NEWS AND COMMENTARY

GM Nation? Debate

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In September 2003, the UK published the results of an unprecedented national debate on GM issues, 'GM Nation?' to help guide the Government's consideration for potentially adopting the applications of this technology. Some believe it was just a PR exercise, but the unequivocal message emerging from the debate is of overwhelming public uncertainty. The report revealed that questions abound over the safety of GM food, the environmental impact of

growing GM crops, and where the public can get hold of trusted, nonpartisan information.

People understand the potential uses of GM but want to comprehend the issues better in order to have informed opinions. However, far from information quelling people's fears, many become more concerned as they engage in GM issues. Furthermore, there is an increasing mistrust of multinational companies and the possibility of early

commercialisation of a little-understood technology.

The UK's report has caused a stir in Europe, where Green Party MEP Dr Caroline Lucas claimed that the European Parliament's Environmental Committee has admitted 'for the first time the possibility of a GM-free UK'. Outside of Europe, the use of GM crops in developing countries is a further concern.

Opinion is clearly still divided, not just in the public domain, but also through the scientific community. Here, *Heredity* presents two different views, written by eminent scientists involved in the GM field.

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The GM debate: future

GM Debate: Dispelling myths

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I participated in a number of 'GM Nation?' debates in the early summer of 2003, both as a plant molecular biologist with relevant research interests, and as a panel member of Cropgen (www.cropgen.org). Cropgen is a consumer and media information initiative that makes the case for GM crops,

helping to achieve a greater measure of realism and balance in the GM debate that has been running these last few years.

Attendees at the debates I spoke at were largely anti-GM; thus it is not surprising that the government report, which summarised the 37 000 questionnaires returned from the 675 meetings held across the country, found antipathy to GM to be at odds with other polls of the population as a whole. A number of other flaws in the analysis were recently shown by Campbell and Townsend (2003). Nonetheless, the outcome of 'GM Nation?' still puts the government in an awkward position in deciding on the future of GM in Britain.

The debates covered a complex web of inter-related issues: (i) alien, unnatural technology; (ii) food safety; (iii) intensification of agriculture and its effect on the environment; (iv) genetic pollution; (v) being driven solely by profits.

As a scientist, I saw the anti-GM 'scientists' as my principal adversaries, who sought to use their scientific credentials to incite fear in the hearts of the scientifically ignorant with a

series of wild statements about the dangers of GM. Yet when challenged, they were unable to supply any peer-reviewed research as evidence to support them.

It was on the first issue of 'alien unnatural technology' that I first became engaged in the GM debate back in 1999: I led a project to engineer transgenic virus-resistant plants by expressing a virally derived antisense transgene that blocked expression of the invading viral DNA replication machinery (Day *et al.*, 1991). Tobacco was our original chosen plant model for engineering plant resistance, and we found that similar 'transgenes' were already present as multiple repeats of methylated silent DNA on two different tobacco chromosomes (Bejarano *et al.*, 1996), as well as related species, suggesting an ancient illegitimate viral DNA recombination event 25 million years ago (Murad *et al.*, 2004 and references therein). So, GM can happen in nature, I argued, using this as an illustration because of the poignancy of it being the same transgene that Mother Nature had 'used'. However, I made the general point that horizontal gene transfer is natural – the real driver being selection – citing the spread of antibiotic-resistance genes in bacterial pathogens by artificial selection on natural plasmid- and transposon-mediated gene transfer.

Of course, all of agriculture is alien and unnatural and selective breeding is artificial selection. What GM adds is artificial variation in place of selection