



Boston-area biotechs dip into alternative fuels

By: Kyle Alspach

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Two area companies are working to prove that converting crops, waste and other sources of biomass into fuel isn't the only way to produce an alternative to gas and oil.

Joule Unlimited in Cambridge and Ginkgo BioWorks Inc. in Boston — both biotech companies — are working to prove that sunlight and even *E. coli* are other renewable sources that can be harnessed to produce an alternative fuel.

At the Washington, D.C.-based Biotechnology Industry Organization, policy director Matt Carr said such fuels could hold the promise of being carbon neutral or perhaps even carbon-reducing.

“Something like that could completely transform the way we do business and live our lives,” Carr said.

Even as efforts to produce biofuels ramp up, there is plenty of market need for additional types of fuel, said Brooke Coleman, executive director of the Boston-based New Fuels Alliance, an alternative fuels trade group.

“Some of the crop-based fuels — soy biodiesel and waste grease biodiesel — have a lot of economic constraints,” Coleman said.

Soybean prices can reach high levels, while waste is a limited resource in terms of volume, which can also lead to high prices, he said. The market is “wide open to other alternatives,” Coleman said.

At Joule, the aim is to convert sunlight and waste carbon dioxide into liquid fuels, via a single-step process that cuts out the dependence on biomass and issues around processing that have constrained biofuels.

The company, which pulled in a \$30 million round of financing led by Cambridge-based Flagship Ventures in April, announced plans in January to build its first pilot plant in Leander, Texas. The company has signed a one-year lease for a five-acre plot to house the plant, which is slated to open this summer.

At Ginkgo Bioworks in South Boston, a research project is set to begin this summer around producing a so-called “electrofuel” through the use of E. coli bacteria. The aim is to re-engineer the bacteria to fix carbon dioxide into liquid transportation fuels, using energy from electricity.

In April, Ginkgo won a \$6 million grant for the three-year project from the U.S. Department of Energy’s Advanced Research Projects Agency – Energy (ARPA-E). The ARPA-E funding round had a total of \$41.2 million for 13 electrofuels projects, which also included electrofuels projects at the Massachusetts Institute of Technology, Harvard Medical School and the University of Massachusetts Amherst.

Many companies are working to make biofuels production more efficient, such as Lebanon, N.H.-based cellulosic ethanol firm Mascoma Corp., noted Peter Abai, director of economic development at the Massachusetts Biotechnology Council.

But it’s likely that more alternative-fuel companies will emerge with methods to cut biomass out of the equation entirely, Abai said.

“It’s more energy to energy, rather than energy to crop and back into energy,” he said.