



SCIENCE: Genome Guru Seeks Patent on Synthetic Life Form

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BROOKLIN, Canada, Jun 11 (IPS) - Patent applications for the world's first-ever human-made species have been made to patent offices around the world.

The Venter Institute, named for its founder and CEO, J. Craig Venter, has applied for a patent on a novel bacterium made entirely from synthetic DNA in the laboratory, according to a civil society organisation concerned that this new technology is outpacing ethics and safety protocols.

Applications have reportedly been made to more than 100 patent offices over the past few months for the synthetic bacterium called "Mycoplasma laboratorium".

"In the tradition of 'Dolly,' (the first cloned animal) we have nicknamed this synthetic organism 'Synthia'", said Jim Thomas of ETC Group, a Canada-based organisation that recently won a 13-year legal battle against Monsanto's species-wide soybean patent.

"These monopoly claims signal the start of a high-stakes commercial race to synthesise and privatise synthetic life forms," Thomas told IPS. "Will Venter's company become the 'Microbesoft' of synthetic biology?"

While this would be the world's first de novo bacterium, there has been no confirmation by the company of its existence. The Venter Institute did not return IPS phone calls and emails for comment. However, Thomas told IPS an announcement to that effect will likely be made by the Institute later this year.

J. Craig Venter, who gained worldwide fame in 2000 when he mapped the human genetic code, announced the start-up of a company called Synthetic Genomics in 2005. Its goal was to construct new organisms that, among other things, use genes culled from the sea to turn crops such as switch grass and cornstalks into ethanol, produce hydrogen, secrete nonpolluting heating oil or break down greenhouse gases.

"It's a very powerful technology that could be used in a huge range of applications," Thomas said.

In media reports last year, Venter said that if researchers could create a synthetic organism that produced fuel, it could be worth "a trillion dollars" and was something his institute would quickly patent.

Synthetic biology combines biology and engineering to build entirely new biological entities from the ground up. In 2004, a bacteriophage was re-created with synthetic biology by assembling 5,000 base pairs of the fundamental units that make up DNA. The human genome has three billion base pairs, while bacteria have just four million pairs.

This new technology is more akin to software engineering than to biotechnology. In fact, once the technical challenges are overcome, it will be far easier and faster to create new organisms that have specific capabilities. The Venter Institute's synthetic bacterium could be the foundation -- a living foundation -- onto which other specialised genes would be added to create functionality for a variety of applications.

"Think of it as an operating system like Windows," Thomas said.

Venter's patent is vague and claims to include any synthetically-constructed organism that lacks at least 55 of 101 genes researchers believe are non-essential.

"If someone creates another bug that lacks some of the same genes that Synthia lacks, will the Venter Institute sue them for infringing its patent?" asked Kathy Jo Wetter of ETC Group.

There have already been calls in the scientific community to keep the basic technology in the public realm, said Markus Schmidt of the Organisation for International Dialogue and Conflict Management in Vienna, Austria.

"I think it would be a good idea to start a 'Minimal Genome Project', a large international publicly-funded effort towards

providing a functional bacterial chassis that is publicly available and the basis for the creation of biological circuits," Schmidt told IPS.

Civil society has been wary of this new technology from the outset. In 2006, 38 groups released an open letter calling for an international discussion and review of the social, environmental, ethical and economic implications of synthetic biology.

Concerns about using the technology to make bioweapons and the potential for accidents involving the release of these living synthetic organisms have yet to be addressed, say critics.

Schmidt agrees the risks are real. The United States is leading the quest to explore security issues – namely, bio-terrorism -- but so far the unintended consequences for human health, agriculture and environment have received relatively little attention from scientists or policymakers, he said.

The European Commission has funded a new project called "SYNBIOSAFE" to "look into the biosafety, biosecurity and ethical aspects of synthetic biology and contribute to a broader debate on these issues in Europe and abroad", Schmidt said.

Self-regulation proposals brought forward by some experts have been rejected by NGOs, including ETC. For that reason, Schmidt, one of the organisers of an international meeting on the topic, has invited ETC to participate in discussions at the Synthetic Biology 3.0 conference in Zurich later this month.

Experts in ethics, security and patents will look at the societal implications.

Meanwhile, ETC has written to patent offices asking that they reject the Venter Institute application.

"We need a full public debate over the implications of creating synthetic life forms before proceeding any further," said Thomas ***** +ETC group (<http://www.etcgroup.org>) +Synthetic Genomic (<http://www.syntheticgenomics.com/index.htm>) +Organisation for International Dialogue and Conflict Management (<http://www.idialog.eu/>)

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