As a child, Audra Geras inspected and scrutinized the plants and insects in her garden. The intricate complexities of nature captivated her from a very young age. She zoomed in on anything that was normally hidden. The most insignificant, infinitesimal organisms burrowing around in the mud and on the plants became her subject matter. As a little tyke, she began to draw and paint them.

By the time college came around, Geras decided against going to the Ontario College of Art, instead opting for honors biology at the University of Toronto. In what can only be understood as eerie foreshadowing, or maybe even postshadowing, she paid her way through biology school by drawing zoological and botanical illustrations for her professors.

Born and bred from such an intrinsic art-science crossover, Geras found a natural next step when she then entered the art as applied to medicine (AAM) program in the Faculty of Medicine at the University of Toronto, a program now called biomedical communication. Discovering a program that allowed her to harmonize both of her passions in a yin-and-yang fashion gave her all the firepower she needed.

“I had been getting increasingly suspicious that my interest in science came from an artistic sensibility and not a scientific one,” recalled Geras. “I recognized that I was some kind of strange hybrid. Once I read about the medical art program, I knew instantly that that was what I wanted to do.”

Six months before graduating, Geras started her own biomedical art business and never looked back. Today she works for numerous clients, everything from advertising agencies to pharmaceutical companies. Even though her work always serves the client’s needs first—whether it’s a high-impact ad campaign or illustrating skin fungus—there’s always an element of creative passion underneath it all.

An Usual Perspective

The cover image comes with the full title of The Amygdalae of the Limbic System of the Brain: The Fear Factor. Crudely simplified, the amygdala is responsible for emotional reactions, triggering “fight, flight, or freeze” responses. It’s one of the parts of the brain often studied in cases of depression, anxiety, or obsessive-compulsive disorders. Geras’ image can be traced to when she worked with a psychiatrist who focused on those particular conditions. She wanted to create a mysterious, introspective look. In the image, the colored parts represent some of the feedback-looping areas of the brain responsible for developing and learning perpetual habits related to those conditions. A monotone brain and head with unseeing eyes, near-ghostly, comprise the rest of the scene.

“The image represents a person who is turned inward, trapped by their anxiety-burdened thoughts,” Geras explained. “The arcs in the background represent the repetitive and circuitous nature of the thinking. The compositional elements were created using a combination of both 2D painting and 3D sculpting software.”

Depending on the situation, Geras’s work might function as scientific visualization, art, education, therapy, or all of the above. On occasion, Geras...
gets assignments from advertising agencies, but the majority of her work is for pharmaceutical and biotechnology clients. Surprisingly, the latter situations provide more artistic freedom because depicting a bioscape or environment no one has yet seen or imagined provides tremendous potential for creativity. More often than not, Geras can set the scene any way she wants, in terms of lighting, color scheme, or composition without compromising the science that underlies the project.

For example, in the case of Coronary Stent (see Figure 1), the client wanted to show its unique stent design in a flashy, dramatic fashion, but in a way that viewers could still take seriously. In another case, The Common Dermatophytes of the Skin featured skin fungi that one wouldn’t assume were pleasant to look at, but Geras found a way to make it work (see Figure 2).

“When seen though a scope, the fungi are quite jewel-like and otherworldly,” she said. “I decided to create the entire scene in a glassy look that would reveal them as something quite fascinating.”

For Neural Network Geras created a scene showing the network’s complexity, with emphasis on the synapses (see Figure 3). She gave the synapses an electrical glow to draw in the viewer and highlight the synapses as communication hot spots. At the very least, Geras says there is always a way to give clients something creative and interesting that still accomplishes what they want.

“This can involve using an usual perspective on a subject or showing it within a dramatic environment,” Geras said. “I think my clients usually understand this. I also talk about aesthetics a lot because I am absolutely convinced that the mysterious qualities that make a work of art beautiful also promote the learning process. It is the beauty of a biomedical painting that more fully engages the viewer, draws them in, and makes them want to understand.”

That Which Is Hidden

After all the science is said and done, Geras’ biomedical art evokes a natural sense of mystery. One can perceive a Zen-like meditative effect, as if she’s investigating that which is hidden, the inner spaces, or something buried beneath the surface that no one knows is there—literally and metaphorically.

“Every day, whole universes of mind-boggling complexity are happening in our bodies that no one can see unless a biomedical artist depicts some tiny, microscopic piece of the story,” she said. “But I think there is even more to it. My personal goal behind every single visual, beyond the goals of the work as a teaching or marketing instrument, is to share with the viewer my perception and appreciation of the wonder and beauty of science.”

And when the ignored or neglected beauty finally emerges, the concept of zooming in on that which is normally overlooked becomes intrinsic. Blinders come off. Childlike curiosity takes over and the viewer is transported back to a state of wonderment. According to Geras, this is what differentiates art from utilitarian scientific illustration.

“There are sources of amazement absolutely everywhere, but so many people go through life without really seeing, without looking,” Geras said. “I want to make people look.”

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Figure 2. The Common Dermatophytes of the Skin. The artistic rendering makes skin fungi visually appealing.

Figure 3. Neural Network. The electrical glow draws in the viewer and highlights the synapses as communication hot spots.