A 'Geeky, Frazzled' Star of Screen

Dena Tyler '94 ditched her plans for a medical career
and took a shot as an actress. It's working out.

By Karen McCally '02 (PhD)

In the past several years, **Dena Tyler** '94 has been showing up in some high-profile television series. In 2005, she appeared in multiple episodes of *Law & Order*. From 2011 to 2015, she popped up on the hit shows *30 Rock*, *Orange Is the New Black*, and *Homeland*. This fall, she played a key role in the pilot of the new CBS drama *Bull*.

"I love playing characters that are raw and fiercely committed to their charges," says Tyler, adding that she has a "goofy" side, too.

Those traits describe *Bull*'s Liberty Davis to a T: a "geeky, somewhat frazzled" attorney, Tyler says, hired by Jason Bull (Michael Weatherly), a psychologist who runs a trial consulting firm. Earnest and intense, Liberty stumbles alongside her more graceful colleagues, juggling multiple briefcases, navigating precariously in her high heels. But in a pair of dramatic courtroom scenes, Tyler shows her to be a hero.

In both *Homeland* and *Orange Is the New Black*, Tyler played medical personnel. Those roles, too, were fitting. A native of Syracuse, she arrived at Rochester with

IN CHARACTER: Tyler (above, right) is about to launch closing arguments as an attorney in the CBS series *Bull*. She minored in dramatic arts at Rochester.

the intention of becoming a physician. She majored in neuroscience, and fed her love of the stage with a minor in dramatic arts. In the spring of her senior year, she played the role of Carol Cutrere in the theater program's production of Tennessee Williams's *Orpheus Descending*.

After college, she decided to delay medical school, performing locally at venues including Geva Theatre, and working at the University's Strong Memorial Hospital as a respiratory therapist. On her actress's profile, Tyler lists her familiarity with medical terminology and neuroscience right along with her facility in Cockney, Irish, and New York accents.

Her professional career took off in 1999 when she was introduced to the Actors Studio in New York City. She steadily landed leads in off-Broadway productions before turning her focus to television.

In 2017, she'll appear in the pilot of a new HBO series, *The Deuce*. The brainchild of David Simon, creator of *The Wire*, and novelist George Pelecanos, *The Deuce* is the fictional story of two brothers caught up in New York's porn industry in the 1970s.

Tyler is also a coach at MN Acting Studio in Manhattan, where she teaches a workshop called TV Audition Bookcamp. She says that being yourself—even on a difficult day—can work to your advantage.

"My audition for Liberty was long delayed, and by the time I went in, I had underarm stains down to my waist and my stomach was eating my back," she says. "I thought, well, I'm going to use it. So I flashed my sweaty pits and belched in my audition. That says geeky, somewhat frazzled, to me." ℝ

Denying Extremists a Powerful Tool

Hany Farid '88 has developed a means to root out terrorist propaganda online. But will companies like Google and Facebook use it?

By David Silverberg

Hany Farid '88 wants to clean up the Internet. The chair of Dartmouth's computer science department, he's a leader in the field of digital forensics. In the past several years, he has played a lead role in creating programs to identify and root out two of the worst online scourges: child pornography and extremist political content.

"Digital forensics is an exciting field, especially since you can have an impact on the real world," says Farid, "When you look around, you see how wide the net is spreading. But with that comes new challenges and problems."

His hallmark project is PhotoDNA, a program he created in partnership with Microsoft Research in 2008. PhotoDNA detects child pornography as the images are posted online. It works by matching new content posted on social media outlets to millions of pornographic images of children collected and maintained by the National Center for Missing and Exploited Children.

Now Farid is taking the same model of PhotoDNA and doubling down: he wants to find and root out extremist content that supports real-world violence and terrorism.

"If we want to really prevent extremist content from getting online in the first place, we need to develop a technology to process billions of images and videos daily," he says.

Farid has created such a technology. It works by establishing a central database of extremist content and distributing unique fingerprints of each photo, video, and audio file to the platforms that want to filter this content. If a Twitter user, for example, uploads a video showing an execution of a soldier, this system would recognize that content as violating the outlet's terms of service and the account would be automatically quarantined. An investigation would determine whether the quarantine was appropriate or a "false positive." Law enforcement could be called in, when necessary, to further investigate the user's account.

Farid has partnered with the Counter Extremism Project, a nonprofit organization led by former officials from the Department of State and Homeland Security. He says the technology's adoption should be a "no-brainer" for social media outlets. But so far, the project has faced resistance from the leaders of Facebook, Twitter, and other outlets who argue that identifying extremist content is more difficult, presenting more gray areas, than child pornography. In a February 2016 blog post, Twitter laid out its official position: "As many experts and other companies have noted, there is no 'magic algorithm' for identifying terrorist content on the Internet, so global online platforms are forced to make challenging judgment calls based on very limited information and guidance."

Farid disputes that argument. "Companies should take responsibility for the misuse of their platforms, from trafficking

DIGITAL DETECTIVE: Farid and a Dartmouth student compare photographic and computer-generated images. In addition to his work combatting online child pornography and political extremists, Farid is founder and chief technology officer of a photo authentication service, Fourandsix Technologies.

of underage prostitutes, to selling illegal weapons, to promoting and radicalizing extremists who then commit heinous crimes," he says.

Media outlets including the *Wall Street Journal, Atlantic* magazine, and the PBS *NewsHour* have called on Farid in pieces or segments exploring the debate. Although concerns about privacy are widespread,

Farid is not alone in his criticism of social media companies. Last August, a panel in the British Parliament issued a report charging that Facebook, Twitter, and Google are not doing enough to prevent their networks from becoming recruitment tools for extremist groups.

Steve Burgess, president of the digital forensics firm Burgess Consulting and Forensics, admires Farid's dedication to projects that, according to Burgess, aren't common in the field. "It's great that such a tool has come into existence," he says of Farid's antiterrorism technology.

After studying computer science and applied mathematics at Rochester, Farid earned a PhD in computer science from the University of Pennsylvania and was a postdoctoral fellow at MIT. These days, he stays busy even beyond his commitment to teaching and research. In 2014, he cofounded the photo authentication service Fourandsix Technologies, where he remains as chief technology officer.

Enmeshed in the seedy underground of extremist online propaganda, Farid says he appreciates the chance to get away from it all. He lives with his wife, Emily, on several acres of land in Vermont. He takes his mind off technology by cutting wood to prepare for harsh winters and, he adds, "bumbling through the woods on my tractor.

"At the end of the day, I'm definitely away from screens." ®

Let's Talk about Our Hair

Revelations from *Hair: A Human History*, by Yale dermatologist, pathologist, and hair follicle expert Kurt Stenn '65M (MD).

By Karen McCally '02 (PhD)

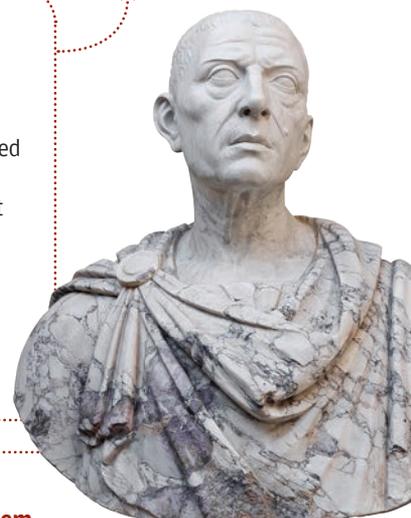Talking about our hair: it's rarely considered a weighty conversation.

Yet hair is a fascinating subject. **Kurt Stenn** '65M (MD) has devoted his career to studying its biology—as director of skin biology for Johnson & Johnson, professor of pathology and dermatology at Yale School of Medicine, and chief scientific officer for a biotech company devoted to hair follicle regeneration.

In the past 10 years, he's broadened his study of hair to take on its cultural role. Incorporating the observations of anthropologists, stylists, and wigmakers in addition to scientists, *Hair: A Human History* gives hair an overdue treatment. Here are some highlights.

The loss of body hair among hominids was a necessary precondition to human evolution.

Darwin argued that human ancestors began to lose their fur because male hominids preferred hair-scarce females. Expert opinion is now coalescing around the view that fur loss occurred due to other types of evolutionary advantages. Three simultaneous events—the loss of body hair, the development of sweat glands, and the growth of the hominid brain to a recognizably human form—appear to have been interdependent. Exposed skin and sweat glands facilitated body temperature control, aiding foraging in the heat. Brain tissue, which is highly sensitive to elevated temperatures, thrived in new ways as hominids began to lose their fur.

Men have worried about male pattern baldness for thousands of years. Julius Caesar was among them.

According to Roman historian Suetonius, writing in the year 121 A.D., Caesar's "baldness was a disfigurement that troubled him greatly, since he found that it was often the subject of the gibes of his detractors. Because of it, he used to comb forward his scanty locks from the crown of his head." Egyptian papyrus scripts going back 4,000 years show evidence of a similar anxiety among powerful men.

In the last decade, scientists have begun studying the hair follicle as a model of tissue regeneration—a process that could be harnessed to repair or re-form damaged organs.
The hair follicle stimulates the growth, shedding, and regeneration of hair shafts in a predictable cycle. With the exception of the uterus, which sheds and rebuilds its lining every month, "no other mature adult human organs cycle, form, cast off, and re-form," Stenn writes.

The red-and-white-striped barber's pole is a visual remnant of the bloodletting practiced by medieval barber-surgeons.
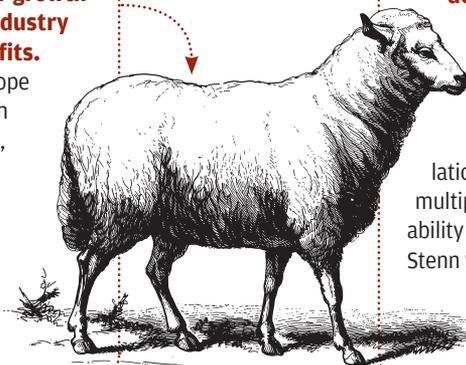In medieval Europe, the medicine man and the barber were one and the same, and called barber-surgeons. During the practice of bloodletting, a barber-surgeon lanced a vessel in the arm, collected blood in a basin, and wrapped the arm with white bandages. "During this procedure," Stenn writes, "the patient gritted his teeth and gripped a pole. When not in use, the pole rested, with a clean white bandage twisted about it, in front of the shop as a sign of services rendered."

The barbershop quartet originated in the black American barber shop, where men sang spirituals, ballads, and other popular songs as they waited.
The barbershop was, and is, a neighborhood gathering place in many African-American communities. In the late 19th century, black barbershops were not only places for grooming, but also for political meetings and discussions, casual socializing, sharing gossip, and even impromptu music making. A practice of spontaneous singing grew into "a codified tradition," Stenn writes. Dressed in striped jackets and pants, and singing in four-part harmony, the a cappella groups "called themselves 'barbershop quartets,' and popularized such songs as 'Shine On, Harvest Moon,' 'Sweet Adeline,' and 'We Are Poor Little Lambs That Have Gone Astray.'"

From the 16th century until the end of Imperial China, it was a mainstream belief among Chinese philosophers that a person's degree of civilization was inversely related to his amount of body hair.
It stood to reason: primitive animals had dense fur, while Chinese men and women alike had relatively scant body hair. "When the bearded and generally hairy Europeans arrived on their shores in the 16th and 17th centuries, the Chinese were confused and reluctant to accept them as equals," Stenn writes.

In multiple studies, patterns of hair growth on the head correlate to patterns in brain development.
Studies of people of European descent have found a strong correlation between cowlicks (or hair whorls) that run clockwise, and right-handedness. Among those with counterclockwise cowlicks, there is no correlation with handedness. In addition, "children with multiple or intersecting whorls show a higher probability of having underlying brain malformations," Stenn writes. Scientists don't have a solid explanation for the correlation, but many embryologists suspect it's due to the common antecedent of skin and brain cells.

Most early scientific research into hair growth was initiated by leaders in the wool industry seeking increased production and profits.
Sheep farmers and wool merchants in Europe and Australia established multiple research foundations in the 19th and 20th centuries, providing funding for anatomists, pathologists, biologists, and physical chemists to conduct hair research that would suggest how sheep could produce more and better wool. The research that came out of the efforts established the foundation of most of what we know about hair today.

Biologists have classified human hair into eight groups. All eight types can be found among all the world's populations.
Early 20th-century Western anthropologists believed that hair types correlated with geographic origin and fell into three groups: straight, black hair in Asians; tightly curled hair in Africans; and smooth, wavy hair in Europeans. In fact, a broad range of hair characteristics can be found among populations around the globe. Modern biologists have identified eight hair types based on curve diameter, a curl index, and the number of waves. They argue that hair type, rather than ethnic origin, is the best guide to treatment, whether in a medical facility or a salon.