



ETC Group
News Release
24 January 2008
www.etcgroup.org

Venter Institute Builds Longest Sequence of Synthetic DNA (that Doesn't Work)

“It's not how long – but how wise” cautions ETC Group

ETC Group today renewed its call for a moratorium on the release and commercialization of synthetic organisms, asserting that societal debate on the oversight of synthetic biology is urgently overdue. The renewed call came as J. Craig Venter's research team announced that it has constructed a bacterial-length synthetic genome in the lab using mail-order synthetic DNA sequences. They've named the synthetic genome, *Mycoplasma genitalium* JCVI-1.0, and it's similar to its counterpart in nature, a genital bacterium with the smallest known genome of any free living organism. The announcement is not breaking news because the work had been previously reported, but the details were published today in *Science*.

“Venter is claiming bragging rights to the world's longest length of synthetic DNA, but size isn't everything. The important question is not ‘how long?’ but ‘how wise?’” says Jim Thomas of ETC Group. “While synthetic biology is speeding ahead in the lab and in the marketplace, societal debate and regulatory oversight is stalled and there has been no meaningful or inclusive discussion on how to govern synthetic biology in a safe and just way. In the absence of democratic oversight profiteering industrialists are tinkering with the building blocks of life for their own private gain. We regard that as unacceptable.”

“The Venter Institute calls this synthetic life version 1.0 and acknowledges that it doesn't quite work yet – however, society shouldn't wait for the next upgrade – the stakes are far too serious,” explains Kathy Jo Wetter of ETC Group. “This news means scientists are one step closer to constructing a living, synthetic organism that has the potential for social, economic, and ecological disruption – and society is not at all prepared for that.” said Wetter.

Venter's immediate goal is to conjure a designer genome, synthesize it and insert it into a cell so that it survives and replicates as a new species, dubbed “Synthia.” What's being reported in *Science* today is not Synthia – but rather the largest DNA molecule ever constructed entirely from off-the-shelf DNA. Venter's team assembled 582,970 base pairs – an order of magnitude greater than the previous record (32,000 bases). According to the paper in *Science* the genome has not been successfully transplanted into a living cell. The only completely synthetic genomes previously re-constructed belong to viruses – including deadly pathogens such as the poliovirus and the 1918 flu virus. The genome of any viral organism on the “select agents” list can be constructed in the laboratory using mail order synthetic DNA sequences. (Select agents refers to the U.S. government's list of deadly microbial pathogens and toxins made by living organisms.)

Today's announcement opens the door to constructing dangerous bacterial select agents – such as the bacterium that causes anthrax.

A [comic strip depicting Venter's plans to build a synthetic organism](#) is available on ETC Group's website:

http://www.etcgroup.org/upload/body_image/38/02/etcventertoons_story_of_lg.jpg

Beyond Synthia:

Craig Venter's attempt to build Synthia, the world's first organism with a fully synthetic genome, is the most high profile example of "extreme genetic engineering" or synthetic biology (Syn Bio). Synthetic biologists are building novel genetic sequences and new synthetic organisms for chemical, drug and fuel production, re-engineering life in the lab for industrial purposes. In terms of technological maturity synthetic biology is still pretty much in diapers, yet is currently enjoying billions of dollars of investment in a push towards rapid commercialization.

This avalanche of new money comes from governments, venture capitalists and large corporations including BP, Shell, Cargill, Dupont and Virgin Group. Just this week synthetic biology company Solazyme teamed up with Chevron, the world's seventh largest corporation, to develop biodiesel from synthetically altered algae. Dupont already produces a commercial bioplastic using a synthetic organism. BP is an equity investor in Venter's company, Synthetic Genomics, Inc. The company has applied for far-reaching patents that would grant it exclusive monopoly over key processes in the emerging industry. For a graphic overview of the synthetic biology industry and the investors behind Synthetic Genomics, Inc. See [ETC Group's "Syndustry" poster](#) and ["The Men & Money Behind Synthia."](#) – both available here: <http://www.etcgroup.org>

Debate Dismissed

Most synthetic biologists have attempted to brush aside the ethical issues and governance of synthetic biology by commissioning soft reviews prepared by syn bio insiders and enthusiasts. The most recent report, funded by the Sloan Foundation, makes no policy recommendations, emphasizes voluntary measures, fails to adequately consult civil society and ignores many central concerns about the societal impacts of the technology. [ETC Group's response to the Sloan report](#) is available here:

http://www.etcgroup.org/en/materials/publications.html?pub_id=654

Note for Editors:

A year ago at the World Social Forum in Nairobi, ETC Group released a 70-page report examining the societal implications of synthetic biology. [Extreme Genetic Engineering – an introduction to synthetic biology](#) is available for free download online:

<http://www.etcgroup.org/upload/publication/602/01/synbioreportweb.pdf>

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