

CLONE RANGER

The law professor and novelist Lori Andrews reigns as the nation's foremost untangler of the profound legal and ethical questions surrounding today's strangest biotech cases



SHE WAS COOKING DINNER WHEN SHE got the call about the dead guy who had willed that his noggin be severed, frozen, and later attached to a live body. “What are the legal rights of a severed head?” the scientist caller asked. “Should it receive a portion of the estate?”

Then there was the senator who wanted to ban genetic engineering by making it a crime to put DNA of any form into a human egg. She had to call back to inform him that he would be outlawing the making of all babies.

“Why?” he asked.

“Because sperm puts DNA into an egg.”

And there were others: the mad millionaire who wanted to launch a eugenics program; the family desperate to test the blood-soaked cloak

“She’s truly brilliant,” says a colleague. “Literally 20 years ago she was anticipating ethical problems that would be coming in the future, and they would all come to pass.” Below: Andrews’s literary efforts range from legal tomes to pulp fiction.

worn by Mary Todd Lincoln the night of Abraham Lincoln’s assassination; the Dubai officials who sought ethical advice on cloning members of the male population (if a man clones himself, would he be the clone’s father or brother?).

But the topper for Lori Andrews, the Downers Grove native who grew up to become one of the world’s foremost legal authorities on the most contentious technological and bioethical issues of our time, came with a 1998 visit to the UFO Café in UFOland, a theme park for the alien-worshiping Canadian cult known as the Raelians (Ray-AY-lee-ans).

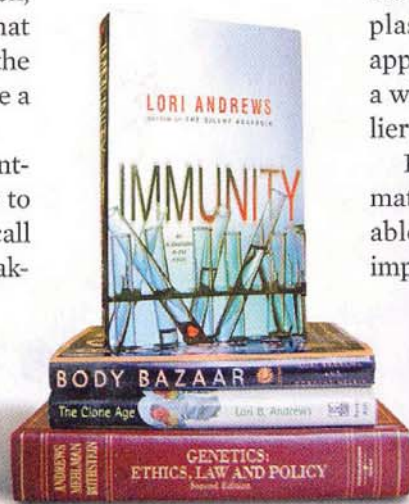
The leader, Rael (a former sports-car journalist who changed his name from Claude Vorilhon after, he says, aliens abducted him in 1973), and his science director, Brigitte Bosselier, had just announced their intention to clone humans—and animals—at \$200,000 a pop for anyone interested in replacing a loved one or a pet.

Andrews wangled an invitation to the compound at a remote farming village in Quebec to question the alien worshipers about the ethical subtleties of their clone-on-demand plan. Right away she was wary. “They told me, ‘We will have our second in command pick you up at the airport and drive two hours to an undisclosed location,’” Andrews recalls. “It felt a little dicey.”

At the UFO Café, after being escorted past a full-size silver-gray model of an alien spaceship and a glass case filled with UFO souvenirs (Japanese baby socks decorated with flying saucers, alien key rings), Andrews was led to a table spread with a plastic tablecloth. Her hosts’ apparel set the tone: Rael wore a white Elvis jumpsuit; Bosselier was dressed as Cleopatra.

Rael explained that ultimately he wanted people to be able to clone themselves and implant their memories in their new bodies—in short, to become immortal. “I see,” Andrews said.

And that’s when the bioethics issue came up. Rael continued, “Stupid



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people won't be cloned. Imagine how bad it would be to be stupid for eternity."

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THIRTEEN YEARS LATER, RAE'S CLONING program lies fizzled on the launch pad, the frozen head remains severed (without, alas, any inheritance), and making babies is still very much legal.

Meanwhile, Andrews's renown as a legal "fixer"—on ethical matters both weird and weighty—has grown into an empire of influence spanning science, the law, and, in recent years, the pulp forensic fiction market in the form of her literary creation Alexandra Blake.

When the White House needed advice after the cloning of Dolly the sheep, Andrews got the call. When the federal government undertook the \$3 billion Human Genome Project, Andrews was tapped to chair an advisory committee.

The capstone of her career, however, came last year with a victory in one of the thorniest, most controversial biotechnical issues in decades. For years, many researchers have argued that they should be able to patent genes, such as the breast cancer gene. That means, among other wide-reaching implications, that researchers and biotech companies can charge a royalty fee every time other scientists want to do research into the disease or test for the gene's presence.

The issue found expression ten years ago in the case of the Greenbergs, a suburban Homewood family who had helped a doctor uncover the gene for Canavan disease (an inherited brain disorder) by providing samples of blood, urine, and tissue from two of their babies who had the condition. Four years after discovering the gene in 1993, the doctor and the hospital started enforcing the patent, reaping hundreds of thousands of dollars in royalties.

The Greenbergs sued, saying the Canavan gene sequence should be in the public domain. Andrews, who represented the family, also argued that the doctor and the hospital had violated the donors' right to informed consent by not disclosing the intent to patent the gene. The hospital argued then—and biotech companies have argued since—that such patents provide the profits that entice and pay for basic scientific research. Andrews argued that the law does not permit the patenting of products of nature because you can't invent something that already exists.

In the Greenberg case, she only won a settlement. But last spring, in a case against a biotech firm called Myriad Genetics, a

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federal court weighed in. Largely as a result of Andrews's work, a U.S. district court in New York effectively banned gene patenting, echoing her claim that genetic material couldn't be patented.

The ruling has been appealed. But no matter the outcome, the case is emblematic of the punch Andrews packs and the inexhaustible zeal she brings to a career defined by issues as fascinating as they are consequential.

"She is a dynamo," says Andrew Kimbrell, executive director of the Washington, D.C.-based International Center for Technology Assessment and a regular foe of Andrews on issues such as whether it's OK to sell body parts for profit. "I've been praised for being a Renaissance man and being energetic, but I have to say, I don't think I've met many people who can compete with Lori for sheer energy level. Whenever we have lunch, she's always writing mystery novels and doing 20 other things."

As Andrews ticks off her various projects and job titles, the description seems literally to be true. Her day job is professor at the Chicago-Kent College of Law. She's also director of the Institute for Science, Law, and Technology at the Illinois Institute of Technology, Chicago-Kent's parent school.

In her spare time, she's a consultant for groups ranging from the World Health Organization to the U.S. Centers for Disease Control and Prevention, as well as for several foreign nations, the emirate of Dubai, and the French National Assembly. She's a frequent guest on television shows from *60 Minutes* and *Nightline* to *Oprah*, and for a while she was a consultant for *Just Cause*, a TV legal drama starring Richard Thomas of *The Waltons* fame—and even tried her hand at writing an episode.

She's completed the third of her Alexandra Blake novels—this after authoring ten nonfiction books on ethical issues related to genetics and technology—and has a draft for a new thriller featuring a female protagonist who bears a not-so-coincidental resemblance to Andrews herself. ("She lives in Chicago—Lincoln Park, no less—unlike Alex Blake, who lives in D.C.," says Andrews, who lives near Lincoln Park Zoo.)

Most recently, she's taken part in cases involving alleged discrimination against people with diabetes and has also joined a 40-professor consortium examining ethical issues around social networks such as Facebook—with a book, naturally, planned on the topic. Oh, and she's in talks with

the television writer and producer Warren Light (*Law and Order: Criminal Intent, In Treatment*) about a proposed television drama whose lead character will be based on her.

On a late-fall morning, Andrews doesn't look superhuman as she talks about her latest inhuman load of projects, meetings, speeches, book deals, Hollywood overtures, and travel. A petite woman with a blond bob fringed with a demure curtain of bangs, she wears a tasteful business suit and a pair of heels that she quietly slipped from a tote bag—the same bag in which she stashes the flats that are essential gear for a woman known to shun cabs for a crosstown trek. ("We once walked from the top of the Upper East Side all the way down to the ACLU [in Lower Manhattan]," recalls Debra Greenfield, a Los Angeles lawyer with UCLA's Center for Society and Genetics. "She was just walking and talking. The energy was incredible.") Andrews is a fast talker—ideas, opinions, observations, and legal references crash in waves, which is not surprising given the varied shores over which her intellect flows.

"She's just such an amazing force of nature in terms of energy and brainpower," says Greenfield.

"It's hard not to gush when you talk about Lori," adds a colleague, Ed Kraus, associate professor of clinical law at Chicago-Kent. "Hanging with law professors and lawyers, there are a lot of smart people, but she's truly brilliant. Literally 20 years ago she was anticipating and talking about conundrums and ethical problems that would be coming in the future, and they would all come to pass."

Andrews, 58, has been single since she and her husband were amicably divorced in 1994. Her son, Christopher, seems to be following his mother's superachiever trajectory. Since graduating from Yale with honors last May, Andrews says, he's worked as a cinematographer, shooting a feature film, two music videos, and a public service announcement about drinking. He's currently on the set of a Martin Sheen/Stephen Rea film in Ireland, learning from a European cinematographer he admires.

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ANDREWS'S INTEREST IN THE LAW HAD early roots. At age seven, when her Ken doll went bald, she did what any enterprising schoolgirl destined for Yale Law School would do: "I wrote to Mattel," she says. "I got action, too." (Mattel sent a new doll's head.)

Born to a Maywood pharmacist and a stay-at-home mom, Andrews showed hints of her consuming drive at a young age. “When I was in fourth grade in my public school, a teacher decided to put together a class of motivated kids from fourth through eighth grades,” she recalls. “We really took advantage of the city. We would go to things like puppet opera. I think that class really influenced me.”

After graduating as a straight-A student from Downers Grove South High School, she won entry to Yale, where she graduated summa cum laude, paying her way in part by rewriting her class papers for newspapers and magazines. She went on to Yale Law School and, in a prescient twist, took her bar exam on July 25, 1978, the day Louise Brown, the first test-tube baby, was born.

Her interest in science and ethics arose from a turning-point moment during her undergraduate years. A young relative of Andrews (out of concern for privacy, she didn’t want to be more specific) succumbed to a mysterious paralysis and was hospitalized for a lengthy period of time. While visiting, Andrews was appalled by how the child was treated in the hospital and by the manner of the doctors, who sometimes seemed more interested in the latest technological toy than in the patient. “It made me start writing in college about the impact of the dehumanization in hospitals,” she says.

It also made her want to know more about the explosion in new medical technologies—not just the cool things they could do, but the psychological, social, and ethical implications of advances such as genetic testing, human cloning, and nanotechnologies. She didn’t want to be a scientist. She wanted to apply her legal knowledge to science in a way that could help people understand—and therefore make better-informed decisions about—new, often controversial discoveries.

Doing so, however, required more than book learning, she reasoned. To find out the ways these technologies were affecting real people, she felt she needed to see for herself, to do field research.

She had no idea what she was letting herself in for.

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THE SETTING WAS THE BASEMENT OF an old well house on a ten-acre farm in Escondido, California. Fresh out of law school, Andrews had heard that Robert Klark Graham, the millionaire inventor of the shatterproof plastic eyeglass lens, was

launching something called the Repository for Germinal Choice—a sperm bank to which only geniuses (preferably Nobel Prize winners) would donate, and from which only supersmart women (Mensa members, to be specific) would be allowed to withdraw. The idea, Graham told the public, was to create a world with brighter, more creative, happier people.

Unable to reach Graham for a phone interview, Andrews decided to take a different tack. She would pose as a potential mother interested in the inventor’s services. The Mensa test proved no problem, and when she finally received a call from Graham saying she’d been accepted, she told him that she wanted to visit the lab first. “I wanted to know more about the secrets of parenting he claimed to possess,” she says. “To see whether he had a theory about how this whole thing would work.”

She arrived in Escondido expecting to find “some supercool science-fictiony place.” Instead, she “descended the stairs behind [Graham] and entered what looked like a suburban rec room.” The two-inch vials of sperm he kept there, frozen in liquid nitrogen, were shipped to women in special two-foot-high containers.

The holes in Graham’s logic were obvious to Andrews. For starters, she knew there was little evidence that Nobel Prize winners run in families. “In fact,” she says, “they run in scientific departments, like the economics department at the University of Chicago.” What’s more, Nobel laureates tend to be older, and “children born from much older fathers can have chromosomal abnormalities and are more likely to have autism.”

Andrews wrote about the experience for the New York Times Syndicate and for *Parents* magazine and included a chapter on the encounter in her book *The Clone Age: Adventures in the New World of Reproductive Technology*.

A few years after her visit, the sperm bank went out of business. “But it wasn’t because we all of the sudden realized it was a bad way to go,” Andrews says. “It went out of business because now every sperm bank offers genetically enhanced sperm.” The California Cryobank, for example, offers sperm from donors who look like famous actors and athletes, she says, as well as gene choices related to education, athleticism, religion, ethnicity, build, skin tone, musicality, facial features, and artistic ability.

To Andrews, such efforts to help create “designer” babies are fraught with ethical peril. “Too many Americans now ap-

proach procreation with a shopping-list mentality,” she wrote in *Self* magazine. “In the future, a daughter might sue her parents for not finding a ‘better’ egg donor to spawn her.”

In one of her next adventures, Andrews sent a team of students to follow surgeons at several hospitals over a period of months. The research revealed an alarming reality: “Hospitals make far more mistakes than people think.” In fact, Andrews says, “those mistakes cause 18 percent of patients to have serious disabilities as a result.”

Her real interest, however, lay with genetic and reproductive issues, and after writing a groundbreaking paper on in vitro fertilization in the early 1980s, she began to develop a reputation as a go-to bioethicist. Government agencies, then Congress, started to call for advice. “Policymakers would say, ‘We don’t have time to worry about this or that issue—genetic enhancing of people or cloning or whatever—because they can’t even do it yet in animals.’ Meanwhile, scientists were saying, ‘I just did that in my lab this past week.’ So I was in all these situations where people were pushing the bounds of science, and I was ten years ahead of lawmakers in all these settings.”

By the late 1990s, Andrews says, she started feeling like the Harvey Keitel character in the movie *Pulp Fiction*. “I was the cleanup person called in after scientists or doctors had done some strange new thing—the lawyer asked to sort out the rights and responsibilities, the liabilities, and the commercial potential. Should anything be allowable so long as a lawyer can come up with a scheme to deal with it? Or are there some scientific advances that would so change the nature of our society that they should be prohibited?”

Indeed, when an elite teaching hospital decided to take sperm from men in comas so that their wives, girlfriends, or, in some cases, parents could create children, Andrews was asked to weigh in on the legal rules that might govern the arrangements.

When the family of a person with Marfan syndrome wanted Abraham Lincoln’s DNA tested (scientists have long believed that Lincoln suffered from the disease), the Chicago History Museum called in Andrews to create guidelines for genetic research on the museum’s prized possessions—in this case, a cloak belonging to Mary Todd Lincoln. (The cloak was never tested because doing so could have damaged the artifact and because there was no guarantee that DNA that old would reveal answers.)

Early in her career, however, Andrews

fought more than quirky legal battles. In Dubai, an official picking her up at the airport was taken aback when he saw that Andrews was a woman. “I hadn’t realized until I got there that they wanted me to come up with a legal system to clone men—just men,” she says.

“Older male lawyers called me a ‘lawyerette,’” she recalled in the *Yale Law Report*, “but they still came to me with their legal questions.” Men who underestimated her often regretted it.

“I remember being in a room about ten years ago when she articulated a theory by which gene patents should be held to be unconstitutional,” recalls Ed Kraus. Among other things, she pointed out the U.S. Supreme Court’s declaration that such discoveries are “manifestations of . . . nature, free to all men and reserved exclusively to none.”

“In the room were some confident big-firm intellectual property lawyers,” Kraus says. “They looked at her blond hair and her petite presence and dismissed her ideas, [saying], ‘Those are cute little academic notions, but that’s not really going to carry any weight in a court.’ Then boom. Ten years later she gets the ACLU to realize the importance of the issue of gene patents, and a court rules precisely the way she had argued.”

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ONE OF THE MOST REWARDING ASPECTS of Andrews’s varied career has been her foray into the world of pulp fiction. “I actually read mysteries for a long time and liked them a lot. For years I kept saying I wanted to write them one day. I finally had to make good on that.”

Her day job provides plenty of fodder, and the novel format gives her a way to introduce the average reader to complex ideas, concepts, and ethical issues in a way otherwise impossible.

One plot taken from her real-life research sprang from a visit to the Armed Forces Institute of Pathology in Washington, D.C., in 2000. During the tour, she asked about something she had read in an obscure scientific article: the Vietnamese trophy skulls.

The guide took her to a storage room, slid open a drawer, and dropped “a garishly graffiti-laden skull into my hands,” she says. The relic and five others like it had been seized in the 1960s from American GIs who had tried to smuggle them into the United States as souvenirs from the Vietnam War.

Andrews used the encounter as the

seed for her second forensic thriller, *The Silent Assassin*, in which Alexandra Blake discovers evidence of a 30-year-old murder inside one of the skulls. Shortly afterward, Andrews wrote an op-ed piece for *The New York Times*, arguing that the skulls should be returned to Vietnam. (They apparently have not been.) “So it all circles back and forth in a way,” she says.

As for her writing inspiration, “Chicago is a great place for medical mysteries,” she says. “There’s the cutting-edge sci-

ence—genetics at Northwestern, nanotechnology and biomedical engineering at IIT—and it’s the home of the American Medical Association and the American Hospital Association.”

Her next novel is, in fact, set in Chicago. The pregnant protagonist shops at the Target on Elston Avenue and meets her sperm donor at the Starbucks on Dickens Street. Meeting a sperm donor at Starbucks? In Andrews’s strange world, it makes perfect sense. ●

IMAGINING THE WORST

Andrews on Facebook, gene patents, and human cloning

What are the emerging legal and ethical issues with Facebook?

As we all begin to live a parallel life on the web, traditional privacy rights are slipping away. Colleges and companies routinely search Facebook and MySpace to determine whether to admit or to hire people. According to a 2009 Harris poll, 35 percent of employers reject job applicants because of information found on social networks—if the person is dressed provocatively in photos, writes about getting drunk, or complains about past employers, co-workers, or clients (all perfectly legal behaviors).

Almost every personal injury case now has a social network connection. When a hospital clerical worker’s chair collapsed, she suffered such extensive injuries that she underwent four operations to insert rods in her spine and screws in her neck. The defendant chair company won a court order for access to her present and past Facebook and MySpace posts. The judge held that if photos showed her smiling or traveling [after the accident], she could not have been injured that badly. But why shouldn’t someone with a horrible injury still be able to show a stiff upper lip on the web?

Privacy has been an important legal right since the U.S. was founded. I favor greater privacy protections for people using social networks. Along those lines, pending legislation in Germany would forbid employers from using social network information to deny people jobs or promotions. The march of technology does not have to trample the concept of individual rights.

What’s wrong with patenting genes?

Each of us has around 25,000 genes in our body—strings of chemicals in a double helix. Twenty percent have been patented. But those patents should never have been granted. Patents are supposed to be granted on inventions, like the cotton gin and the iPhone. Under patent law, no one

is allowed to patent products of nature.

Gene patents dramatically increase the cost of health care. For 20 years, a gene patent holder controls any use of “its” gene. A patent holder can forbid everyone else from testing the gene and can charge whatever it wants for a test.

One company has filed for a patent on a genetic sequence that indicates whether patients will benefit from its asthma drug. But the company has said that for the 20-year term of the patent it will not allow anyone to use the sequence to determine whether its drug will help or harm patients. While such information is crucial to physicians and patients, the use of the sequence to identify people who would not benefit from the drug would diminish the market for the drug.

What’s your position on human cloning?

An infertility doctor in the U.S. wants to start cloning human beings. But one-third of cloned animals die shortly before or shortly after birth. If a disease were killing one-third of children, we’d declare it a public-health disaster. We wouldn’t be opening clinics to do it. And even if the process were perfected to have no physical risks, there would still be psychological risks for the children.

Shortly after Dolly the sheep was cloned, a survey of Chicagoans suggested cloning Michael Jordan. But pity the poor child who is the clone of Michael Jordan. If he breaks his kneecap at age ten, will his parents consider him worthless? Will he consider himself a failure? And what if cloned MJ wanted instead to be a musician, scientist, or computer gamer? Would the couple who chose his genes—or even paid for them—let him follow his own passions?

And if the original Michael Jordan died young of an inheritable cardiac disorder, then his clones might be discriminated against. Children shouldn’t have to live with a hand-me-down genome.