

## Long way home

**Chicago geneticist Rick Kittles stirs controversy and hope with a DNA database designed to help African Americans unearth their roots.**

**Reverend Al Sampson arrived in Lunsar, Sierra Leone, on a sunny December day in 2005. It was seasonably hot—85 degrees or so—and the streets were muddy. A small crowd gathered as he stepped from the car, wearing a cobalt-blue safari suit and carrying a folder filled with papers. The village elders were expecting him.**



**Al Sampson's DNA led him to Sierra Leone.**

**More than a year and a half earlier, Sampson had swabbed the inside of his cheek with a sterile foam pad, which he mailed off to African Ancestry, a Silver Spring, Maryland-based company that uses genetic testing to trace African Americans' genealogical roots. Six weeks later he got a letter from company president Gina Paige, informing him that his DNA indicated a common ancestry with Sierra Leone's Temne tribe. Sampson booked a flight after a chance meeting with a Sierra Leone native who offered to accompany him there. Most Temne, his guide told him, live in the area around Lunsar, along the wide Rokel River 70 miles upstream from the Atlantic coast.**

**The Massachusetts-born preacher, who had grown up in Boston and spent the bulk of his career behind the pulpit of Fernwood United Methodist Church on Chicago's South Side, would be coming home to a place he had never been.**

**Sampson isn't alone. Three decades after *Roots* author Alex Haley followed family lore, slave-ship records, and a few snatches of inherited tribal dialect to Kunta Kinte, a Gambian warrior sold into slavery in 1767, African Americans are unearthing their ancestry in growing numbers. And increasingly they're using genetics to do so. In the past six years, some two dozen DNA testing companies have sprung up, offering to help people of all ethnicities re-establish long-severed links to their past. As of this past October, more than 260,000 Americans had paid for genealogical genetic testing.**

**For African Americans, DNA's promise is particularly seductive. "People are riveted by the possibility that they can find the tribe they're descended from," says Harvard University African American-studies professor Henry Louis Gates Jr., "but the Middle Passage prevented us from really finding out." Between the western shore of Africa and the eastern shore of America, names, identities, and religions vanished. "Now for the first time in three centuries," Gates says, "we can begin to reverse the Middle Passage." In 2006 he featured African Ancestry in *African American Lives*, a PBS documentary on black Americans' search for their roots. Eleven million people watched as celebrities such as Oprah Winfrey, Quincy Jones, and Chris Tucker submitted their DNA for the company's analysis. Sampson decided to take a genetics test after attending a 2004 presentation at Chicago's South Shore Cultural Center given by Paige and African Ancestry cofounder Rick Kittles, then a geneticist at Ohio State University. The two talked about science and history, and finding a sense of place. Says Sampson: "That resonated."**

**At first sight, Lunsar's cinderblock shacks and dirt roads reminded Sampson of the rural Southern towns he'd seen as a civil-rights organizer during the 1960s—the kind of place where townspeople gather around a single television in the main store. Some buildings had thatched roofs, and many local**

businesses were simply candlelit kiosks. Sampson met with Lunsar's 40 elders, all but one of them men, and all Muslim, save one Christian. He showed them the paperwork he'd gotten from African Ancestry, the certificate attesting to his Temne lineage. "I told them, 'Five hundred years ago my DNA was removed from here by slave traders and taken to America, so I'm coming back for my seat,'" Sampson recalls. "'My seat's been vacant.'" He also asked them for a Temne name. "I said, 'I have to reclaim what was taken away from me.'" Sampson told them he was like a tree from their forest that had been uprooted and stolen. The elders listened. After a while they withdrew to consult. When they emerged, they bestowed the name "Pa Sorie Kamara." *Pa* indicates an elder; *Kamara* associates Sampson with a particular house. "And *Sorie*," he explains, "means, 'They snatched you from us and now we're snatching you back.'"

Kittles, who joined Chicago's faculty in 2006, hardly imagined any scene like Sampson's Lunsar homecoming when he began constructing the DNA database that would become the foundation of African Ancestry. "The company was sort of an afterthought," he says. In fact, African Ancestry has always been a sideline; Kittles's scholarly work investigates genetics' role in diseases like prostate cancer and diabetes, which disproportionately strike African Americans. But 15 years ago, when he first embarked on his database research, he says, "I was interested in exploring genetic variation in Africa," where DNA diversity is broader and richer than anywhere else on the globe. As a second-year graduate student in biology at George Washington University, he began collecting data on mitochondrial DNA, the maternally inherited part of the genome, which passes unchanged from generation to generation. He started with scientific literature, compiling African DNA sequences that had already been decoded and digitized. "There was so much variation, and I realized we could tell something about maternal ancestry by looking at this data," he says. Where, he wondered, did he and his ancestors fit in?

That's when the database work began in earnest. "When I started, it had fewer than 100 samples," Kittles says. Now it contains more than 25,000 and counting. He started

collaborating with researchers at clinics and hospitals across Africa, who sent him genetic data volunteered by indigenous patients. He mounted his own research trips to the continent too, concentrating on its western territory, from which so many millions of African slaves had been captured and shipped to America. By this time it was the late 1990s; Kittles earned his PhD in 1998 and took a job as assistant professor of microbiology at Howard University. He also became codirector of the molecular-genetics unit at the university's National Human Genome Center.

While at Howard, one project in particular pushed Kittles into business. In 1997 he joined a research team examining remains from a colonial-era black cemetery that once occupied six acres of lower Manhattan. Construction workers accidentally unearthed the graveyard in September 1991 while bulldozing the foundation for a federal office tower, and by the following summer, archaeologists dug up more than 400 graves. Historical records suggest that between 1640 and 1795 as many as 15,000 slaves were laid to rest in the New York African Burial Ground; after the cemetery closed, it was paved over as the burgeoning city expanded. Following public outcry over the federal government's haphazard excavation—and some dismay that the graves had been disturbed at all—the remains were turned over to Howard researchers for more systematic examination. Anthropologists pored over the caskets, finding signs of ancient African rituals in the toys and tools buried with the dead, the coins placed in their hands. From rough-etched bones, scientists constructed stories of hunger and backbreaking labor. Kittles's job was to isolate DNA from the skeletons and determine whether their origins were African, American Indian, or European. In 2003 the remains were reinterred, and this past October a monument was dedicated at the site.

In part because its unearthing sparked controversy among African Americans, and because the find was archaeologically significant, the burial ground got plenty of press. Between 1991 and 2003, the *New York Times* covered the story more than 100 times. It made news in London and Sydney. Some of the coverage discussed Kittles's genetic analysis of the remains. "After the media attention on the genetics of the

**project started to erupt,” Kittles says, “many folks were like, ‘If you can do that for the bones of dead people, you should be able to do it for me.’”**

**The way Kittles tells it, requests from African Americans swelled to a roar. Reporters called; ordinary people wrote to ask about being tested. Starting a company began to seem inevitable. “And I felt that I was probably the right person to do it,” he says, noting that for many African Americans, the idea of scientific testing raises the specter of the Tuskegee experiments, begun in 1932, in which 400 poor, black Alabama sharecroppers were denied treatment for syphilis over the course of 40 years. “I knew that if you started to get genetic samples from African Americans, it would be sensitive data,” Kittles says. “I wanted to make sure the people involved would be attuned to those issues.” One of the first decisions he made was to destroy clients’ genetic material after it was analyzed.**



**Kittles says DNA offers a way to reclaim identity.**

**Kittles launched African Ancestry in February 2003 with Paige, a Washington, D.C., entrepreneur who, as president, oversees the company's marketing and finances. Kittles took on the role of scientific director. Already, he had tried out his ancestry tests on a few subjects, among them his parents. "Like many African Americans, we knew nothing about where in Africa our ancestors were from," he says. Oral history traced the family from New York, where Kittles grew up, to Georgia, where he was born and his grandparents lived. But there the trail ended. His parents'DNA, however, revealed links to the Hausa people of northern Nigeria, the Ibo of eastern Nigeria, and the Mandinka of Senegal.**

**Kittles's analysis can't always narrow clients'genetic past to a particular tribe. But failing that, he says, he is able to specify the present-day country their DNA points to (most of the continent's national boundaries are postcolonial phenomena, finalized a century ago or less). Kittles does this using tests that examine two components of the genome that remain essentially unchanged from one generation to the next: mitochondrial DNA, a maternally inherited genetic strand found outside the cell nucleus and separate from other genes; and the Y-chromosome, which passes from father to son. Men inherit their mothers'mitochondrial DNA, but only women can pass it on; thus, both genders can trace their maternal roots using mitochondrial DNA. But women looking to discover the origins of their father's father's fathers must rely on a male relative—a father, a brother, a paternal uncle—to take the Y-chromosome test.**

**To analyze a client's data, Kittles looks for genetic markers, short sequences of DNA whose physical locations are known and whose variations differ from one population to another. He matches them to corresponding markers from his database. The 25,000 samples he's collected represent 389 ethnic groups from more than 30 countries, most in west and central Africa, where the slave trade was concentrated. Several thousand ethnic groups exist throughout the continent, sometimes as many as 20 or 30 in a single country, and African Ancestry consults with anthropologists, archaeologists, historians, and linguists to put the data into context and account for the influences that wars or migrations or famines might have had**

on present-day Africans' DNA. "Your result is not based on a single data point," says Paige, noting that African Ancestry has performed some 12,000 tests to date, a figure she says translates into genealogical information for more than 50,000 people.

Clients' results depend, Kittles says, on the ubiquity of their genetic profiles. "It's like your last name," he says. Some surnames, like Smith or Jackson or Brown, are common. "You can go to any city in the country, and in the phone book you'll find pages of Smiths. But you're not necessarily related to any of them; it's just a common name." Other last names are more rare. "If I go to Wisconsin and look in the phone book and see a Kittles, more than likely I'm going to be related to that person." Similarly, common lineages—usually more ancient ones, from which others evolved and branched outward—recur frequently in more than one population. More distinctive lineages are restricted to particular regions and groups. For 85 percent of African Ancestry's clients, Kittles says, he finds an identical match to an ethnic group in his database, and he tells clients the present-day country or countries where that group resides. He locates "closely related lineages" for the remaining 15 percent.

Often, those matches hold surprises. Some people come to African Ancestry, Paige says, hoping to confirm oral histories about American Indians in the family, but the tests rarely bear them out. Others are looking for an ancestor from a particular African tribe. Moreover, a third of paternal-lineage tests don't lead to Africa at all, but to Europe. Kittles's own Y-chromosome test turned up a result in Germany. "That's mainly because of the behavior of slaveholders during slavery," Kittles says. In the age of DNA screening, centuries-old rumors about plantation owners siring children with their female slaves have become, he says, verifiable fact. "It's recorded in our genome."

Most clients, though, come to Kittles knowing little about their African forebears and expecting nothing in particular. To many of them, what Kittles offers isn't merely scientific information, it's a missing fragment of identity. "For African Americans, it's hard to make that African connection," says Reverend

**Sampson. "A lot of folk are really into family reunions, but it stops at grandma or great-grandma. They know their ancestors were from Africa, but they can't get past South Carolina or Mississippi." For Sampson, this is especially true: adopted and raised by his maternal uncle, he met his mother only three times and knew nothing about his father's family. In 2006 he took African Ancestry's Y-chromosome test and was told his DNA matched with Nigeria's Ibo people. He's planning a trip there this year.**

**"One of the components that shapes identity," Kittles says, "is family history, and for African Americans there's a void. You hit a wall in the antebellum South." Young African Americans grow up with the debilitating idea that their history begins with slavery. "When you look at our family history, what gets reinforced is that we were enslaved," he says. "But our history didn't start with slavery; we came through slavery. To overcome that wall is more empowering than I can describe."**

**Kittles's critics—and there are many—worry that he's promising too much too fast. Particularly vocal is Troy Duster, a New York University sociologist who served on the committee advising the Human Genome Project on social and ethical issues and who has called genetic-testing proponents "pied pipers" of genealogical certainty. In July 2007 he told England's *Observer Magazine*, "There is a cultural feeling that DNA evidence is sacrosanct. But a kind of false precision is rampant right now." Cautioning consumers against any headlong plunge into genetic ancestry testing, an article in the October 19 *Science*—coauthored by 14 anthropologists, sociologists (including Duster), bioethicists, and legal scholars—summed up the skeptics' case. Most tests, they wrote, can trace only a few ancestors out of thousands and likely won't identify every place or group that matches a client's genetic profile. Sometimes DNA companies fail to account for ethnic migrations or gene flow between populations, or the fact that a client's ancestor may have been a genetic outlier. "Many consumers do not realize," the authors wrote, "that the tests are probabilistic and can reach incorrect conclusions."**

Others criticize the expense. A single mitochondrial DNA or Y-chromosome test from African Ancestry costs \$350; other companies charge between \$200 and \$900 for genetic screenings. Kittles says he expects the price to fall as demand rises, but Harvard's Gates puts the issue into perspective this way: "Many people buy shoes that cost \$250 or more," he says. "Is understanding your roots as important as a pair of sneakers?" Sampson, who established genetics as a ministry within his church and encourages worshippers to test their DNA, advises splitting the cost among several family members. One sibling's results hold true for the others, and parents who swab their cheeks save their children the trouble. "That DNA flows through the entire family," Sampson says. "Call a family reunion and have everybody put in \$10."

Kittles takes the criticism seriously, but in stride. For one thing, he says, his database outmeasures, by two- and threefold, any other repository of African DNA, making his results more precise than other geneticists could expect to achieve. For another, he's used to scrutiny. Since he first pondered the database's commercial prospects, he's been part of an intensifying public debate over genetics' role in genealogy. In fact, he delayed launching African Ancestry by one or two years while he labored to answer and accommodate his critics. Until this past November, when Gates introduced his own company, AfricanDNA, Kittles's was the only genetic-testing lab set up specifically to find Americans' African roots, and he became a focal point for scholars' discomfort not only with the technology's accuracy, but also its implications. Some feared his work could be used to resanctify disgraced racial theories, or that DNA's essentializing power might engulf other aspects of African American identity. Waldo Johnson, associate professor at the School of Social Service Administration and director of the University's Center for the Study of Race, Politics, and Culture, disagrees. "It's important to have a historical place of origin," he says, and Africa is a huge continent—"much larger than the U.S. When you say 'African American,' are you talking about Kenya? Ghana and Ivory Coast? Morocco? South Africa? These are very different places."

Kittles acknowledges that for all its restorative promise, genetic testing has limitations. "I mean, we're talking about a

**very small part of your DNA," he says, "less than 0.01 percent." The thinnest shred of genetic material—0.1 percent—accounts for the entire spectrum of human variation; the other 99.9 percent of the genome's 3 billion nucleotides are identical from person to person. Counting backward 350 years, or about 14 generations, to the height of the African slave trade, any one person could have as many as 16,384 ancestors. Kittles's tests offer information about only one ancestor per generation. So those whose results don't reveal the American Indian, or Zulu, or Mende, or Mandinka lineage that oral histories led them to expect may simply have those ancestors on a still-shrouded branch of the family tree. "But that fraction of a percentage of DNA is more than what we had," Kittles says. "It's a jump-off point."**

**Some jumps land further than others; African Ancestry's analysis transcends individual families, raising questions about the meaning of race itself. "If you look at the data, what we're doing is actually deconstructing race," Kittles says. "We're showing that nobody's pure." Besides the 35 percent of African Americans who discover European genes in their past—and the disparate tribes whose DNA may also be mixed in—African Ancestry sometimes confirms white clients' beliefs about African forebears. In his biomedical research, Kittles often confronts the puzzle of race; too many studies rely on imprecise thinking. "If you want to measure biology and genotypes, say so," he says. "If you want to measure environment, say that." As a sociological concept, race remains a powerful force, but as a scientific proposition, it is a muddle. Johnson concurs, adding that DNA reveals the limitations of the very idea of race. "Genetics can help us have a more nuanced understanding of how we use that word, not just in the biological sciences, but in the social sciences and humanities," he says. "Race becomes a proxy for so many other things—by 'race,' do you mean socioeconomic class? Culture? Color?"**

**Sampson now finds himself thinking less about race and more about ancestry. Since that first journey to Lunsar, he has made several trips back, as do many who trace their roots to Africa, and he's added his Temne name to his business card, just above the line that reads, "Ordained by Dr. Martin Luther King Jr." Sampson's congregation is starting an adoption program**

for Lunsar's orphans—"I'm always concerned about orphanages," he says, "not least because I could have grown up in one"—and this year he plans to bring over a few generators to power the village's schools. "The whole countryside," he says, "is basically without electricity. Nobody mentions that. They've got all these diamonds, but there's so much exploitation."

Sampson has read the critical press about Kittles's work. In October he watched an episode of CBS's *60 Minutes*, in which a woman wept on-camera when African Ancestry traced her lineage to Sierra Leone. Then she learned other companies traced it elsewhere, to Senegal and Ivory Coast. "I saw it as a way of trying to put water on our flame," Sampson says. Then he adds, "I know that if I wasn't who I was in that little village of Lunsar, they wouldn't have given me no name."