



ETC Group  
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[www.etcgroup.org](http://www.etcgroup.org)

## Synthia is Alive ... and Breeding Panacea or Pandora's Box?

*As Craig Venter announces lab-made life, ETC Group calls for Global Moratorium on Synthetic Biology.*

In a paper published today in the journal *Science*, the J. Craig Venter Institute and Synthetic Genomics Inc announced the laboratory creation of the world's first self-reproducing organism whose entire genome was built from scratch by a machine.(1) The construction of this synthetic organism, anticipated and dubbed "Synthia" by the ETC Group three years ago, will stir a firestorm of controversy over the ethics of building artificial life and the implications of the largely unknown field of synthetic biology.

**Panacea, or...?** According to today's publication, "Synthia" could be a boon to second-generation agrofuels making it – theoretically – possible to feed people and cars simultaneously. The article further suggests that Synthia, or synthetic biology, could help clean up the environment, save us from climate change, and address the food crisis. "Synthia is not a one-stop-shop for all our societal woes," disputes Pat Mooney, Executive Director of ETC Group, an international technology watchdog based in Canada. "It is much more likely to cause a whole new set of problems governments and society are ill-prepared to address."

**...Pandora's Box?** "This is the quintessential Pandora's box moment - like the splitting of the atom or the cloning of Dolly the sheep. We will all have to deal with the fall-out from this alarming experiment," comments Jim Thomas of the ETC Group. "Synthetic biology is a high-risk profit-driven field, building organisms out of parts that are still poorly understood.(2) We know that lab-created life-forms can escape, become biological weapons, and that their use threatens existing natural biodiversity. Most worrying of all, Craig Venter is handing this powerful technology to the world's most irresponsible and environmentally damaging industry by partnering with the likes of BP and Exxon to hasten the commercialization of synthetic life-forms."(3)

Synthetic biology refers to the construction of novel life-forms using synthetic DNA made from off-the-shelf chemicals - a form of "extreme genetic engineering". The team behind today's announcement, led by controversial scientist and entrepreneur Craig Venter, is associated with a private company, Synthetic Genomics Inc, bankrolled by the US government and energy behemoths BP and Exxon. Synthetic Genomics recently announced a \$600 million research and investment deal with Exxon Mobil in addition to

a 2007 investment from BP for an undisclosed amount. Venter, who led the private sector part of the human genome project ten years ago, has already applied for patents related to Synthia's technology.(4)

Although high-profile backers of synthetic biology now occupy key positions in the US Obama administration(5) there still remains no proper national or international oversight of new high-risk, technologies that carry vast implications for humanity and the natural world. In 2006, ETC Group joined with other organizations to demand the formal, open and inclusive oversight of synthetic biology(6) and have since called for a global halt on research pending the development of global regulations. ETC Group has reiterated that call at a scientific meeting of the United Nations Convention on Biological Diversity in Nairobi attended by more than 100 governments.(7)

**Pandemonium?** The lack of global rules governing the field also concerns many governments, illustrated by the biodiversity talks in Nairobi. Mundita Lim of the Philippines delegation to the CBD expressed her country's concerns "about the serious potential impacts of synthetic biology on biodiversity... we believe that there should be no field release of synthetic life, cell or genome into the environment until thorough scientific assessments have been conducted in a transparent, open and participatory process involving all Parties, indigenous and local communities that will all be potentially affected by these synthetic life forms with unknown consequences on biodiversity, the environment and livelihoods." Today's announcement will give new urgency to the debate on synthetic biology and provide a dramatic example of the need for rigorous oversight over new technologies before their environmental or commercial release is permitted.

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1) *Science*, 20 May 2010, "Creation of a Bacterial Cell Controlled by a Chemically Synthesized Genome," by D. Gibson; J.I. Glass; C. Lartigue; V.N. Noskov; R.-Y. Chuang; M.A. Algire; M.G. Montague; L. Ma; M.M. Moodie; C. Merryman; S. Vashee; R. Krishnakumar; N. Assad-Garcia; C. Andrews-Pfannkoch; E.A. Denisova; L. Young; Z.-Q. Qi; T.H. Segall-Shapiro; C.H. Calvey; P.P. Parmar; J.C. Venter at J. Craig Venter Institute in Rockville, MD; G.A. Benders; C.A. Hutchinson III; H.O. Smith; J.C. Venter at J. Craig Venter Institute in San Diego, CA. The paper acknowledges 'generous funding' from Synthetic Genomics Inc for this work, that three of the leaders of the scientific team hold executive positions at Synthetic Genomics Inc and that the J Craig Venter Institute itself holds stock in Synthetic Genomics Inc.

2) For a graphic overview of the investors behind Synthetic Genomics, Inc, see ETC Group's 2007 Poster "The Men & Money Behind Synthia." available here:  
<http://www.etcgroup.org/en/node/4797>

3) Some details of Synthetic Genomics deal with BP are available at  
<http://www.syntheticgenomics.com/media/bpfaq.html> and reporting of their deal with Exxon Mobil is available at <http://nyti.ms/sf5A6>

4) ETC Group News Release, 7 June 2007, "Patenting Pandora's Bug, Goodbye, Dolly...Hello, Synthia! J. Craig Venter Institute Seeks Monopoly Patents on the World's First-Ever Human-Made Life Form" online at <http://www.etcgroup.org/en/node/631>

5) US Energy secretary Steven Chu was feted by press as "The Secretary of Synthetic Biology" when he was named to office last year (see <http://bit.ly/9pMDp8>), reflecting his previous role as head of Lawrence Berkeley National Lab where he oversaw a \$600 million dollar investment by BP in the university's synthetic biology labs. On the other side of that deal was BP chief scientist Steve Koonin, now Undersecretary for Science in the DOE. Koonin reportedly spearheaded BP's investment in Synthetic Genomics Inc.

6) Open Letter on Synthetic Biology from Civil Society, May 2006:  
[http://www.etcgroup.org/en/materials/publications.html?pub\\_id=11](http://www.etcgroup.org/en/materials/publications.html?pub_id=11)

7) ETC Group currently has three staff members in Nairobi at the meeting of the Subsidiary Body on Scientific, Technical and Technological Advice to the UN Convention on Biological Diversity (SBSTTA 14). The topic of synthetic biology is under discussion at SBSTTA 14 under an item concerning the biodiversity risks of next generation biofuels.

### Notes to Editors:

ETC Group is an international civil society organization based in Ottawa, Canada. We conduct research, education and advocacy on issues related to the social and economic impacts of new technologies on marginalized peoples – especially in the global South. We look at issues from a human rights perspective but also address global governance and corporate concentration. All ETC Group publications are available free of charge on our website: [www.etcgroup.org](http://www.etcgroup.org)

ETC Group has been monitoring developments in synthetic biology for the past five years and has pioneered civil society activism around the field. In 2006 we joined dozens of other civil society organisations to protest plans for voluntary governance of synthetic biology. In 2007 we released "Extreme Genetic Engineering" the first ever critical introduction to the field (available at <http://www.etcgroup.org/en/node/602>). We also exposed plans by J. Craig Venter and his colleagues to patent their planned synthetic organism, which we dubbed 'Synthia'. A full archive of ETC Group's writings, comments and press releases on the topic of Synthetic Biology is available at [http://www.etcgroup.org/en/issues/synthetic\\_biology](http://www.etcgroup.org/en/issues/synthetic_biology) and video, audio and graphic resources on the topic are available at [http://www.etcgroup.org/en/materials/video\\_audio\\_library](http://www.etcgroup.org/en/materials/video_audio_library)

ETC Group has three staff members in Nairobi at the meeting of the Scientific Body to the UN Convention on Biological Diversity (SBSTTA 14). The topics currently under discussion at SBSTTA include the biodiversity risks of next generation biofuels and new and emerging threats to biodiversity.

For more information and background:

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