

PROCEEDINGS OF THE GREEN IRELAND CONFERENCE

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Full proceedings may be found at www.gmfreeireland.org/conference

KATE CARMODY • Speech

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Kate Carmody is a biochemist, organic farmer, and a member of the Board of Directors of the Irish Organic Farmers and Growers Association (IOFGA), one of the main co-sponsors of the Green Ireland Conference.

IOFGA is Ireland's largest organic certification body.

See www.irishorganic.ie for details.

Please download IOFGA's PowerPoint presentation **Forging a GM Policy for Ireland** at www.gmfreeireland.org/conference/PPT/IOFGA.ppt (76 kb pdf file) for the complete content of Kate's intended speech, which she had to cut short due to a severe headache.

This is the transcript of a video recording of Kate's speech, slightly edited for clarity.

Footnote references may be found on page 3.

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Hello. My name is Kate Carmody. I'm an organic dairy farmer. I also make cheese. I'm a biochemist as well by qualification, and I work as a medical scientist. This year I've been studying for my masters in biomedical science, where I've also been doing a lot of molecular biology. So I've been very interested in this whole debate.

In my short talk I aim to cover the current policy vacuum on GM crops, the working views of IOFGA [the Irish Organic Farmers and Growers Association], the key issues to consider, and the key advantages to be gained by keeping Ireland GM-free.

As we know there is a huge policy vacuum in this country. No major political party has a policy. Things are happening by default. We know there is no evidence of consumer demand for GM crops. There is no strong evidence of lack of impact on the environment. And there is no thought about the future direction of Irish agriculture, which is being decimated at the moment.

We need to respond to the challenges of globalisation by producing high value-added products. We need to focus on sustainability of agriculture, and you have to ask yourself, how does GM fit in with this?

IOFGA [the Irish Organic Farmers and Growers Association] is Ireland's largest organic certification body. We operate an inspection and certification scheme approved by the Department of Agriculture, both here in Ireland and in the UK, as we cover Northern Ireland as well. We operate under two EU regulations, the 1992 regulation for crops and the 2000 regulation for livestock.

Our position on GM is quite straightforward. They are prohibited, as are their derivatives, due to their incompatibility with organic principles, their unrecallable nature, and their risks to the environment and human health.

Key issues to consider for the future of Irish agriculture:

- Changing consumer demands
- Greater concern about food production
- Greater concern about environmental impact
- Food and health
- Food miles

Working as a medical scientist, I have seen a ten-fold increase in blood testing in the last five years. This is because consumers have incorporated health [concerns] into everything.

The future of the Irish environment: green, clean and GMO-free?

What's happening in this country is not based on evidence-based decision-making.

Lessons from medical science and issues to do with how to assess the risks of GM: The role of epigenetics [1] has been ignored by the agricultural biotechnology industry. They still insist on using the dogma that one gene codes for one protein [2]. One thing I've learned from my studies is that this is definitely not true. Putting GMOs in crops is just plain bad science.

Risk assessment based on "substantial equivalence", as was mentioned earlier, is a pseudo-scientific concept because it is a commercial and political judgment masquerading as if it were scientific [3]. And "co-existence" has been found to be impossible in countries already growing GM crops [4].

The conclusions now: the latest research shows substantial health risks from GM food, including allergic reactions and anti-biotic resistance [5].

The European consumer is willing to pay for value-added products to ensure their health benefits. We have seen this by the growth of the organic market, which is increasing by at least 10% annually.

My final comment is this: you are what you eat - let's hope not if it's GM!

I'm sorry about having such a headache!

NOTES (provided by GM-free Ireland):

1. Epigenetics is the study of reversible heritable changes in gene function that occur without a change in the sequence of nuclear DNA. It is also the study of the processes involved in the unfolding development of an organism. In both cases, the object of study includes how gene regulatory information that is not expressed in DNA sequences is transmitted from one generation (of cells or organisms) to the next - that is (from the Greek prefix), 'in addition to' the genetic information encoded in the DNA. (Source: Wikipedia - the online dictionary).

The language of heredity has for decades appeared to be a relatively simple one that is written on and translated through the sequence of DNA. But recent discoveries have highlighted how inherited changes in gene function can occur outside of this, through the modification of DNA or chromatin structures. These so-called epigenetic changes are present from birth to death, being involved in the first crucial steps that govern embryonic development, and in influencing expression or silencing of genes in 'epigenetic diseases'. Only now are we beginning to unravel how these epigenetic mechanisms interact with each other, how disruption of these systems can lead to conditions including cancer and mental retardation. (Source: A living frontier - exploring the dynamics of the cell membrane, Nature www.nature.com/horizon/epigenetics/index.html)

For an excellent short book which explains the new paradigm of genetics in layman's terms, see **Living with the Fluid Genome**, M.W. Ho, ISIS and TWN, London and Penang, 2003. Available from the Independent Science Panel www.indsp.org.

For more on this subject see the following papers:

- The epigenetic approach to the evolution of organisms – with notes on its relevance to social and cultural evolution. M.W. Ho and P.T. Saunders. In Learning, Development, and Culture (HC Plotkin ed), John Wiley & Sons Ltd, 1982.
- Epigenetics and Evolution - Theory and Experiment. M.W. Ho, C. Tucker, D. Keeley & P.T. Saunders. In Evolution and Environment (V.J.A. Novak & J. Nilkovsky, eds.) pp 59-75, Praha, CSAV, 1982.
- Beyond neo-Darwinism: an Epigenetic Approach to Evolution. M.W. Ho and P.T. Saunders, J. Theor. Biol . 78: 573-91, 1979.

2. Determinism is the doctrine that all acts, choices, and events are the inevitable consequence of antecedent sufficient causes. Genetic determinism is the doctrine that the organism is the inevitable consequence of its genetic make-up, or the sum of its genes. The theory of genetic determinism is based on the Central Dogma, according to which one gene codes for one protein. But we now know that this is false, because there are at least 100 times more proteins than genes. So many different mechanisms intervene between the gene sequence in the DNA and the precise protein made under different circumstances in individual cells that it is scientifically out of the question to be able to predict the results of modified transgenic DNA.

The demise of the Central Dogma is a scientific paradigm shift as significant as the demise of the geocentric cosmology of mediaeval Christendom following Copernicus and Gallileo's discovery that the Earth is not the centre of the Universe.

3. The WTO GM trade dispute against the EU rests on the concept of "substantial equivalence" between GM crops and food and their conventional counterparts. The WTO agreement prohibits any impediment to the trade of so-called "like products", including GM products which are said to be "substantially equivalent" to their conventional counterparts. If GM food were "substantially equivalent" to non-GM food, then the EU's

mandatory labelling of GM food would be an illegal impediment to trade, under current WTO rules.

The notion of "substantial equivalence" was first conceived by the Organisation of Economic Cooperation and Development (OECD) in 1993, which concluded that "If a new food or food component is found to be substantially equivalent to an existing food or food component, it can be treated in the same manner with respect to safety."

According to this principle, certain chemical characteristics are compared between a genetically modified product and any variety within the same species, past or present. If the two are grossly similar, the GM product does not need to be rigorously tested, on the assumption that it is no more dangerous than the non-GM equivalent, which should have a long history of safe use. The biotech industry has long argued that GM produce is "substantially equivalent" to its non-GM counterpart and therefore should not undergo rigorous health or environmental studies.

But the assumption of "substantial equivalence" is scientifically preposterous. GM crops (together with animal feed and food derived therefrom) are **substantially different** to non-GM varieties because:

- their agricultural performance is intentionally very different: but contrary to biotech industry claims, GM crops often increase reliance on agricultural chemicals, reduce average yields, produce widespread crop failures, and have disastrous economic impacts on farmers;
- they are likely to be genetically unstable as a direct result of the genetic modification process itself;
- they typically contain a cocktail of foreign DNA from viruses, bacteria, plants and/ or animals (also as a direct result of the modification process);
- some of their normal metabolic processes have been altered in ways that are not fully understood;
- they may produce and contain toxic herbicides, fungicides and pesticides;
- they usually contain novel proteins and enzymes whose long term environmental and health effects have not been studied and are in any case impossible to predict, although short-term studies indicate potential human toxicity, allergenicity, and other health effects

The concept of "substantial equivalence" between GM and conventional crops was dealt a further blow on 10 November 2004 in a scientific report from the North American Free Trade (NAFTA) commission. The report, written by a group of geneticists convened under NAFTA, refuted the U.S. claim that GM maize is, for trade purposes, "substantially equivalent" to GM-free maize. (Mexican farmers had asked NAFTA to undertake the study after researchers found that cross-pollination by wind or insects carried GM maize pollen from the USA across the border into Mexico. The commission said this contamination of Mexican farms is unacceptable because the Mexican government never approved the GM hybrids, and that the contamination should be limited or stopped.) NAFTA's decision will strengthen the EU's side in the WTO trade dispute.

4. See the GM Contamination Register at www.gmcontaminationregister.org.

See "The Myth of Coexistence: Why Transgenic Crops Are Not Compatible With Agroecologically Based Systems of Production", by Miguel A. Altieri, University of California, Berkeley, available at www.organicconsumers.org/2006/article_875.cfm.

For more information about the so-called "co-existence" of GM crops with their conventional and organic varieites, see www.gmfreeireland.org/coexistence/index.php.

5. "Genetic engineering is inherently dangerous, because it greatly expands the scope for horizontal gene transfer and recombination, precisely the processes that create new viruses and bacteria that cause disease epidemics, and trigger cancer in cells."
— Dr. Mae-Wan Ho, Independent Science Panel (www.indsp.org).

For more information on the health risks of GM foods, see www.gmfreeireland.org/health/index.php.