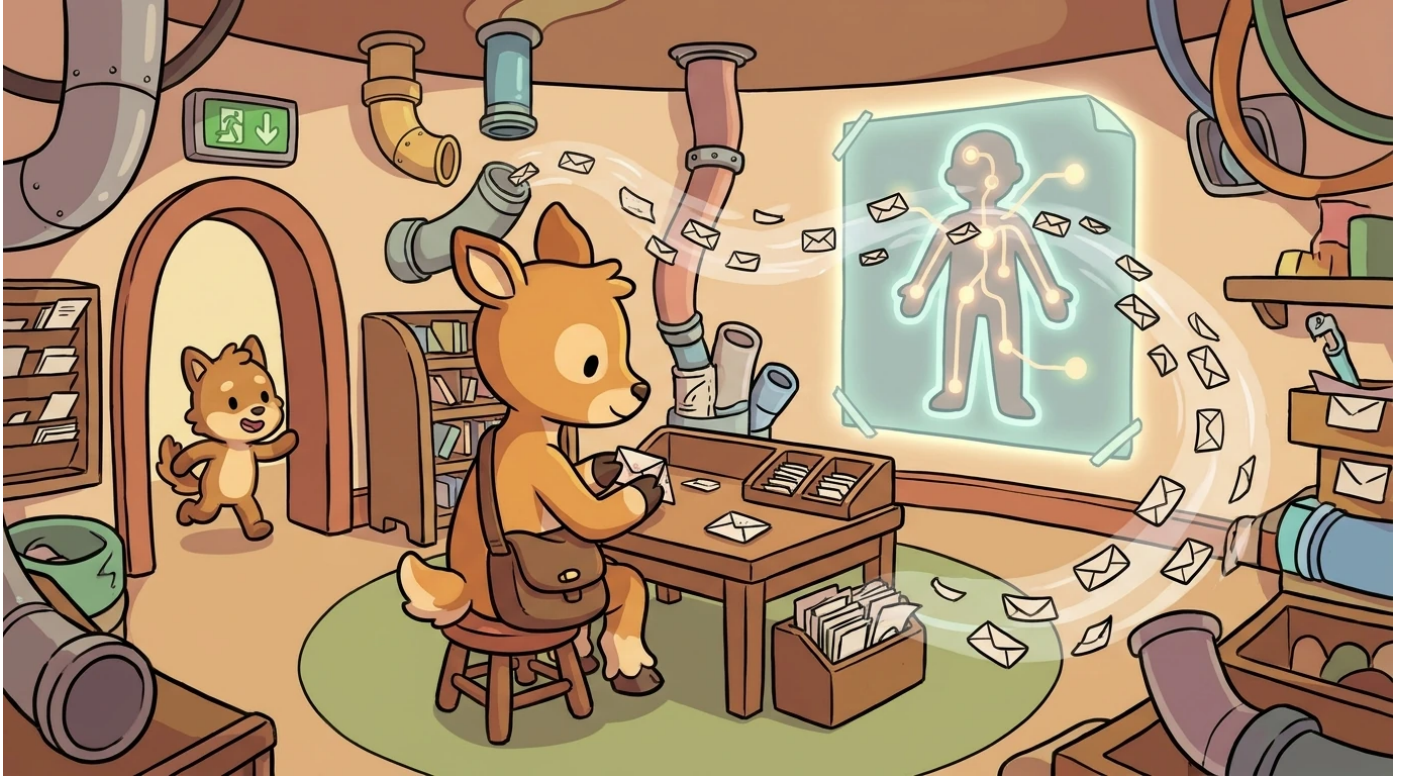
"You feel the edges of it," Ward said. "The warm scrape. The tired-then-better. The scab that shows up out of nowhere and means the mending's nearly done." They walked the otter to the doorway and looked out at the dark. "The rest you take on faith, and the faith is earned. Every time you've ever been sick and gotten better, that was them. Every scrape that closed. Every cold that lifted. A whole patient crowd inside you, watching all night, asking nothing, remembering every fight so the next one's easier."

The otter went still, and Ward watched the worry slide off their shoulders — the same way, years ago, the fear of every stranger had slid off their own.

They didn't say the last part out loud, but they thought it, warm and sure: *the body isn't a thing to be afraid of. It's a home with the kindest guards there are. And they never once clock out.*

Courier

*COURIER — *the body sends slow chemical messages*. Glands release hormones into the blood that travel everywhere and tell faraway parts what to do — grow, rest, fuel up. Slow chemical mail, not the fast electrical signals of the nervous system.*



In the sorting room deep inside BioForge, a deer-tween named Courier was folding a letter no bigger than a grain of rice.

They did it slowly, the way they did everything. Warm tan fur, a chunky satchel across a soft, steady frame, hooves that never hurried. Around them, hundreds of tiny paper messages drifted on slow currents of air, like leaves down a lazy river. Courier licked a fingertip, sealed the little letter, and set it onto the current.

A younger cast member watched from the doorway, bouncing on their heels. "Down the hall, Flicker fires a message across the whole body in *half a second*. You've been folding that one for a minute."

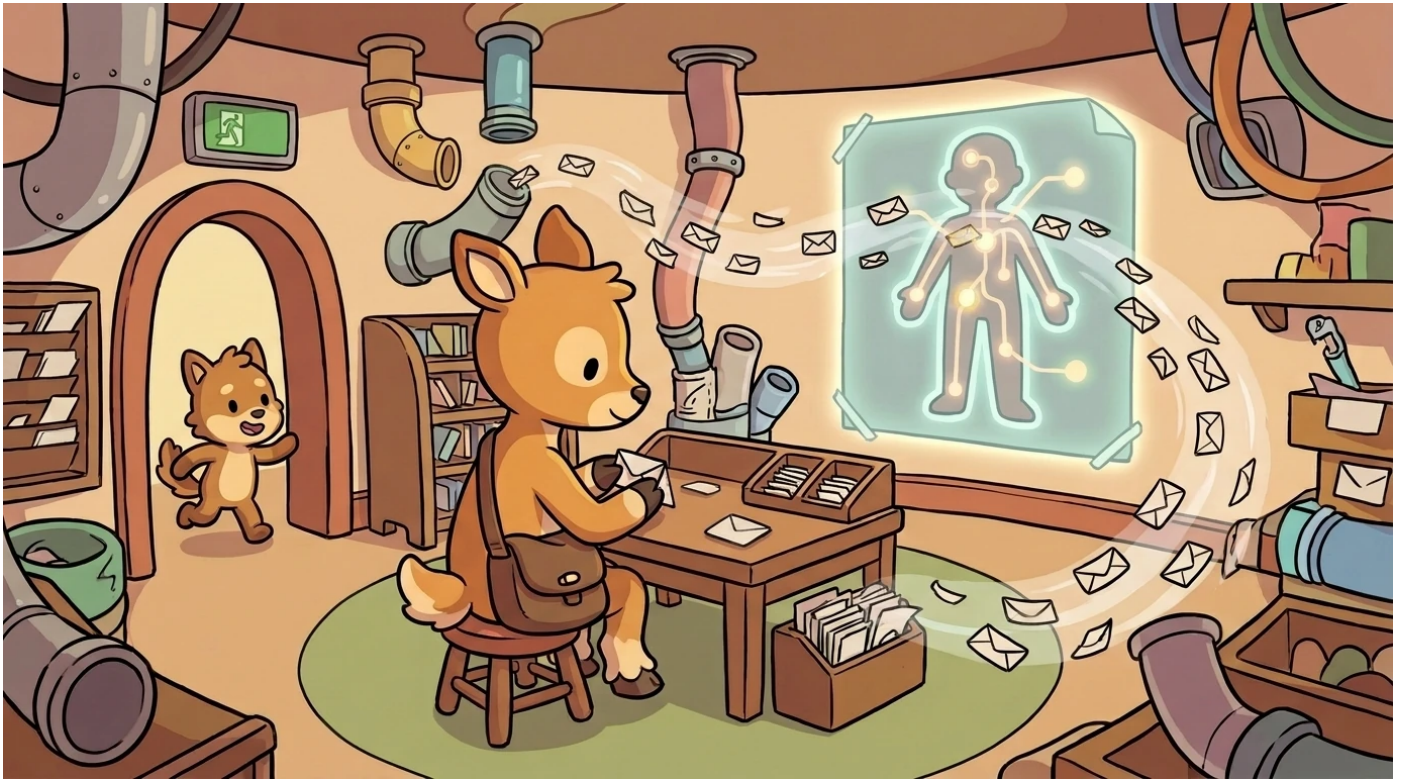
"Flicker sends lightning," Courier said, not looking up. "I send mail."

They walked the drifting letter to the far wall, where a glowing map of a body waited. The letter floated past an arm, past a leg, past the heart — ignoring all of it — and then *clicked* into one small spot near the belly, which lit up gold.

"Watch what mine does that lightning can't," Courier said. "It went everywhere. It touched every part. And only the one part that was *waiting* for it opened it." They tapped the gold light. "That part just got told: *you're low on fuel — get hungry*. Nobody shouted it. Nobody chose it. A quiet letter arrived, right where it belonged, and now the whole body will go looking for a snack."

The younger cast member stopped bouncing. "It just... knew?"

"It knew because the letter found it," Courier said. "Slow. But it always gets there."



Courier came from a long line of valley post-riders — the ones who carried letters on hoofback between mountain towns too far apart to shout across.

When they were small, Courier had wanted to be fast. They'd raced the message-birds and always lost. One evening, discouraged, they'd asked their grandfather why anyone bothered with a slow rider when birds existed.

Their grandfather had been sorting the day's letters by lamplight. He didn't answer right away. He held up one envelope. "This one goes to the miller's daughter, three towns over. Tells her the flour's ready. If a bird drops it in the wrong yard, it means nothing — just paper on the ground." He set it in Courier's satchel. "A bird throws messages *at* the world. A courier carries one *to* the right hands and puts it there. Slow. Sure. Opened by the one who needed it."

Courier had felt something settle in their chest — a warm, unhurried feeling, like the weight of the satchel was a good weight to carry. Not losing a race. *Arriving.*

They didn't understand it yet as anything more than pride. But years later, standing in a body full of drifting chemical letters, they'd feel that same settled weight and finally have a name for it: the body did exactly what their grandfather did. It didn't shout its needs. It *mailed* them.



Courier walked to BioForge because a place that studied the body ought to understand the kind of message that travels slow.

Marrow, the old mentor who kept the workshops, met them at the sorting-room door and asked only one thing. "The nerves already send signals. Why does a body need you too?"

Courier didn't argue with words. They took a single letter, wrote one word on it — *sleep* — and dropped it onto the slow air. Then they stepped back and waited while it drifted the long way around the glowing body-map, unhurried, past everything.

"That's taking forever," Marrow said, testing them.

"It is," Courier agreed. The letter finally reached a spot behind the eyes and clicked home; the map dimmed to a soft, restful blue. "A nerve would've snapped that message across in an instant — and then it's gone. Mine took the slow way. But look." They gestured at the whole map, now settling into calm. "It didn't just poke one nerve. It changed the *whole evening*. Slow mail doesn't flash and vanish. It arrives, and it *stays*, and it turns the whole body toward rest for hours."

Marrow looked at the blue, restful map for a long moment. "You belong here," she said.



Courier's first student was a kid named Alex, who arrived mid-fret, tugging their sleeves.

"I get sleepy when I don't want to," Alex said. "And starving out of nowhere. It's like my body isn't even listening to me."

Courier opened their satchel and laid a delivery game across the desk — a little runner on a glowing track. "Let's send some mail. You're going to be the sender. This runner's about to start a race. What does the body need?"

"Um — energy?"

"So write it." Courier slid a blank letter over. Alex scrawled *release fuel* and set it on the drifting air. It floated across the board, past most of the runner, and clicked into a gland near the middle. The runner sped up; the track lit green.

"You didn't grab a muscle and yank it," Courier said. "You dropped one letter into the blood. It went *everywhere*. And only the part holding the matching keyhole opened it and acted." They flipped a card. "Now the race is over. Send the after-message."

Alex wrote *rest and repair* and let it go. The runner slowed, and a soft glow spread through the whole body as it cooled and settled.

"That's the part nobody told you," Courier said gently. "The sleepy feeling, the sudden hunger — those aren't your body ignoring you. Those are letters arriving on time. A gland wrote one, the blood carried it, the right part opened it. You never had to command a single one."

Alex stared at the glowing, balanced body. "So it's been mailing itself the whole time."

"All day, every day," Courier said. "Grow. Rest. Eat. Steady. Quiet letters, carried slow, opened only where they're needed."



When the workshop had emptied, Alex came back with a smaller question.

"When a message is just drifting around in there," they said, "and you can't feel it moving yet — how do you know it's coming?"

Courier thought about the lamplit sorting room, and the good weight of a full satchel, and their grandfather's unhurried hands.

"You don't watch for it," they said. "You feel it *land*. There's a moment when the right message reaches the right place, and your whole self kind of... settles. Like a held breath letting go. Sleepy at the right time. Hungry at the right time. Calm when your body's got what it needs." They looked out at the slow-drifting letters. "That settled, steady feeling isn't luck. It's mail — arriving exactly where it belongs, in a body that's always quietly writing to itself."

Alex nodded, and Courier watched the tugging leave their sleeves, the shoulders come down — a body, for a moment, receiving its own kind letter and believing it.

Mantle

*MANTLE — *skin is the body's living wall*. It keeps the outside out and the inside in, holds your temperature steady, feels the world by touch, and heals itself when it tears. The body's largest organ, wrapped around everything you are.*



On the coldest morning of the year, an otter-tween named Mantle stood barefoot on the frost-bright deck outside their workshop and did not shiver — yet.

They had come out to feel the cold on purpose. The wind came off the water sharp enough to sting, and Mantle stood in it, palms open, reading it the way another person reads a page. A student named Alex watched from the warm doorway, hugging a mug, sure Mantle had lost their mind.

"You'll freeze," Alex called.

"Not yet," Mantle said. "Watch."

Under Mantle's fur, thousands of tiny muscles pulled tight all at once. Goosebumps rose across their arms like a field standing to attention. Then a slow shiver rolled through them — not a helpless one, a *working* one, the kind that makes heat. Mantle held one warm palm to the cold rail, then to the frost, then to Alex's mug through the doorway, naming each one before touching it. *Cold. Colder. Warm.* Every time, they were right.

"My skin's been talking the whole time," Mantle said, coming inside. "It felt the wind, decided I was losing heat, and started making more before I even noticed I was cold. It keeps the outside out and the inside just-right, and it feels the whole world for me while it does it." They wrapped both hands around Alex's mug and sighed. "Biggest organ you've got. Wrapped around your entire self like a living wall."



Mantle grew up in a family of wall-and-roof builders, in a place of hard weather where a bad wall meant a cold winter.

The walls they built were not simple. Their mother would press a hand flat against a finished one and hold it there, listening with her palm. "A good wall isn't just hard," she'd say. "It breathes. It keeps the storm out — but it lets the house *feel* the day. Warm sun on this side. Cool shade on that one. A dead wall is just a rock. A living wall knows what the weather's doing."

Young Mantle loved that. A wall that protected *and* paid attention. A wall that was on your side.

Then one summer they fell against a stone corner and scraped a long red line down their arm. It hurt, and worse, it frightened them — a break in the wall, the outside suddenly let in. For days they watched it, certain something was wrong.

But the wall was already fixing itself. A scab drew across the gap like a patch. Underneath, quietly, new skin was building — cell by cell, closing the line until only a thin pale mark was left, and then not even that.

Mantle sat with the healed arm in their lap for a long time, feeling something loosen in their chest. Their skin hadn't just guarded them. When it tore, it had gone to work and *mended itself*, without being asked. That was the day Mantle stopped thinking of skin as a shell and started thinking of it as alive.



They walked to BioForge at twelve, because a place that studied the body ought to understand the part of it everyone forgets is an organ at all.

Ward, the old guard-mentor who ran the lessons, met them at the gate and asked one question. "Your skin. Is it just a bag that holds you in?"

Mantle didn't answer with words. They took Ward's cold metal key from their hand, then their own warm sleeve, then the sun-warmed gatepost, and named the temperature of each before their fingers even settled — key, sleeve, post, *cold*, *warm*, *warmer* — eyes shut the whole time.

"Touch," Mantle said, opening their eyes. "Warmth. The wall's not just holding me in. It's reading everything, all the time, and telling the rest of the body what's out here." They pressed a palm to the sun-warm post and left it there. "And it's the first thing between you and every germ and scrape in the world. It fights before anyone inside even knows there's a fight."

Ward looked at them a while. "You belong here," he said.



Mantle's workshop was full of things that asked to be touched — smooth stones, soft cloth, cool metal, warm wood — and a glowing model of a single patch of skin, its layers lit up like a cross-section of Mantle's mother's wall.

Alex came in one afternoon, tugging a sleeve down over a healing scrape, embarrassed by it.

"Ugly, isn't it," Alex muttered.

"Show me," Mantle said. Alex did. Mantle looked at it the way their mother used to look at a wall — with respect. "That's not ugly. That's a work site." They turned the skin model so the layers glowed. "Top layer's the tough shield — blocks water, germs, bumps. Under it, the dermis, full of tiny sensors that feel pressure and heat and cold and pain. Your scrape broke through both. So right now, under that scab, the wall's rebuilding. New cells, filling the gap."

Alex touched the edge of the scab, gentler now. "It's warm."

"That's the work," Mantle said. They flipped a card from a small game board. *The athlete is overheating*. "Now — your skin does one more brave thing. Say you're sprinting on a hot day. Getting dangerous-warm inside. What does the wall do?"

"...Sweat?"

"Sweat. And as it dries, it pulls the heat right off you." Mantle flipped another card. *Cold and windy*. "And this?"

Alex thought of the frost that morning. "Goosebumps. Shivering."

"Exactly like I did on the deck. Every shade of skin, every texture, every size — all of it does the same three brave things. Guards. Feels. Holds your warmth." Mantle set the card down. "Yours included. Scab and all."



Later, when the workshop had emptied, Alex came back with a quieter question, sleeve pushed up on purpose now.

"When it's mending," Alex said, "and you can't really see it working — how do you know it's still doing it?"

Mantle thought about a red line down a young arm, and a chest that had finally loosened.

"You feel it," they said. "The warmth of a healing scrape. The relief when sweat cools you down and your body eases back to comfortable. The reach of a cold morning right up to your skin and no further." They rested a hand on the warm window, the way you'd rest it on a wall you trusted. "It's been between you and the whole world every second of your life, feeling for you, guarding you, quietly fixing itself when it tears. You just don't usually notice — because it's doing its job."

Alex pulled the sleeve back down, but slowly, no longer hiding.

And Mantle felt it too, the way they always did when a lesson landed — a warm, grateful aliveness, the plain comfort of being wrapped, head to toe, in something that feels and protects and mends.

Sieve

SIEVE — the body cleans its own blood. The kidneys filter waste out of the blood, keep the good stuff, and balance the body's water — sieving everything that flows through, all day, to keep the inside clean and steady.



Behind the river-mill on the edge of BioForge, a beaver-tween named Sieve stood knee-deep in the current, doing what looked like nothing.

The stream came in muddy — twigs, silt, a drowned leaf or two — and rushed against the great straining screens. Sieve did not fight it. She just watched the water shove through the mesh and come out the other side clear enough to drink, while the junk piled up against the screen where it belonged. She scooped a paw of the clean side and let it run through her fingers.

A younger otter paddled up, dripping. "You just *stand* here all day? Watching mud?"

"I'm not watching mud," Sieve said. "I'm keeping the mud." She tipped her head at the clear side. "That's the part everybody downstream drinks. Nobody ever sees it get clean. They just get clean water and never wonder why."

The otter squinted at the screens.

"Watch." Sieve dumped a whole muddy bucket into the top of the channel. The otter flinched, sure it would ruin everything — but the water fanned across the mesh, dropped its dirt, and slid out the bottom clear. Not one clean drop lost. Not one bit of junk let through.

"See," Sieve said, wringing out her apron. "The dirty stuff and the good stuff came in all mixed together. My screens just let the good through and hold the rest back. All day. Every drop." She grinned. "That's the whole job. Sort what stays from what goes, and never stop."



Sieve had learned to love that job as a small kit, on a long, hot, thirsty afternoon.

She'd been out playing in the dry hills, too far from water and too stubborn to turn back, until her mouth went to sandpaper and her head went tight and heavy. By the time she stumbled home her whole body felt gummed-up and wrong, like a stream choked with silt.

Her grandmother — old, round, unbothered — sat her down and put a cup of cold clear stream-water in her paws. "Slow," she said. "Little sips."

Sieve drank. And she felt it: the heaviness loosening, the tightness in her head easing, a clean lightness spreading out from her middle like clear water finding every channel.

"That good feeling," her grandmother said, "isn't magic. That's the inside of you getting *balanced* again. You went too low. Now there's enough, and everything sorts itself back to steady." She patted Sieve's paw. "There are two little sieves in you, tucked in your back, doing this every minute of your whole life. When you're thirsty, they hold the water tight so you don't dry out. When you drink plenty, they let the extra go. You never feel them work. You just feel *right* when they've done it."

Sieve looked at the empty cup. The gummed-up, thirsty misery had a name now: *out of balance*. And so did the clean lightness after: *sorted*. Somehow, knowing that made the whole invisible thing feel like a friend.



She walked to the BioForge lab at twelve, because a place that studied the body ought to understand the quiet work that keeps it clean.

Pump, the old mentor who ran the workshops, met her at the door. He didn't ask her to prove she was clever. He asked one question. "What do your kidneys do?"

Sieve didn't answer with a speech. She took a jug of cloudy, silty water, poured it slowly through a fine cloth stretched over a bowl, and held up the two results side by side — clear water in the bowl, grey sludge caught in the cloth.

"The blood comes in carrying junk from all your cells," she said. "The junk gets caught. The clean blood, and all the good stuff worth keeping, goes right back." She swirled the clear bowl. "And they do more than catch. They decide how much water stays. Too much in you, they let some go. Too little, they hold it back. Always balancing — not too much, not too little."

Pump looked at the two bowls for a long moment, then at the girl who'd made his point without saying the word *kidney* once.

"You belong here," he said.



Sieve's workshop was full of streams that quietly sorted themselves.

A boy came in one afternoon, flushed and cranky after running drills. "I drank a whole bottle at practice and I *still* feel gross," he said. "And coach says my pee was dark this morning. Is something broken?"

Sieve knew that gummed-up feeling. She'd felt it in the dry hills.

"Nothing's broken. Let's play the water game." She set out a channel with little gates. "You're the kidneys now. This body is at practice, sweating fast." She flipped a card: *running low on water*. "So — do you let water out, or hold it back?"

The boy hesitated, then closed the gates. "Hold it back. It doesn't have much to spare."

"Right." Sieve nodded. "And that's your dark pee this morning — not a warning light, just your kidneys holding water tight because you were low. A little signal you can actually read." She flipped another card: *just drank a big bottle*. "Now?"

"Open the gates. Let the extra go."

Water ran clear through the channel, and the little model-body held steady no matter what the cards threw at it. The boy watched it stay level and something in his shoulders unclenched.

"So it's *working*," he said. "The gross feeling was just it catching up."

"Every shape and size, two quiet sieves, all day," Sieve said. "Drinking water is just you handing them what they need to keep you level."



Later, when the workshop was empty, the boy came back with one more question. Quieter now.

"When they're just... doing it in there," he said, "and I can't feel anything — how do I know they're even on?"

Sieve thought about the dry hills. About the gummed-up, heavy misery and the clean lightness after, and her grandmother's slow, certain voice.

"You feel it when it's *done*," she said. "Not the work — the balance. That easy, clean, just-right feeling after a long drink, when your head clears and everything settles. That's not nothing. That's two patient filters catching everything that didn't belong, keeping every drop worth keeping, and handing you back a body that's steady." She looked out toward the river-mill. "The whole inside of you runs on it. Quiet, endless, asking nothing. And you never have to think about it — you just get to feel *right*."

The boy nodded slowly, and Sieve watched the cranky heaviness lift off him — the same way, years ago, hers had lifted over an empty cup.

She didn't say the rest out loud, but she thought it, warm and sure: *the clean, light, sorted-out feeling is the whole point. The work is always in there, tending the river, keeping you steady. You only ever have to feel how good it is when it's done.*

About Spark & Anvil

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Methodology

Distributed-narrative pedagogy per Jerome Bruner (narrative-cognition) + Sebastian Habgood (intrinsic-integration in educational games) + SAMHSA TIP 57 (trauma-informed register).

Trauma-informed-design framework per Eggleston et al. (2025) and Stoltenburg et al. (2024).

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