Talking the talk

Without effective public engagement, there will be no synthetic biology in Europe, says **Colin Macilwain**.

It has become fashionable, in some quarters, to decry orchestrated 'dialogues' between scientists and the public as excuses for much talk and little in the way of practical outcomes. But for synthetic biology in Europe, at least, it is dialogue or bust. Unless the public is on board, the field won't develop here, where loss of public trust has halted entire technologies.

That's why the engineers and biologists who are interested in synthetic biology have been working to embed social scientists and members of the public firmly in the field. Their involvement will be crucial as it develops, from the early exploration of concepts and tools to the still-remote prospect of plants and microorganisms 'designed' for various uses.

Last July, the Leopoldina — Germany's national academy of science — and the DFG, the country's main research agency, issued a joint statement pledging a dialogue with the German public on synthetic biology.

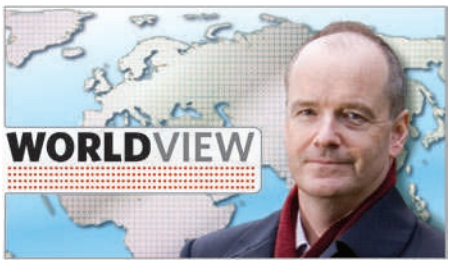
This week, two of the British research councils published initial results of an unusually detailed and extensive dialogue between members of the public and scientists on synthetic biology. British research leaders, chastened by the public's rejection of genetically modified (GM) crops a decade ago, have been particularly active in trying to develop more proactive and sophisticated approaches to public consultation.

The *Synthetic Biology Dialogue* report carries a very clear message. Brian Johnson, chairman of the dialogue's steering group and former biotechnology adviser to the conservation group English Nature, says that people want to know "why you are doing this work, who pays for it, and who governs it".

Lessons from GM crops

Scientists habitually overlooked such claims before previous crises of public confidence. For example, during the public debate that ended in Europe's virtual moratorium on GM foods, plant scientists kept telling anyone who would listen that the technology would be deployed for the public good. At the same time, everyone in the biotechnology industry knew that Monsanto had the best strains, and that its main interest was in doubling the traditionally modest margins that farmers used to pay for seed.

This unresolved clash between the true and purported 'motivation' of agricultural biotechnology helps to explain why government-sponsored dialogue in that arena remains



so fraught. In the past few weeks, two members of the steering panel for the UK Food Standards Agency's dialogue on GM foods — Helen Wallace of the protest group GeneWatch and Brian Wynne, a sociologist at the University of Lancaster — resigned, alleging that the process was being used as a public-relations exercise by the agency as it moves towards approval of transgenic strains.

These resignations could yet destabilize plans to cultivate GM crops in Britain for the first time. The environment secretary in the new British government, Caroline Spelman — a former biotech lobbyist — has branded the dialogue as rigged in industry's favour and seems minded to shut it down. Such a step will make it all the harder for the government to press ahead on GM crops, without unleashing another deluge of press criticism.

> "Regulators across Europe have a poor record of maintaining public confidence."

The newly published synthetic-biology dialogue is on much firmer ground. It was started last November by organizations that can be seen as relatively honest brokers, the Biotechnology and Biological Sciences Research Council (BBSRC) and the Engineering and Physical Sciences Research Council (EPSRC). And it got going at a stage in synthetic biology's development when its potential applications are too remote to attract the direct interest of government ministers or big business.

Additionally, the culture of the nascent discipline in Europe is, so far, distinct from that of more business-orientated areas such as genetics or plant biotechnology. Most of those involved are young academics who don't yet see their work primarily in terms of commercial application. Many are more temperamentally attuned to open innovation than to fighting over patent protection, and may therefore be equipped to assuage the fears of one dialogue participant that synthetic biology would be "greed-led".

Almost two years before Craig Venter announced his 'synthetic cell', the UK research councils funded seven networks of scientists and engineers to start exploring technical aspects of synthetic biology, ranging from the necessary standards and methods to applications, such as electronics and tissue engineering. They demanded at the outset that social scientists and members of the public be 'embedded' into these networks. "Whatever we do has to be done with society's authority," says Alistair Elfick, a medical engineer at the University of Edinburgh and chair of the network looking at technical standards.

The formal dialogue overseen by Johnson's group cost about £350,000 (US$510,000), and involved 160 citizens, at four locations, who were invited to two-and-a-half days of discussions, spread out over weeks so that people had time to think about what was being said.

In the longer term, research-council officials want public participation to remain integral to the development of the discipline. This could take many forms including, some senior participants believe, helping to design regulatory mechanisms for synthetic biology that will be publicly credible as well as technically robust. Regulators across Europe have a poor record of maintaining public confidence.

These regulators, everywhere in the world, rely primarily on the process of quantitative risk assessment to assess the safety of, for example, a GM organism by comparing it with that of an ancestor. If synthetic biology were to create new organisms without ancestors, this approach would break down. Current regulators are in denial about this impasse.

Whether the new UK coalition government will continue the public dialogue on synthetic biology, or act on its findings, remains unknown. Meanwhile the allegations that the dialogue on GM crops was being rigged by the last government present a political opportunity to the coalition led by Prime Minister David Cameron: it could conduct such exercises with a genuine intent that they influence policy.

That option is open to every European government that is considering how to ensure that its researchers grasp the opportunity that synthetic biology may represent. Without meaningful public involvement in its development, as well as appropriate regulation, the entire field will live under the threat that events, or scaremongering, could derail it at any moment. ■

Colin Macilwain is based in the United Kingdom.
e-mail: cfmworldview@gmail.com

See go.nature.com/ILx8PC for more columns.
Comment online at go.nature.com/NuZZc8.