

IN brief

Algal biofuels questioned

Large-scale production of biofuels from algae is unsustainable using existing technologies, says a report by the National Research Council of the US National Academies published in October. The authors base their conclusions on the water, energy and nutrients required to grow and harvest enough algae to meet 5% of US transportation fuel needs. "Algae have to get an order of magnitude better before they are sustainable," says Mark Jones, one of the report's authors and a research fellow at Dow Chemical. "We are not looking for a single minor tweak, but improvements that really move the needle." Algae can be grown in many ways—in freshwater, saltwater or wastewater; in closed photobioreactors or open ponds. One key advantage of algae is that its cultivation does not require cropland. But other resources are needed, and the amounts of these resources vary widely from one algae production pathway to another. For instance, between 3.15 and

3,650 liters of freshwater are needed to produce the algal biofuel equivalent to 1 liter of gasoline using current technologies, the report found. For comparison, 5–2,140 liters of water are needed to produce a liter of corn ethanol and 1.9–6.6 liters are needed to produce a liter of petroleum-based gasoline. In another blow to the algae field, human genome pioneer Craig Venter said in October at a talk in San Diego that algal biofuels "are just dead" unless the federal government sets an effective carbon policy. "It doesn't matter what the scientific breakthroughs are, there's no way to beat oil," he said. Venter is CEO of La Jolla-based Synthetic Genomics, which partnered with ExxonMobile to develop algae-based biofuels. Despite the bleak outlook, algal biofuel developers press on. San Diego-based Sapphire Energy in October announced a partnership with the Institute for Systems Biology (ISB) in Seattle. The company is paying the institute to investigate algal gene networks in an attempt to find ways to optimize oil yields. When *Nature Biotechnology* asked ISB's founder, Leroy Hood, if algae is a viable route to biofuels, he said, "I'm

agnostic on that.... I'm not going to say algae is going to be the optimal choice, but it's a good candidate." The national research council report notes that none of the sustainability concerns are a definitive barrier to future production of algal biofuels, but significant biological and engineering innovations will be needed to mitigate demands on resources.

Emily Waltz

IN their words



"Everybody was doing advanced biofuels back then," recalls Christophe Schilling, the CEO and co-founder of San Diego-based Genomatica, as BP announces its intention to scrap a five-year-old agreement with another

San Diego-based biofuel company, Verenium. (*Xconomy*, 21 November 2012)

Around the world in a month



CANADA

A former AstraZeneca (AZ) research center in Montreal is reborn as Neomed, a public-private partnership between AZ, Pfizer and the government of Quebec. Neomed will continue to develop AZ's pain compounds and plans to grow its pipeline with regional partnerships.



BELGIUM

MDxHealth of Irvine, California and Ghent University form a new center to apply epigenomics innovations to personalized medicine. The facility, based at the University, will house basic researchers, clinical validation teams and bioinformaticians as well as researchers from MDxHealth, who will develop epigenetic-based tests.



CHINA

Swiss pharma Roche and insurer Swiss Re set up a private insurance program to cover the cost of some of its expensive cancer drugs. This novel approach aims to capture this growing market, as China's public health system will not pay for these drugs, putting them out of reach of the Chinese population.



BRAZIL

Agricultural research agency, Embrapa, plans to clone endangered animals. The clones will be kept in captivity as a reserve in case wild populations collapse. Within a month it hopes to begin cloning the maned wolf (*Chrysocyon brachyurus*). Embrapa also hopes to clone the black lion tamarin, bush dog, coati, collared anteater, gray brocket deer and bison.



UK-CHINA

The UK's MRC Technology enters a discovery deal with the Chinese Academy of Science's Shanghai Institute of Biochemistry and Cell Biology. New targets identified at the institute will be further developed at MRC Technology's Centre for Therapeutics Discovery. The company did not disclose who will own IP rights to discovered targets.



SOUTH AFRICA

Affymetrix enters a research and service collaboration with the Centre for Proteomic and Genomic Research (CPGR) in Cape Town. The Affymetrix and CPGR partnership will enable high-throughput genomics research and personalized medicine projects across Africa.