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Exhibition Reveals the Art of Science and the Science of Art

By Tyler Smith

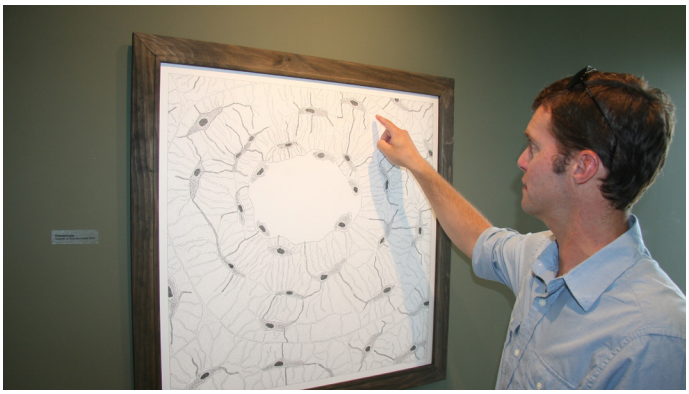
To some, the world of science seems coldly analytical. Seen through the eyes and the artistry of Travis Vermilye, however, dispassionate observations of vasculature and the unyielding calculus of selecting organ transplant recipients come brilliantly to life.

Vermilye, an assistant professor at the University of Colorado Denver's Department of Visual Art in the College of Arts & Media, brings a powerful interest in science to "hyper-stasis," a showing of his work now on display through Aug. 29 at The Art Gallery in the Fulginiti Pavilion for Bioethics and Humanities on the Anschutz Medical Campus.

Travis Vermilye points to a depiction of the narrowing of an artery in "Stroke," one of the illustrations he created to demonstrate the effects of physical inactivity on the body.

Thickening blood vessels, fragile bone cells and retinal microaneurysms might not suggest beauty. But in Vermilye's hands, these and other disease states flower in "Nine," one of two series presented in the "hyper-stasis" exhibit.

"Nine" depicts the top nine conditions linked to physical inactivity. To create the graphite illustrations, Vermilye drew on photographs, CT images and histology sections to reveal the microscopic effects of disease. "Stroke," for example illustrates a plaque-constricted artery and a ballooning aneurysm in a sea of painstakingly drawn micro-vessel tributaries.



"Osteoporosis" depicts weakened bone cells, which are the hallmark of the debilitating disease.

Upon closer inspection, each of the drawings yields further discoveries: handwritten facts about the conditions and the toll they take on individuals and on society.

"The idea is that combining text with an image creates something more powerful than either one alone," he said. "Looking at the microsections of the body, you don't know immediately what it is, but as you get close and look at the text, you understand the horror."

From search to synthesis. Vermilye found the information about the conditions – the number of people who suffer strokes each year, for example – through simple Internet searches.

"They are nothing more than a typical person could find," he said. "But I'm hoping people take a lot more away after viewing these representations."

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The concept for "Nine" emerged after Tess Jones, PhD, interim director for the CU Center for Bioethics and Humanities, invited Vermilye to create a show at the Fulginiti Pavilion for the 2013 spring semester. He'd been doing some not very fulfilling freelance work and took the invitation as an opportunity to create something with personal meaning.

Vermilye with the labyrinthine conceptions in the "Waiting" series. Shown in detail below, they represent the long delays for people needing donor organs for transplant.

"Public health is something I care deeply about," he said. After doing the online research and making some sketches, he began work on the exhibit in earnest. The "Stroke" and "Breast Cancer" pieces alone took two months of work, he said, but the project was deeply satisfying.

"I'd had these ideas spinning in my head, but the show was an opportunity to put them into place," he said. "Most of us don't see the body in this way."

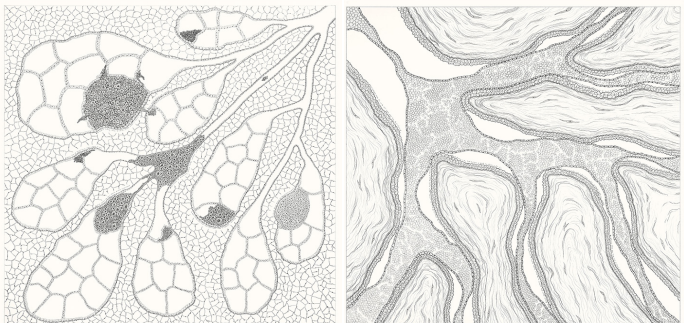
Winding path. Joining "Nine" in the exhibition is the three-piece, digitally created "Waiting," a conceptual series that illustrates the large number of transplant candidates caught in a waiting game for donor organs. The respective works depict "loose anatomical abstractions" of a kidney, liver and pancreas, Vermilye said, with tiny geometric figures representing the thousands of people on waiting lists.

The symbolic suggestion of waiting is contained in the labyrinthine imagery of the three works, Vermilye said. He got the idea during a 2009 visit to Ghost Ranch, near Santa Fe, NM, the inspiration for many of the works of American artist Georgia O'Keefe.

As he viewed natural rock labyrinths in Ghost Ranch's rugged terrain, Vermilye said he began to think about "the powerful image of walking toward a goal in the center." While he worked on paintings of labyrinths, he happened to run across data about kidney transplants and was taken aback by the number of people waiting for donated organs.

"I began thinking about how many people are going to die without a transplant," he said. In the finished "Kidney," each geometric shape represents 100 transplant candidates winding through a labyrinth suggestive of the organ's vasculature – and of the long process of moving from candidate status to receiving a donor organ.

In the "hyper-stasis" exhibit, and in all his work, Vermilye said he had one simple goal. "I want to tell a story as accurately and as beautifully as I can," he said.



From the "Nine" series: "Breast Cancer," left, depicts cancer cells' advance. In "Heart Disease," plaque clogs arteries.

Bridging art and science. He has brought the same spirit to other collaborations with providers on the Anschutz Medical Campus. In "The White Death," for example, he and Hans Rosenwinkel, assistant professor of theater, film and video production at UC-Denver, worked with CU School of Medicine pathologist Elmer Koneman, MD, on an animated 3-D project that brought the disease process of tuberculosis to life. Vermilye also produced

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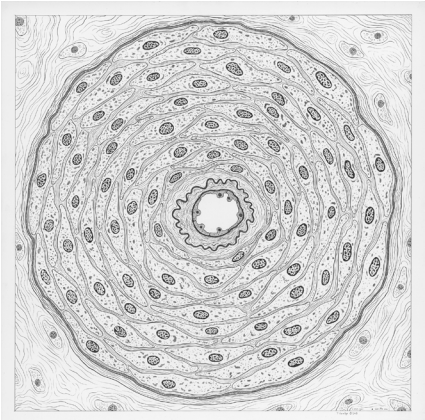
medical illustrations of a medication pump implant surgery for young multiple sclerosis patients performed by Children's Hospital Colorado neurosurgeon Corbett Wilkinson, MD.

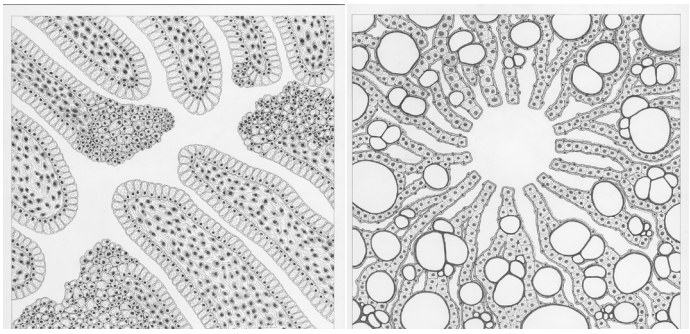


Vermilye's depiction of a narrowed vessel caused by hypertension.

Vermilye said his work springs in part from a longtime interest in biology and botany. As an undergraduate taking life drawing classes at Southwest Missouri State University, he stumbled on the Association of Medical Illustrators, a professional organization that supports using the visual arts to advance science and medicine.

"I said that's what I want to do," Vermilye said. "I was interested in using scientific illustration to help explain things that can't be seen."

By the early 2000s, he was working for a Golden firm that used CT data to create anatomical representations clinicians used for pre-surgical planning. The firm was an early adopter of 3-D printing, using it to produce clear plastic models of bone, with nerve pathways to tumors illuminated in red.



"Colorectal Cancer" (left) and "Obesity" from the "Nine" series.

His present position allows him to "make a bridge and a connection with the medical campus," Vermilye said. During the past five years, he's devoted an increasing amount of his time to 3-D animation to achieve that goal in all his work.

"My training is in 2-D drawings," he said, adding that he spent hours early in his career observing surgeries and drawing them by hand. "But the bulk of my work now is in 3-D. It makes it easier to tell the story."