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# Scientist's Study Of Brain Genes Sparks a Backlash

**Dr. Lahn Connects Evolution  
In Some Groups to IQ;  
Debate on Race and DNA**

**'Speculating Is Dangerous'**

By ANTONIO REGALADO  
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CHICAGO -- Last September, Bruce Lahn, a professor of human genetics at the University of Chicago, stood before a packed lecture hall and reported the results of a new DNA analysis: He had found signs of recent evolution in the brains of some people, but not of others.

It was a triumphant moment for the young scientist. He was up for tenure and his research was being featured in back-to-back articles in the country's most prestigious science journal. Yet today, Dr. Lahn says he is moving away from the research. "It's getting too controversial," he says.

Dr. Lahn had touched a raw nerve in science: race and intelligence.



**Bruce Lahn**


What Dr. Lahn told his audience was that genetic changes over the past several thousand years might be linked to brain size and intelligence. He flashed maps that showed the changes had taken hold and spread widely in Europe, Asia and the Americas, but weren't common in sub-Saharan Africa.

Web sites and magazines promoting white "racialism" quickly seized on Dr. Lahn's suggestive scientific snapshot. One magazine that blames black and Hispanic people for social ills hailed his discovery as "the moment the antiracists and egalitarians have dreaded."

Dr. Lahn has drawn sharp fire from other leading genetics researchers. They say the genetic differences he found may not signify any recent evolution -- and even if they do, it is too big a leap to suggest any link to intelligence.

"This is not the place you want to report a weak association that might or might not stand up," says

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Francis Collins, director of the genome program at the National Institutes of Health.

Several scientific groups have set out to disprove or challenge Dr. Lahn's discoveries. His own university now says it is abandoning a patent application it filed to cover a DNA-based intelligence test that drew on his work.

As scientific tools for probing genes become increasingly powerful, research into human differences has exploded. Most of the time, scientists are looking for clues about the causes of disease. But some research is raising tensions as scientists such as Dr. Lahn venture into studies of genetic differences in behavior or intelligence.

Pilar Ossorio, a professor of law and medical ethics at the University of Wisconsin, criticizes Dr. Lahn for implying a conclusion similar to "The Bell Curve," a controversial 1994 bestseller by Richard J. Herrnstein and Charles Murray. The book argued that the lower average performance by African-Americans on IQ tests had a genetic component and wasn't solely the result of social factors. Referring to Dr. Lahn and his co-authors, Prof. Ossorio says: "It's exactly what they were getting at. There was a lot of hallway talk. People said he's doing damage to the whole field of genetics."

The 37-year-old Dr. Lahn says his research papers, published in Science last September, offered no view on race and intelligence. He personally believes it is possible that some populations will have more advantageous intelligence genes than others. And he thinks that "society will have to grapple with some very difficult facts" as scientific data accumulate. Yet Dr. Lahn, who left China after participating in prodemocracy protests, says intellectual "police" in the U.S. make such questions difficult to pursue.

Scientists believe that a small group of anatomically modern humans struck out from Africa probably less than 100,000 years ago. After arriving on the Eurasian land mass, they continued to split up and eventually humans populated nearly every corner of the globe. One use of genetic research is to probe how each group evolved differently after becoming isolated from the others. Recently created genetic maps of people of African, Asian and European ancestry make that research easier.

For instance, researchers have found that most Europeans have a genetic variant that lets them fully digest milk as adults. The variant is much less common in Africa and Asia, where lactose intolerance is widespread. Scientists theorize that it spread quickly among Europeans because drinking milk from domesticated dairy animals conferred a nutritional advantage. Similar evolutionary reasoning may explain why many people in malaria-prone parts of Africa carry gene variants linked to malaria resistance.

Other research is starting to explain variations in human skin color and hair texture. But scientists tense up when it comes to doing the same sort of research on the brain. Sociologist Troy Duster, who studies the use of racial categories by geneticists, worries that scientists will interpret data in ways that fit their prejudices. He cites the sorry history of phrenology, a study of skull shapes popular in the 19th century, and other pseudoscientific techniques used to categorize people as

inferior. "Science doesn't transcend the social milieu," says Dr. Duster, of New York University.

Dr. Lahn traces his interest in human differences back to his youth in China. Foreigners there used to have a special currency that they could use at stores closed to ordinary Chinese. "I wondered why people were different, and why Chinese were at the bottom," he says.

By the time violence struck Tiananmen Square in 1989, Dr. Lahn, the son of two physicists, was an undergraduate at Harvard University. He channeled his curiosity into genetics and built his reputation with a groundbreaking study of the Y chromosome. After taking a post at the University of Chicago in 2000, Dr. Lahn won a prestigious fellowship from the Howard Hughes Medical Institute.

The fellowship pays most of his research bills and has allowed him to pursue creative projects, often on attention-grabbing subjects. One study looked at how promiscuity among female chimpanzees, gorillas and humans affected the evolution of a gene that makes sperm sticky. "Bruce is in a hurry to be famous," says Martin Kreitman, a Chicago colleague who is friendly with him.

Henry Harpending, a University of Utah anthropology professor who recently published a theory for why Ashkenazi Jews tend to have high IQ's, says Dr. Lahn once suggested they co-author an article for Scientific American about the genetics of behavior, in which they could explain why "Chinese are boring."

"I think that Bruce doesn't understand political correctness," Dr. Harpending says. Dr. Lahn says he only vaguely recalls the conversation but confirms that he wonders whether during China's imperial times there was "some selection" against rebellious individuals.

In recent years, Dr. Lahn has become interested in why the human brain is so large and complex. Although humans and chimpanzees share about 96% of their DNA, human brains are about four times larger. Even today, researchers can find a correlation, on average, between people's brain size and their IQ.

Dr. Lahn's group zeroed in on the role of two genes, called ASPM and microcephalin, that are known to have a role in brain size. Humans with defective copies of either gene are born with brains only about one-third the normal size.

Studying DNA from several species, the Chicago team found that, over millions of years, the genes had undergone more rapid change in monkeys, apes and humans than in other animals. Their next step was to determine if evolution had continued in modern humans. Dr. Lahn's graduate students began decoding DNA from 1,184 people belonging to 59 groups from around the world, including Bedouins, Pima Indians and French-speaking Basques.

The data showed that evolution had continued in recent millennia. A statistical analysis of DNA patterns suggested that new mutations in each of the two brain-related genes had spread quickly through some human populations. Evidently, these mutations were advantageous among those populations -- just as the genetic variant promoting milk digestion was advantageous to early

Europeans. Dr. Lahn and his team further observed that the new mutations are found most frequently outside of Africa.

What the data didn't say was how the mutations were advantageous. Perhaps the genes play a role outside of the brain or affect a brain function that has nothing to do with intelligence.

While acknowledging that the evidence doesn't permit a firm conclusion, Dr. Lahn favors the idea that the advantage conferred by the mutations was a bigger and smarter brain. He found ways to suggest that in his papers. One mutation, which according to his estimates arose some 40,000 years ago, coincided with the first art found in caves, the paper observed. The other mutation, present mostly in people from the Middle East and Europe, and estimated to be 5,800 years old, coincided with the "development of cities and written language."

That suggested brain evolution might have occurred in tandem with important cultural changes. Yet because neither variant is common in sub-Saharan Africa, there was another potential implication: Some groups had been left out.

The dean of the University of Chicago's medical school, James L. Madara, says he approached Dr. Lahn before the papers were published. They discussed whether the report could be taken out of context. "Let the chips lie where they may," Dr. Madara says he told Dr. Lahn. As long as the ideas and data are clear, "don't worry about the implications," the dean said.

John Easton, head of media relations at the medical school, says his office was worried the work could be misinterpreted and abused by racist groups. Mr. Easton borrowed a copy of "The Mismeasure of Man," the famous attack on IQ tests and brain-volume measurements by the late paleontologist Stephen Jay Gould. Mr. Easton helped Dr. Lahn with talking points about his research. "We said, 'Don't be shy about telling people what it doesn't mean,'" Mr. Easton recalls.

Mr. Easton says Dr. Lahn "makes us nervous" but "with Bruce we know it's not driven by personal bias." That is because Asians "don't score at the top" in the frequency of the brain-gene mutations, Mr. Easton says.

Dr. Lahn's paper and talk at his university -- in which he also claimed the gene variants were probably linked to higher IQ -- provoked a strong reaction both on and off campus. Dr. Collins, head of the federal genome program, obtained advance copies of the papers and circulated them to top population geneticists. He wasn't persuaded by the statistical evidence for evolution and criticized Dr. Lahn's work in media interviews.

The papers won wide attention among researchers, and several responded by setting out to test Dr. Lahn's findings. Scientists at the Broad Institute, a top genetics center in Cambridge, Mass., have been reanalyzing some of the data and say they may challenge Dr. Lahn's finding that evolution acted on ASPM, one of the genes. Broad's influential chief, Eric Lander, says scientists probing recent evolution run the risk of "seeing a difference, and saying there is a story to fit it."

A team at the University of California, Los Angeles, recently tested whether the gene variants

actually affect brain size. They studied DNA from 120 people whose brain volumes they had already measured using magnetic-resonance imaging. They didn't find any difference. "It certainly makes you want to look at other explanations" of what the variations mean, says Roger P. Woods, a UCLA brain-mapping expert who reported the results in May.

Some of Dr. Lahn's co-authors are also uncomfortable with the work. Sarah Tishkoff, a geneticist at the University of Maryland who provided DNA from remote African groups, says she is bothered how one paper drew a link between the genetic changes and the rise of civilization. She thinks it is too early to reach any conclusions about why the changes spread and says it is "very simplistic" to imagine that a single gene could have a major effect on complex cultural traits.

Several groups of scientists have sent letters to Science criticizing the papers. Dr. Lahn prepared responses, sending one earlier this month, but Dr. Tishkoff wasn't willing to add her name to them.

"You have to follow the data wherever it leads, but speculating in this field is dangerous," says Spencer Wells, head of the National Geographic Society's Genographic Project, a five-year, \$40 million effort to collect DNA samples from 100,000 indigenous people. Dr. Wells says the project team might try to find evolutionary reasons for physical differences such as why Danes are taller than pygmies. But Dr. Wells says National Geographic won't study the brain. "I think there is very little evidence of IQ differences between races," he says.

The accuracy of Dr. Lahn's work and his views on race came up in his tenure review last fall, says a person familiar with it. After debate, his department voted unanimously in his favor, according to another faculty member. A more senior committee agreed and awarded Dr. Lahn the post of full professor, although it wasn't unanimous, this person says.

Dr. Lahn stands by his work but says that because of the controversy he is moving into other projects. Earlier this year, Mr. Easton of the university's media department forwarded Dr. Lahn a paper by two economists looking at the IQ of infants of different races. Dr. Lahn wasn't interested. "I'm surprised anyone studies this," he replied in an email.

Dr. Lahn says he isn't as eager as he once was to continue studying brain differences. P. Thomas Schoenemann, a professor of anthropology at the University of Michigan-Dearborn, says that at Dr. Lahn's request he collected DNA from 25 people whose brain sizes he had studied previously. But the two scientists haven't been in touch recently.

The university's patent office is also having second thoughts. Its director, Alan Thomas, says his office is dropping a patent application filed last year that would cover using Dr. Lahn's work as a DNA-based intelligence test. "We really don't want to end up on the front page...for doing eugenics," Mr. Thomas says.

More recently, Dr. Lahn says he was moved when a student asked him whether some knowledge might not be worth having. It is a notion to which he has been warming. Dr. Lahn says he once tried testing himself for which version of the brain genes he has. The experiment's outcome was blurry "but it wasn't looking good," he says. He hasn't tried testing himself again.

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