



ETC Group
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The Last Straw? As Extreme Genetic Engineers Gather in Hong Kong, Critics Warn of Corporate Grab on Plant Life *SynBio 4.0 = SynBio-4-profit*

Synthetic biologists, a brave new breed of science entrepreneurs who engineer life-forms from scratch, will hold their largest-ever global gathering in Hong Kong, October 10-12, known as “Synthetic Biology 4.0.” Although most people have never heard of synthetic biology, it’s moving full speed ahead fueled by giant agribusiness, energy and chemical corporations with little debate about who will control the technology, how it will be regulated (or not) and despite grave concerns surrounding the safety and security risks of designer organisms. Corporate investors/partners include BP, Chevron, Shell, Virgin Fuels, DuPont, Microsoft, Cargill and Archer Daniels Midland.

“SynBio 4.0 sounds like a convention for science geeks, but the real agenda is SynBio-4-profit,” said Pat Mooney of ETC Group. Mooney will lead a panel discussion at the Hong Kong meeting featuring civil society activists who will raise broader concerns about the technology. The panel, “Global Social Impact,” is scheduled Saturday, 11 October, 10:30-12:00.

A new 12-page report from ETC Group, “Commodifying Nature’s Last Straw? Extreme Genetic Engineering and the Post-Petroleum Sugar Economy,” warns that corporate biorefineries fueled by plant sugars will create a massive demand for agricultural feedstocks, which threatens to devastate marginalized farming communities, deplete soil and water, and destroy biodiversity. ETC Group is an international advocacy group based in Canada that monitors the social impacts of new technologies. ETC will maintain a daily blog throughout the 3-day meeting.

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“Bankrolled by Fortune 500 corporations, synthetic biologists meeting in Hong Kong are promising a green, clean post-petroleum future where the production of economically important compounds depends not on fossil fuels – but on biological manufacturing platforms fueled by plant sugars,” explains Jim Thomas of ETC Group. “It may sound sweet and clean, but this so-called sugar economy will catalyze an unprecedented corporate grab on *all* plant matter as well as destruction of biodiversity on a massive scale,” warns Thomas, who also speaks Saturday on the panel.

Synthetic biology enthusiasts envision a “sugar economy” where industrial production will be based on biological feedstocks (agricultural crops, grasses, forest residues, plant oils, algae, etc.) whose sugars are extracted, fermented and converted into high-value chemicals, polymers or other molecular building blocks. For example:

- Amyris Biotechnology is attempting to modify the genetic pathways of yeast so that it ferments sugars to produce longer chain molecules of gasoline, diesel and jet fuel. It recently signed a deal with Brazil's largest sugar producer Crystalsev to turn sugar into commercially available diesel fuel within two years.
- Solazyme, Inc., which partners with Chevron, recently announced that it has successfully produced the world's first microbial-derived jet fuel by synthetically engineering algae to produce oil in fermentation tanks.
- DuPont, in partnership with Genentech and sugar giant Tate & Lyle, engineered the cellular machinery of an *E. coli* bacterium so that it ferments corn sugar to produce Sorona fiber – a product that Dupont says will eventually replace nylon. It takes six million bushels of corn to produce 100 million pounds of the key ingredient in Sorona fiber – the annual output of DuPont's Tennessee-based (USA) bio-refinery.

According to biotech industry estimates, it takes a minimum of 500,000 acres of cropland (that is, the crop residues or “wastes” from that area) to sustain a moderately-sized, commercial-scale biorefinery.¹ Advocates insist that the “food vs. fuel” debate will be irrelevant because feedstocks will eventually come from cheap and plentiful “cellulosic biomass”– plant matter composed of cellulose fibers (including crop residues such as rice straw, corn stalks, wheat straw; wood chips; and dedicated “energy crops” such as switchgrass, fast-growing trees, algae, etc.).

“Haven't we learned anything from the disaster of first generation agrofuels?” asks Camila Moreno of Terra de Direitos in Brazil. “Industrial agrofuels are driving the world's poorest farmers and indigenous peoples off their lands. Agrofuels are the single greatest factor contributing to soaring food prices, pushing millions from subsistence to hunger. With synthetic biology's sugar economy, the demand for plant biomass will increase exponentially – not just for transportation fuels, but for plastics and chemicals as well. We're about to repeat the debacle of first-generation agrofuels on a more massive scale,” said Moreno.

Advocates of the bio-based sugar economy assume that unlimited supplies of biomass will be available. Civil society organizations in Hong Kong will ask: Can massive quantities of biomass be harvested sustainably without eroding and degrading soils, destroying biodiversity, worsening the climate and water crisis, increasing food insecurity and displacing marginalized peoples? Can synthetic microbes work predictably? Can they be safely contained and controlled? How will they be regulated? No one knows the answers to these questions, but corporate enthusiasm for a sugar-coated, bio-engineered future is plowing forward.

Civil society speakers will also warn that faster techniques to build DNA from scratch and transfer DNA code electronically could accelerate biopiracy and erode intergovernmental support for biodiversity conservation. It is already possible to build the full genome of some microbes from scratch. Some synthetic biology companies are engineering microbial pathways to churn out valuable plant-derived substances (pharmaceuticals, flavors and valuable products such as rubber) – resources that were first developed and conserved by indigenous and farming communities. Synbio is also unleashing new pathways for exclusive monopoly claims on digital DNA and engineered organisms.

“Once again, land, labour and biological resources in the global South are in danger of being exploited to satisfy the North’s voracious consumption and reckless waste,” observes Neth Dano of Third World Network who will also be speaking at the conference. “We’re seeing a new convergence of corporate power that is poised to appropriate and further commodify biological resources in every part of the globe,” said Dano.

ETC Group will offer commentary via its blog during SynBio 4.0. Watch here for updates: www.etcblog.org

ETC Group’s new report, “Commodifying Nature’s Last Straw? Extreme Genetic Engineering and the Post-Petroleum Sugar Economy,” is available here:

http://www.etcgroup.org/en/materials/publications.html?pub_id=703

View the color cartoon by Stig:

http://www.etcgroup.org/upload/gallery/129/02/synsugamonsta_small.jpg

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¹ Biotechnology Industry Organization, “Achieving Sustainable Production of Agricultural Biomass for Biorefinery Feedstock,” on the Internet: www.bio.org/ind/biofuel/SustainableBiomassReport.pdf