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Lake Bogoria Journal

## An Age-Old Salt Lake May Yield a Washday Miracle

By [MARC LACEY](#)

LAKE BOGORIA, [Kenya](#), Feb. 18 — In generations past, the people who lived around this most unusual of lakes attributed mystical powers to its water.

Chilly in some points and scalding in others, Lake Bogoria could supposedly wash away an array of maladies from skin ailments to stress. Goats were, and sometimes still are, slaughtered at the edge of the lake's hot springs as offerings to the spirits thought to reside in the mist.

Equally miraculous uses have been discovered recently for the water, which is as salty as the sea and holds hearty microorganisms not commonly found in other parts of the world. Although it has a primordial feel, Lake Bogoria is in many ways thoroughly modern, a little-known player in the fashion industry, for instance, and the subject of a high-stakes legal dispute to boot.

Those stonewashed jeans that fit oh, so right may owe their bleached appearance and soft feel to Lake Bogoria, or more specifically to an enzyme isolated from a microbe collected here. Another enzyme derived from creatures in Kenyan salt lakes like this one plays an important role in commonly used detergents, rooting out difficult stains and reducing the pills on cotton fabrics.

What the company that developed the commercial uses for the microbes trumpets as innovative science, Kenyan authorities are decrying as "bio-piracy." Developing countries seek to share in the profits made from their biological riches, whether from a fungus found in giraffe dung, an antibiotic discovered in a termite mound or an appetite suppressant derived from a cactus.

The International Convention on Biological Diversity, which came out of the Earth Summit in Rio de Janeiro in 1992, commits countries to equitable sharing of some of the benefits derived from biological resources. But advocacy groups say the convention is routinely ignored.

"It's a free-for-all out there," a researcher, Jay McGown, wrote in a recent report, "Out of Africa: Mysteries of Access and Benefit Sharing," published by the Edmonds Institute and the African Center for Biosafety. At Lake Bogoria and Lake Nakuru, to its south, scientists took samples in plastic bags in 1992 — before the convention went into effect in December 2003, they say. They found "extremophiles," durable creatures that reside in the earth's most inhospitable terrains, and subjected them to a battery of tests.

Genencor International Inc., a California-based company, subsequently purchased the enzyme samples, patented them and cloned them on an industrial scale for textile companies and detergent manufacturers.

Genencor, which became a division of Danisco in 2005, says what it did was on the up and up. It says it obtained the samples from a Netherlands-based company that took part in an academic research expedition led by William D. Grant, a microbiologist at Leicester University in England who has studied East Africa's saline and soda lakes. The mission, Genencor says, had all of the required research permits from the Kenyan authorities and was joined by a microbiologist from Kenyatta University, Wanjiru Mwatha.

Genencor has not been shy about the origins of its microbes. In its annual report in 2000, it boasted: "To find enzymes that flourish in alkaline environments, like your Saturday wash water, the enzymes that give your jeans a 'softer' feel and a stonewashed look, we looked for them, that's right, in the soda lakes of Kenya."

Kenyan officials learned in 1994 that the company was profiting from materials taken from the lake, and have been pursuing compensation ever since. They say proper permission was never granted for microorganisms to be taken and sold.

Dr. Mwatha said in an interview that she had received government permission to conduct research for her Ph.D. thesis at Bogoria and other lakes. Dr. Grant was her thesis adviser when she studied in Britain, she said, and he accompanied her on a research trip to Kenya. But Dr. Mwatha said she knew nothing about his involvement with any company and was unaware if any of her samples had been put to commercial use.

"I personally never dealt with any company," Dr. Mwatha said. "What really annoys me is that if they hit on something from my samples, I should know about it, not from a monetary point of view but from a scientific point of view."

But it is the monetary aspect that Kenyan officials are focusing on. "We're having discussions with them," said Connie Maina, spokeswoman for the Kenya Wildlife Service. Genencor added in a statement, "We welcome an open dialogue with appropriate Kenyan authorities and look forward to a positive resolution."

Genencor has said that the enzymes derived from Kenyan lakes are not huge money earners, taking in less than \$10 million, and that it has donated computer and sampling equipment to Kenyatta University's microbiology department.

Kenyan officials say they believe that the profits are far more than the company is letting on. And while Genencor insists that one of its main business partners, Procter & Gamble, has not used the Kenyan enzymes in its products, the Kenyans suspect otherwise.

For now, though, the situation over how Bogoria's microbes found their way into the marketplace remains as murky as the lake itself, which, dispute or no dispute, remains a great source of pride for Kenyans. Schoolchildren regularly take field trips to Lake Bogoria. "So this lake is being used all over to make jeans look bleached," Benson Kiritu, a social studies teacher at the Vidhu Ramji Academy in Muranga, told a group of seventh graders at the lake the other day. "You didn't know that, did you? What do you think about that?"