SEEDS OF DESTRUCTION
THE MONSANTO GMO WHITEWASH

A long-term study of rats fed with GM food produced alarming results with tumour growths and deaths, but the European Commission and its food safety authority, working in collusion with the GMO lobby, are refusing to act on these findings.

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Because of the power vested in the European Commission in Brussels, Belgium, with command over a space encompassing 27 nations with more than 500 million citizens and the largest nominal world gross domestic product (GDP) of US$18 trillion, it's perhaps no surprise in this era of moral promiscuity that powerful private lobby groups such as the tobacco industry, the drug lobby, the agribusiness lobby and countless others spend enormous sums of money and provide other favours—legal and sometimes illegal—to influence policy decisions of the Commission.

This revolving door of corrupt ties between powerful private industry lobby groups and the European Commission was in full view recently with the ruling of the European Food Safety Authority (EFSA) which tried to discredit serious scientific testing on the deadly effects of a variety of Monsanto genetically modified (GM) corn.

The Cancer of Corruption

In September 2012, *Food and Chemical Toxicology*, a serious international scientific journal, released a study by a team of scientists at France's Caen University led by Professor Gilles-Eric Séralini. Before publication, the Séralini study had been reviewed over a four-month period by a qualified group of scientific peers for its methodology and was deemed publishable.

It was no amateur undertaking. The scientists at Caen carefully documented results of tests on a group of 200 rats over a two-year life span, with one group of non-GM-fed rats—a so-called control group—and the other a group of GM-fed rats.

Significantly, following a long but finally successful legal battle to force Monsanto to release the details of its own study into the safety of its NK603 maize (corn), Séralini and colleagues reproduced a 2004 Monsanto study published in the same journal and used by the EFSA for its 2009 positive evaluation of NK603.

Séralini and colleagues based their experiment on the same protocol as the Monsanto study but, critically, were testing more parameters more frequently. Furthermore, the rats were studied for much longer—their full two-year average lifetime instead of just 90 days in the Monsanto study. The long time-span proved critical. The first tumours only appeared four to seven months into the study. In the industry's earlier 90-day study on the same GM maize, Monsanto's NK603, signs of toxicity were seen but were dismissed as "not biologically meaningful" by industry and the EFSA alike. It seems that they were indeed very biologically meaningful.

The study was also done with the highest number of rats ever measured in a standard GM diet study. The researchers tested also "for the first time 3 doses (rather than two in the usual 90 day long protocols) of the R-tolerant [Roundup-tolerant] NK603 GM maize alone, the GM maize treated with R, and R alone at very low environmentally relevant doses starting below the range

of levels permitted by regulatory authorities in drinking water and in GM feed".[1]

Their findings were more than alarming. The Séralini study concluded: "In females, all treated groups died 2–3 times more than controls, and more rapidly. This difference was visible in 3 male groups fed GMOs [genetically modified organisms]… Females developed large mammary tumors almost always more often than and before controls, the pituitary was the second most disabled organ; the sex hormonal balance was modified by GMO and Roundup treatments. In treated males, liver congestions and necrosis were 2.5–5.5 times higher. This pathology was confirmed by optic and transmission electron microscopy. Marked and severe kidney nephropathies were also generally 1.3–2.3 greater. Males presented 4 times more large palpable tumors than controls…"[2]

Four times meant 400 per cent more large tumours in GM-fed rats than in normally fed ones of the control group. Because rats are mammals, their systems should react to chemicals—or, in this case, GM corn treated with Monsanto's Roundup chemical herbicide—in a similar way to those of a human test subject.[3]

In their study, Séralini and colleagues further reported: "By the beginning of the 24th month, 50–80% of female animals had developed tumors in all treated groups, with up to 3 tumors per animal, whereas only 30% of controls [non-GM-fed; W.E.] were affected. The R treatment groups showed the greatest rates of tumor incidence with 80% of animals affected with up to 3 tumors for one female, in each group."[4]

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Such disturbing results had not yet become evident in the first 90 days, the length of almost all Monsanto and agrichemical industry tests to date—a clear demonstration of how important it was to conduct longer-term tests and apparently why the industry avoided the longer tests.

Séralini and associates continued to document their alarming findings: "We observed a strikingly marked induction of mammary tumors by R alone, a major formulated pesticide, even at the very lowest dose administered. R has been shown to disrupt aromatase which synthesizes estrogens (Richard et al., 2005), but to also interfere with estrogen and androgen receptors in cells (Gasnier et al., 2009). In addition, R appears to be a sex endocrine disruptor *in vivo*, also in males (Romano et al., 2010). Sex steroids are also modified in treated rats. These hormone-dependent phenomena are confirmed by enhanced pituitary dysfunction in treated females."[5]

Roundup herbicide, by terms of the licence contract with Monsanto, must be used on Monsanto GM seeds. The seeds are in fact genetically "modified" only to resist the weed-killing effect of Monsanto's own Roundup, the world's largest-selling weedkiller.

In plain language, as another scientific study led by Professor Séralini noted: "All these commercialized cultivated GMOs have been modified to contain pesticides, either through herbicide tolerance or by producing insecticides, or both, and could therefore be considered as 'pesticide plants'."[6]

Further, Séralini *et al.* noted: "…Roundup ready crops [such as Monsanto NK603 maize; W.E.] have been modified in order to become insensitive to glyphosate. This chemical together with adjuvants in formulations constitutes a potent herbicide. It has been used for many years as a weed killer… Therefore, GM plants exposed to glyphosate-based herbicides such as Roundup…can even accumulate Roundup residues throughout their life… Glyphosate and its main metabolite AMPA [aminomethyl-phosphonic acid] (with its own toxicity) are found in GMOs on a regular and regulatory basis. Therefore, such residues are absorbed by people eating most GM plants (as around 80% of these plants are Roundup tolerant)."[7]

Suspiciously enough, Monsanto had repeatedly refused scientific requests to publish the exact chemicals used in its Roundup, aside from one—glyphosate. Monsanto argued that it was a "trade secret". Independent analyses by scientists indicated, however, that the combination of glyphosate with Monsanto's "mystery" added chemicals created a highly toxic cocktail that was shown to affect human embryo cells toxically in doses far lower than those used in agriculture.[8]

What is more than alarming in the context of Séralini's first long-term independent study of the effects of a GM diet on rats is that it took place some 20 years after US President George H. W. Bush gave the commercial release of GM seeds the green light and mandated no government safety tests before release. Bush did so following a closed-door meeting with top officials of the Monsanto Company, the world's largest GMO concern.

The US President decreed then that GM seeds were to

be permitted in the United States with not one single independent precautionary government test to determine if they were safe for human or animal consumption. It became known as the "doctrine of substantial equivalence". The European Commission dutifully aped the US substantial equivalence doctrine of "hear no bad effects, see no bad effects…hear no evil, see no evil".

EFSA "Science" Exposed

What the Séralini study has set off has been the scientific equivalent of a thermonuclear explosion. It exposed the fact that Europe's "scientific" controls on GMOs were nothing other than to accept without question the test results provided by the GMO companies themselves. As far as the irresponsible bureaucrats of the European Commission were concerned, when it came to GMOs the Monsanto fox could indeed "guard the henhouse".

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Suddenly, with worldwide attention drawn to the new Séralini results, the European Commission and its scientific food regulatory organisation EFSA clearly were under fire as never before in their history, and how they reacted was worthy of a bad Agatha Christie murder novel—only it was no novel, but a real-life conspiracy that evidently involved some form of collusion between Monsanto and the GM agrichemical cartel, European Commissioners, the EFSA's GMO Panel members, complacent major media and several Member States of the European Union, including Spain and the Netherlands.

The European Food Safety Authority was under the gun from the damning results of the long-term Séralini study. EFSA had recommended approval of Monsanto's NK603 Roundup-tolerant maize in 2009 without first conducting or ensuring any independent testing. EFSA admitted in its official journal that it relied on "additional information supplied by the applicant [Monsanto], the scientific comments submitted by Member States and the report of the Spanish Competent Authority and its Biosafety Commission". EFSA also admitted that the Monsanto tests on rats were for only 90 days.[9]

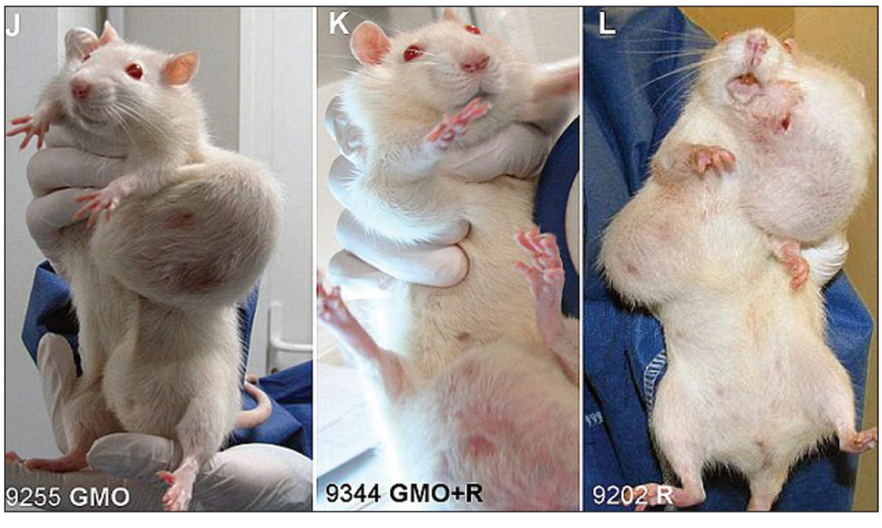
Séralini's group noted that the massive toxic effects and deaths of GM-fed rats took place well after 90 days, a reason why longer-term studies were obviously warranted.

The Spanish report cited by EFSA was itself hardly convincing and was anything but independent. It stated that "according to the current state of scientific knowledge and after examining the existing information and data provided by the Monsanto Company, the Spanish Commission on Biosafety could give a favourable opinion to the commercialisation in the EU [European Union] of maize NK603…" The scientific comments submitted by Member States seemed to include Spain and the Netherlands which applied to license the Monsanto seed in the first place.[10]

EFSA concluded at the time of NK603's approval in 2009 that "the molecular data provided [by Monsanto; W.E.] are sufficient and do not raise a safety concern". The scientific panel further declared amid scientific-sounding verbiage: "The EFSA GMO Panel is of the opinion that maize NK603 is as safe as conventional maize. Maize NK603 and derived products are unlikely to have any adverse effect on human and animal health in the context of the intended uses."[11]

Now, in September 2012, three years after the commercial introduction of Monsanto GM maize in the European Union, Séralini showed, complete with ghastly photographs, that Monsanto's GM maize demonstrably caused severe rates of cancerous tumours and early death in rats.

The EU had guidelines that were as revealing for what they did *not* say as for what they did say about what precautions were to be taken to ensure public health and safety from exposure to GM plants and their paired toxic



Shocking images of tumours in mice caused by exclusively eating GM corn.

herbicides: "Toxicological assessments on test animals are not explicitly required for the approval of a new food in the EU or the US. Independent experts have decided that in some cases, chemical analyses of the food's makeup are enough to indicate that the new GMO is substantially equivalent to its traditional counterpart… In recent years, biotech companies have tested their transgenic products (maize, soy, tomato) before introducing them to the market on several different animals over the course of up to 90 days. Negative effects have not yet been observed."[12]

Because of US government arm-twisting and the obviously powerful lobbying of the Monsanto-led GM agrichemical industry in the US and the EU, as at the time of the Séralini study no regulatory authority in the world had requested mandatory chronic animal feeding studies to be performed for edible GMOs and formulated pesticides. The only studies available were a tiny handful of 90-day rat-feeding trials carried out by the biotechnology industry and no studies longer than that, apparently on the principle that conflict of interest in an area as important as the safety of food should not be taken as a serious matter.

Revealingly, the European Union stated publicly its seemingly reassuring policy: "GMO critics claim that feeding studies with authorised GMOs have revealed negative health effects. Such claims have not been based on peer-reviewed, scientifically accepted evaluations. If reliable, scientific studies were to indicate any type of health risk, the respective GMO would not receive authorisation."[13] That was the European Union's official line until the 2012 Séralini bomb exploded in its face.

EFSA Deception and Cover-up

The September 2012 Séralini study was peer reviewed and then published in a highly respected international scientific journal. What was the response of the European Commission and EFSA? Nothing short of fraudulent deception and cover-up of their corruption by the Monsanto GM lobby.

On 28 November 2012, only a few weeks after the study was published, EFSA issued a press release with the following conclusion: "Serious defects in the design and methodology of a paper by Séralini *et al.* mean it does not meet acceptable scientific standards and there is no need to re-examine previous safety evaluations of genetically modified maize NK603." Per Bergman, who led EFSA's work, said: "EFSA's analysis has shown that deficiencies in the Séralini *et al.* paper mean it is of insufficient scientific quality for risk assessment… We believe the completion of this evaluation process has brought clarity to the issue."[14]

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Nothing could be further from the truth.

At the very minimum, the precautionary principle in instances involving even the potential for grave damage to the human population would mandate that the European Commission and EFSA should order immediate, further, serious, independent, long-term studies to prove or disprove the results of the Séralini tests. That refusal to re-examine its earlier decision to approve Monsanto GM maize, no matter what flaws might or might not have been in the Séralini study, suggested that EFSA might be trying to cover for the GM agrichemical lobby at the very least.

Instead of clarity, EFSA's statement once more fed EFSA critics who had long argued that the scientists on EFSA's GMO Panel had blatant conflicts of interest with the very GMO lobby that they were supposed to regulate.

Corporate Europe Observatory, an independent corporate watchdog group, noted about the EFSA response: "…EFSA failed to properly and transparently appoint a panel of scientists beyond any suspicion of conflict of interests; and it failed to appreciate that meeting with Europe's largest biotech industry lobby group to discuss GMO risk assessment guidelines in the very

middle of a[n] EU review undermines its credibility."[15]

More damaging for the shoddy EFSA cover-up on behalf of Monsanto was the fact that over half of the scientists involved in the GMO Panel—which positively reviewed Monsanto's study for GM maize in 2009, leading to its EU-wide authorisation—had conflicts of interest with the biotech industry.[16]

A report by Corporate Europe Observatory found that more than half of the GMO Panel experts who signed the approval had conflicts of interest. The conflicts ranged from receiving research funding from the biotechnology industry and being a member or collaborator in a pro-biotech industry association to writing or reviewing industry-sponsored publications. The report also revealed a conflict of *scientific* interests, with some Panel members involved in working on the creation of transgenic plants, including potatoes, with antibiotic-resistant marker genes including nptII. Although none of EFSA's GMO Panel members was a medical expert in the use of antibiotics in human medicine, the members decided that neomycin and kanamycin were antibiotics with "no or only minor therapeutic relevance". In 2005, the World Health Organization classified these antibiotics as "critically important".[17]

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Dutch scientist Harry Kuiper, chair of the EFSA GMO Panel and who has close links to the biotechnology industry, played a key role in the framing of this disputed key scientific advice. Kuiper himself is an open advocate of fewer controls on GM seed proliferation in the European Union. He has led the EFSA GMO Panel since 2003, during which time EFSA went from no GMO approvals to 38 GM seeds approved for human consumption. The criteria for approval were developed by Kuiper for EFSA in cooperation with Monsanto and the GMO industry and a Monsanto pseudoscientific front group called ILSI, the Washington-based International Life Sciences Institute, between 2001 and 2003.

In 2011, the board of the noble-sounding ILSI was comprised of senior people from Monsanto, ADM (one of the world's biggest purveyors of GM soybeans and corn), Coca-Cola, Kraft Foods (a major proponent of GMO in foods) and Nestlé (another giant food industry GMO user).[18]

One critic of the blatant conflict of interest in having the top EU food safety regulator in bed with the industry whose practices he is mandated to assess objectively noted: "During this period, Harry Kuiper and Gijes Kleter (both members of the EFSA GMO Panel) were active within the ILSI Task Force as experts and as authors of the relevant scientific publications. It is a scandal that Kuiper has remained as Chair of EFSA's GMO Panel since 2003, and that he is still Chair in spite of the massive criticism directed at the Panel from NGOs and even from the Commission and EU member states."[19]

The brazen conflicts of interest between Monsanto and the agribusiness lobby and the EFSA went further. In May 2012, Professor Diána Bánáti was forced to resign as Chair of the EFSA Management Board when it was learned that she planned to take up a professional position at the Monsanto-backed ILSI in Washington.

In 2010, the same Diána Bánáti had been forced to resign not as EFSA Chair but as a simultaneous Board Member of ILSI. Public interest groups made calls for her to resign from EFSA, but to no avail.[20] At ILSI, she will be able to use her expertise and contacts gained from working for EFSA to help GMO companies like Monsanto and other food industry companies influence policy across the world.

In sum, it came as no surprise to those familiar with the notorious "revolving door" between the GMO industry and the regulatory body entrusted with making independent decisions on GMO risks in the EU that EFSA condemned the Séralini study results. Most telling, however, of the brazen pro-GMO industry bias of EFSA's GMO Panel members was the fact that the final ruling statement by the EFSA GMO Panel reviewing Séralini's results announced that "serious defects in the design and methodology" mean that the paper "does not meet acceptable scientific standards and there is no need to re-examine previous safety evaluations of genetically modified maize NK603".[21]

EFSA is not the only source of blatant and reckless pro-GMO sentiment in Brussels. Some weeks before the release of the embarrassing Séralini study, Anne Glover, chief scientific adviser of the European Commission, said in an interview on 24 July 2012: "There is no substantiated case of any adverse impact on human health, animal health or environmental health, so that's pretty robust evidence, and I would be

confident in saying that there is no more risk in eating GMO food than eating conventionally farmed food." She added that the precautionary principle also no longer applies,[22] which means that the EU should not err on the side of caution on the approval of GMOs.

If Professor Glover's office and the corrupt EFSA GMO Panel members had any pretence of scientific responsibility, they would have immediately called for multiple, independent and similar long-term rat studies to confirm or disprove the Séralini results.

They, and the Monsanto GMO lobby influencing them, clearly had no desire to do anything but try to slander the Séralini group with vague accusations, and hope that the obedient international media would take the headline and close the embarrassing story. It was typical of the entire history of the spread of patented GM seeds and paired toxic herbicides like Roundup. ∞

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F. William Engdahl's article, "Seeds of Destruction: The Monsanto GMO Whitewash", can be viewed at http://tinyurl.com/cnu3r4w. For more information and to access Mr Engdahl's articles on war, peak oil, geopolitics, the financial tsunami, GMOs and more, visit his website http://www.engdahl.oilgeopolitics.net.

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