

VIRUS CHANGES SKIN

by EKATERINA SEDIA

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The question “Who’s in charge here?” may apply on very large scales....

Willow Robertson smoothed the skirt over her thighs and perched on the examination table. Her hands gripped the edge, and she spent some time studying them—pale, with the slightest yellow tinge. Like nicotine. Jaundice. Old T-shirt.

She chased the thought away and instead rehearsed her words for Dr. Margulis. She arranged them carefully in her mind, fearful that the moment she started talking they would scatter like pearls, the string of resolve that tied them together broken.

She looked out of the window at what used to be tundra just a few decades back and now became the pale scrub of pines and oaks. The sun beat down on the tarmac roads and the haggard town of hastily erected houses, shops, hangars, but people stayed indoors. Not safe. Even the farmers had to work in full protective gear.

Dr. Margulis entered the examination room, and as she walked she flipped through Willow’s chart, skimming every childhood hurt (appendectomy at six, a leg broken on the monkey bars at ten), every adolescent embarrassment (laser removal of acne scars at fifteen, corrective eye surgery at seventeen), and every adult self-denial (tubal ligation at twenty-four, breast reduction at twenty-eight).

“What can I do for you?” Dr. Margulis said.

Willow gripped the edge of the table harder, watching the half moons on her nails pale into white. “My mother died last week.”

“I am sorry to hear that.” Dr. Margulis’s face folded along the well-worn lines into a habitual grimace of sympathy. Every doctor Willow had ever seen had that prefab expression, and these days their faces assumed it almost automatically. Too much cancer. Too much sun.

“It’s all right,” Willow said. “I mean, she was in her eighties.” And answered the unspoken question, “I was a late child. Anyway, since my parents are gone now, I would like my alterations reversed.”

“Your skin?” The doctor did not hide her surprise.

“Yes. And hair. I understand why my parents did it to me, they wanted me to have a better shot at getting ahead, but now I can do what I want. Right?”

“Of course. It’s just ... what are your coworkers going to say?”

Willow shrugged. She did not have an answer to that. People’s opinions mattered less to her with each passing year.

“Don’t you like being the way you are?”

“I don’t hate it,” Willow said. “But my parents did not ask me about it. They just had it done. And when I was little, I could not understand why I was a different color than they, and why they wouldn’t come to my school plays. And I was angry that they didn’t ask me. And they said that they didn’t want me to change color when I was grown up—people would wonder, they said. You’d never pass then; someone will always remember that you used to be black.”

Dr. Margulis raised her eyebrows and gave a sigh of resignation. I’m not going to argue with that, her demeanor said, I have better things to worry about. “Fine. The receptionist will schedule you for some time next week. I’ll prepare your inoculation.”

“Oral?”

The doctor nodded. “A very simple one. A single gene that will release the suppressors on your melanin genes.”

“And hair,” Willow reminded softly.

“And hair. You’ll have to shave your head, of course, and your new hair will grow with your original keratin structure. Anything else?”

“How long will it take?”

“For hair, a few weeks. For skin—it will be gradual. As your old cells slough off, the new ones will have a heavy pigmentation. The virus will target the skin cells only.” The doctor spoke with obvious pride in her ability to communicate complex information in simple terms.

“Thanks,” Willow said. As she was leaving the examination room, she heard Dr. Margulis say, “What are you trying to achieve?”

“I don’t know,” Willow said and closed the door behind her.

It was true, she didn’t. Color did not equal culture, and that was one thing that she had lost and could never reclaim. She still would be a white person, even if her skin turned the deepest shade of sienna. But she owed it to her mother to at least look like her.

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Willow was growing impatient—two weeks after she took the viral pill, her skin tone deepened only a little. Still, people noticed. She saw heads turn as she walked from her apartment complex—a new ugly building made even uglier by the massive solar panels on the roof—to work.

“You really shouldn’t be out in the sun,” Andre, her coworker at the Corn Institute, said. “Skin cancer is no joke.”

Willow rolled her eyes. “If you’re done stating the obvious, do you mind looking over these data with me?” She spread the sequencer printout on the lab bench and rifled through the reference library of plant genomes. “Does this look right to you?”

Andre tugged on his upper lip. “Nope,” he said. “Which strain is it from?”

“IC5. The dwarf.”

Andre’s face lit up. “I love that strain. They’re so *cute*.”

Willow smiled too. Everyone at the Institute anthropomorphized corn; Willow used to find it ridiculous when she first started here, but now it seemed natural. And this corn *was* cute—tiny plants, no taller than wheat, with a spray of succulent leaves and thick robust stems, burdened by ears bigger than the rest of the plant.

“Anyway,” Andre continued. “They’re not stable yet, so shit like this is to be expected. Did you find this mutation in the library?”

“Uh huh, only it’s not from corn. It’s a cauliflower gene.”

“You’re shitting me.”

“See for yourself.” Willow moved the sheaf of papers toward Andre. “See? This is all corn, but this little bugger is cauliflower. Except for this G and that A.”

Andre nodded. “Don’t tell me. We used the cauliflower mosaic virus as a vector for this one.”

Willow did not comment on stating the obvious. Instead, she thought of the viruses—always multiplying, always mutating—especially in Alaska, so close to the polar ozone hole. The rest of the country was even worse off, with its scorched land and tepid oceans, with its heat and dust storms, but here ... Willow shook her head. Not even glass and cement of the Institute could keep them contained.

“What?” Andre said.

“Do you ever think that viruses made us bring them here?”

He stared at her, unsure whether she was joking. “Made us bring them here how?”

“By making us smart. Too smart for our own good, so we messed up everything, and the viruses are our only hope, and we put them into every living thing, we give them new genes to carry around from organism to organism, we make UV radiation so high that they mutate like there’s no tomorrow.” She bit her tongue.

“Viruses made us smart?”

“Why not? We use them to make things better, to shuffle genes about. They could’ve done it on their own. The unseen force of evolution.”

He sat down, rubbing the bridge of his nose with two fingers. “It’s possible, I guess. But what do we do with the dwarf?”

“Start over.”

Andre made a face. “You sure we can’t fix this one?”

Fix virus with virus, Willow thought. And why wouldn’t they? She was doing the same thing—she introduced a virus into her body to counteract the effects of the one her parents put in her. She imagined that virus when she was a kid. In her mind, she pictured it taking her melanin genes and

twisting them into little black coils, tight like braids of her old neighborhood friends, so they would lie dormant and not betray her blackness to the world. Now, quite grown up, she imagined the virus untwisting them, she imagined the pigment seeping through her cells, reaching the surface of her skin, coloring her—like a letter written in milk, she was just waiting for the right stimulus to reveal her hidden meaning. She was white paper, and the black viral letters would soon become bright enough to read.

“Willow?”

“I suppose,” she said. “Maybe. ‘Fire with fire’ is our motto, right?”

Andre looked puzzled. “I don’t think you’re having a good day.”

“I’m having a great day,” Willow said, and stood. “I’m going to the greenhouse.”

“Grab me a tray of EB-A seedlings, will you?” It was Andre’s pet strain; he called the seedlings ‘babies.’

“Sure thing. How’re your babies doing, by the way?”

Andre sighed. “Tumorously. If that’s a word.”

“It should be.”

In the greenhouse Willow walked along the aluminum benches with rows of trays housing green sprouts. Each tray bore a label indicating its strain and growing conditions—with traditional agricultural soils gone to dust or underwater, everyone at the institute worked hard to create corn that would grow in the peat and sand of Alaska.

Willow sighed as she ran her fingers along the tender stems. Poor plants, she thought, they don’t know what they are and don’t remember what they’re supposed to be. The only choice they have is to grow blindly in every direction, whipped by viruses that changed them with their alien will. Tumorously.

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Willow caressed the fabric of the caftan, gingerly tracing the pattern of blue and orange stripes. It seemed too loud, too boisterous. Expensive, too, ever since all cotton had to be imported from Canada. Nonetheless, she put it on.

“It looks good,” said the store clerk the moment Willow stepped from behind the curtain of the dressing room.

The woman in the mirror seemed as foreign as the caftan that slithered along her body, shifting and shimmering with every breath. The woman with dark glossy skin. Willow did not belong inside either of them; she could not take off her skin, and so it was the dress that had to go.

“Didn’t like it?” said the store clerk when Willow, back in her white blouse and blue slacks, handed her the caftan. “Too bad; it looked really good on you.” She smiled wistfully, a pale freckled girl. “I wish I could pull off wearing something like that.” She clamped her hand over the startled ‘o’ of her mouth. “I didn’t mean it in a bad way.”

“I know,” Willow said, smoothing her short hair. “Don’t apologize. And it’s a nice dress, but I couldn’t wear it for work. And I don’t go anywhere else.”

The store clerk nodded. “I understand. And I’m sorry.”

Willow bought a white blouse and a pair of long, jangly earrings to combat her guilt. She felt fake, undeserving.

She walked home. In these high latitudes, darkness all but disappeared in the summer. Nine P.M., and the sun still shone through the thick haze surrounding it. Even at night there was no respite from the radiation.

Willow hated to imagine what happened to the rest of the country. With Florida submerged and Pennsylvania a thirsty, cracked desert, with dustbowls and tornadoes, they were lucky to have a place to go. After Alaska, there would be nothing left. They had to make do.

Science can fix everything; didn’t they promise her that? Didn’t she become a scientist because she believed that scientists solved problems? Survival, she reminded herself. They had to feed what was left of the population—twenty million? Ten? The government didn’t publish the latest census data. They had trouble enough keeping the trains running between Alaska and Canada, and trading what remained of the oil in the former ANWR for goods and research funding. Suddenly, science wasn’t a search for truth; it became a search for food and for continuing life. What could be more important than that?

When she got home, she tried her new earrings on and cried. Her tearstained eyes glanced at her hand, and she contemplated it a while—deeper dark around the fingernails and in the creases of the joints, lightening at the phalanxes, and pink at the palm. Tiny moons of her fingernails seemed to hover above the darkness of her fingers. She cried for herself and for her poor corn plants, which she could not make better. The plants whose soul was eaten away by the viruses, and nothing could restore it to them, not even viruses themselves. They died because there was nothing for them to be; she feared to continue this thought and played with her earrings instead.

The next day she came to work early and ran the labyrinth of glass corridors and elevators to the safety of her lab like a gauntlet. She wanted to be in the comfort of her equipment, in the shared misery of her plants. Before she could turn the thermocycler on, someone knocked at the door.

Willow jolted upright and fought a sudden urge to cover her face with her hands. Through the glass door, she saw the smiling face of Emari from the transposon lab down the hall.

“Come in,” Willow said.

Emari grinned and entered. “Going to the conference in Anchorage next week?”

Willow shook her head. “I have nothing to present. The dwarves wouldn’t stabilize. What about you?”

“I’m going,” Emari said. “We found some freaky stuff with Mu21. It just loves that UV light. Loves it. And I think if we move to transposable mutagenesis, we might be able to dispense with viral vectors altogether.”

“Trying to put me out of work?”

Emari laughed. “Of course not; we’d never lose such a good gene jockey as you. What do you care about the vector? Just make us new mutations, and our little Mu will take care of them.” She grew serious. “Besides, Andre tells me that you’ve had some thoughts about viruses that were ... let’s say, not very flattering.”

“Uh huh.”

“Want to get some tea?”

“Okay. But let’s go outside.”

Emari glanced at the window. Heavy clouds rendered the world grey—low enough UV to venture outside for a few minutes. “Sure.”

The two women strolled along one of the paths that transected the institute’s garden. Initially, it was meant as an enticement for the visitors and the advertisement for the donors, showcasing all of the Institute’s achievements; now, Willow and Emari exchanged a sad smile at the sight of these monstrous plants, violet and bronze, their leaves leathery, their stems bulbous, ill. There was no funding to maintain the garden, and only the ugliest and the most resilient plants persisted, UV light be damned.

The women sipped their tea tasting of grass—the best they grew in Alaska.

“Look at those colors.” Willow pointed out an especially brilliant plant, streaked in florid bronze and dark purple.

“Yeah,” Emari said. “Wild transposons are turning on. I wonder if they would do a better job than us.” She drained her cup and turned to Willow. “So what’s with you and viruses?”

Willow wasn’t sure if she was asking about her skin and shrugged. “Well. Human history was run by viruses. We wouldn’t even be in the Americas if the Spaniards’ viruses didn’t kill off the locals. They wouldn’t need so many slaves, too, so there would be no African Diaspora. The influenza epidemics helped the Allies to defeat Germany in the WWI, so without it ... who knows? And if it wasn’t for AIDS and Ebola, we wouldn’t all fit in Alaska.”

“And?”

“And it’s the same with evolution, I think. How many genes were translocated by viruses? Even your transposons are just viruses without anything but the DNA.”

“That’s why I love them,” Emari said. “Transposon is a perfectly abstract parasite.”

“Well. They are good at it, you know? I can’t help but think that we’re just their tools, letting them do what they do best. Bringing them wherever they want to go.”

“So evolution and human history are just a massive viral conspiracy.” Emari was not laughing anymore and looked at Willow with worry in her green eyes.

Willow shrugged. “Do you really feel that in your relationship with transposons you’re the one in control?”

Emari shook her head. “It’s a battle, no doubt. But may I ask why you’re helping them?”

“This?” Willow raised her hand. “I’m just reversing the treatment I had after I was born.”

“Oh. It is quite smart, actually; I hear that melanin offers some protection against UV. Soon, everyone will be doing it.”

Willow cringed. If Emari was right, soon everyone would be like Willow, the color of their skin divorced from meaning or history. It would be just an adaptive trait. Like the violet streaks on the corn.

Willow woke up in the middle of the night, her hair damp with sweat, her thoughts more lucid than ever, the skin on her hands and feet burning. She sat up and stared at the billowing of the white curtains on the windows. The answer came to her in her fevered sleep, and for a while she wasn’t able to accept it.

The cancer, the dying corn, her own misery; it all happened because they had forgotten who was the master in this relationship and who was the servant. Things went bad because people decided to manipulate the viruses without understanding them. From the very first pox-infected blanket, things went wrong. Viruses did not take kindly to their rightful place being usurped.

Her legs wobbled under her as she stood and threw on some clothes. She was going to set things right, to let the viruses roam free like they were meant to, to paint their unfathomable designs in skin and leaves, without interference from human meddlers.

The Institute was empty, except for a security guard who gave her an indifferent look. No doubt, he was used to wild-haired scientists experiencing breakthroughs and running for their sequencers at any hour of the night. Willow waved at him and stumbled for the elevator.

She stopped by the lab to load up a cart with cell cultures that

harbored viruses of every stripe with every imaginable corn gene inserted into them, and pushed it to the greenhouse, often stopping to wipe the sweat that ran down her face. She tried not to think about whether it was the virus inside of her that pushed her on, getting giddy at the impending freedom of its brethren ... she chased such thoughts away.

In the greenhouse, she flicked on the daylights, illuminating the experimental plants in all their sickly, tumorous nudity. If she didn't do something, they would never get it right. People would starve. People would burn to the crisp and die. They would poison what remained of the air and the water. It wasn't their fault; they were just not equipped to do the viruses' job. She had to trust the viruses to make it better.

Willow emptied the dishes over the plants, smearing thick translucent cellular jelly over leaves and stems. She pushed apart the heavy glass panels that protected the plants from the ravages of the outside air and gulped the night and the coolness with wide-open mouth. She poured the leftover viral cultures over the plants in the garden below and threw the empty Petri dishes after them.

She waited for the sound of shattering glass, gripping the windowsill. The creases on the joints of her fingers looked pitch black and she could feel the restless shimmying and shifting of the virus in her blood. It made her hair sing like taut violin strings, it made her skin burn.

Willow had to lean against the wall as her legs grew weak. She felt no fear, only the calm assurance that the plants would flourish. And after that, she would find a way to liberate the human viruses, to let them shape the humans as they had been doing for thousands of years.

She stroked her skin, burning, hot to the touch, almost smoldering under the viral assault. "Be still," she whispered. "I will take good care of you."

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BIOLOG: EKATERINA SEDIA by RICHARD A. LOVETT

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Ekaterina Sedia likes lichens. “They’re like little trees,” she says. That’s because she’s a biologist who did her Ph.D. studying them in New Jersey’s Pine Barrens.

To date, however, there haven’t been any lichens in her *Analog* stories. Instead, they’ve been about genetic engineering, including the popular “Alphabet Angels,” which (coauthored with David Bartell) not only won an AnLab Award, but was her first-ever fiction sale.

That story appeared in 2005. Since then, she’s only appeared a handful of times in these pages, but she’s published two novels and racked up nearly two dozen short story sales to other publications.

And she’s not even doing this in her native language. Sedia was born in Russia and didn’t move to the U.S. until 1991. Nor did she grow up reading science fiction. She began with literary mainstream, then shifted when she got older, “because there’s just so much realism you can take.”

She found that science fiction and fantasy are still basically about the human condition. “But you can put those humans into more interesting situations.”

One advantage of coming to the field late was that she’d developed a literary taste that she could import into her fiction. “Words matter,” she says. “Style isn’t something separate from a story.”

As a biologist, she’s struck by the paucity of stories featuring good, plausible biology. “Genetic engineering is generally used like magic,” she says. “It’s the same with nanotechnology. Most people don’t see the limitations.”

She also likes history. An upcoming novel, *The Secret History of Moscow*, (due in November) deals with the things every culture sweeps under the carpet. “Basically, it’s history written by the losers,” she says.

As a Russian, she’s sometimes drawn to darker-than-average stories. “It’s a stereotype,” she says, “but accurate.” Nor is she a fan of technological fixes. Many problems, she believes, are unintended consequences of prior technologies.

She avoids the pretense of thinking she writes only to entertain. Entertainment is important to her, but it can’t be the only thing. “I recently saw magazine guidelines that said, ‘No agenda stories,’” she says. “All stories are agenda stories. You might not necessarily notice the agenda,

but it's there. Either it's maintaining the status quo, or challenging it, or approving it, or ignoring it. For me, it's about acknowledging and questioning the status quo."

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