Almost as soon as it started, the 1898 trial of serial killer Joseph Vacher, who had confessed to nearly a dozen murders across the French countryside, devolved into a circus.

Outside the courthouse, a mob shouted, “Death to Vacher.” Inside, newspaper reporters gossiped among themselves and a noisy pack of spectators shoved, chatted, and laughed during the proceedings. The defendant, wearing a ragged beard, clawlike fingernails, and a white rabbit-fur hat, disrupted the trial with his outbursts—raking a finger across his throat as the charges were read and yelping during part of the testimony. Vacher admitted in court that he had murdered four boys, six girls, and an adult woman, but insisted that he was insane.

We know all of this because Douglas Starr, a College of Communication professor of journalism, spent four years devouring every document he could on the Vacher case, the subject of his new book, *The Killer of Little Shepherds: A True Crime Story and the Birth of Forensic Science* (Knopf, 2010).

“Vacher wanted to turn the trial into a circus,” says Starr, codirector of the COM science journalism program. “After confessing, he pulled out all the stops to appear mentally ill. At the time, insane asylums were not particularly secure. They were humane, but it was easy to break out of them.”

Things settled down a bit on the third day of the trial, when several medical experts testified against Vacher. One of them, the renowned criminologist Alexandre Lacassagne, described in detail how Vacher had
chosen and murdered his victims. He laid out evidence from the crime scenes, including blood patterns and wound sites, and concluded that the crimes were those of a “sadistic, antisocial” man who was indeed responsible for his actions.

“What Lacassagne did that was really remarkable,” says Starr, “was to use the evidence to tell the story of the crime, to understand the state of mind of the criminal.”

Vacher, who was on trial for only one of the murders, was found guilty and sent to the guillotine.

While the case was certainly sensational, it wasn’t the courtroom theatrics or the gory slayings that captured Starr’s attention. Rather, it was the work of Lacassagne, head of the department of legal medicine at the University of Lyon, and his 19th-century colleagues, who were creating sophisticated techniques to solve crimes like Vacher’s. They developed ways of making molds of footprints, blood spatter evidence, and bone and tooth growth. Investigators learned to analyze footprints, blood spatter evidence, and bone and tooth growth.

They analyzed the shape of blood drops and used ink to re-create the angle they must have flown at.

“There was a whole cadre of brilliant scientists and legal scholars throughout Europe who were really developing the modern version of forensic science as we know it today,” he says.

Starr stumbled on the Vacher case while poring over some medical journals several years ago. The more he learned about Lacassagne and his colleagues, the more engrossed he became. “I really wanted to write about the scientists,” he says, “but here was a string of crimes that kind of tied it together.”

He bought a plane ticket to France, the first of a few trips, before he even signed the book contract.

Starr notes that France in the late 19th century was just as fascinating as the cast of characters he’d discovered. “It was the beginning of the modern era,” he says. “In France, it was the Belle Époque—this whole notion of prosperity and intellectual achievement and science. Darwin was alive, Pasteur, and Freud. It was an amazingly vibrant time.”

“At the same time,” he says, “the entire Western world had this rumbling underclass. Industrialization had thrown hundreds of thousands of people out of work in the rural areas. There was this problem of vagabonds. You saw the rise of street gangs. There was an international terrorist movement—they called it anarchism—that had everyone on edge. You saw the birth of the tabloid press. There was this new thing called the newsstand, and they were all competing, so the bloody stuff always went on page one.”

Starr read Lacassagne’s original case files and downloaded every issue of the monthly scientific journal Archives of Criminal Anthropology—more than 20 years’ worth—which Lacassagne edited. He found the courthouse where Vacher’s trial took place and photographed every page of the original records, including investigator and police reports, court testimony, and affidavits. He collected all of Vacher’s letters and visited his place of birth.

Accompanied by a local amateur historian, he traveled to the villages where the murders took place. “I would spend hours with these elderly farmers,” Starr says, “and they’d give me village lore.”

He studied up on the science of the times, reading medical books and learning how autopsies were performed and how the first crime scene diagrams were made. The work of the scientists, from the time of the guillotine to the birth of the tabloid press, is now regarded as the birth of forensic science. Lacassagne, the criminologist who solved the Vacher murders, was a “sadistic, antisocial” man who was indeed responsible for his actions.

“Photographs of the face and (later, the system included) photographs of the face and bone and tooth growth.”
The Whole Tooth and Nothing but the Tooth

Mey Alhabib’s mice just might put the Tooth Fairy out of business.

Alhabib, a postdoctoral student and endodontic resident at the Henry M. Goldman School of Dental Medicine, and her research supervisor, George Huang, the Herbert Schilder Chair in Endodontics and director of the school’s postdoctoral program in endodontics, have begun regenerating two major human tooth components—dental pulp and dentin—using fresh stem cells from baby teeth, which are often tossed after being placed under kids’ pillows, as well as from third molars, or wisdom teeth.

Those components could then be used to regrow damaged or decayed parts of a mature tooth, one day eliminating the need for invasive procedures like root canals and dental implants, as well as expensive crowns.

“It’s the future of treating clinical diseases,” says Alhabib (SDM ’12,’14), who hails from a family of dentists in Saudi Arabia. “The most interesting thing is that you can isolate stem cells from teeth, put them in the culture medium, and freeze them. And they’ll be there for years.” The culture medium is a liquid nutrient that cultivates cell growth.

In a unique procedure, Alhabib harvests dental stem cells from third molars—taken from patients at BU’s Dental Center—and seeds them into a scaffold,