Glyphosate is an antibiotic and Japanese knotweed is a Glyphosate-Resistant (GR) Super Weed

- Glyphosate was patented in the US as an antibiotic, acting against a wide range of pathogenic organisms. That is why it kills off many beneficial bacteria in the guts of humans and animals and allows toxic ones such as *clostridium* spp. to prevail. In January 2013 the Chief Medical Officer for England Dame Sally Davies announced that antibiotic-resistant diseases posed an 'apocalyptic' threat.[1] She told MPs that the issue should be added to national risk register of civil emergencies and placed the blame firmly on doctors, farmers and vets for overuse. This is a drop in the ocean compared with the global use of glyphosate.[2] Glyphosate is used to desiccate crops and those eating foods that are not organic are consuming residues every day in staple foods. The patent was granted to Monsanto US in 2010. Which other companies that produce glyphosate knew? Presumably Syngenta must have known, otherwise how could its parent company AstraZeneca predict that cancer *"deaths are estimated to reach 12 million by 2030*"?
- In the US Genetically Engineered (GE) Glyphosate-tolerant crops systems, super weeds no longer respond to chemicals. *The emergence and rapid spread of GR weeds has driven rising herbicide use in all three Herbicide-Tolerant crops, especially in recent years*.
- Spraying with the same chemical repeatedly makes them more resistant (& stronger).
- Agricultural Corporations all make their own brands of glyphosate: the secret ingredients act as detergents or surfactants; they help penetration but make the glyphosate far more toxic.
- These formulated glyphosates have not been tested by European Regulators.
- Glyphosate was developed under the erroneous belief that the enzyme it inhibits in plants, which is essential for the biosynthesis of certain amino acids, is not found in animals and humans.
- That is untrue. Absorption of nutrients in animals and humans is via the gut microbiome; the collective genome of organisms inhabiting our body has an identical enzyme system which involves 5-enolpyruvylshikimate-3-phosphate synthase.

Glyphosate preparations authorised by the Chemicals Regulation Directorate (CRD)
At the present time the CRD lists on its approved pesticides database 187 different glyphosate products that are licenced to be sold as suitable for the amateur gardener and 211 for professional use.[3]

Reply to Rob Mason
Head of Regulatory Policy
Chemicals Regulation Directorate – Protecting the health of people and the environment

This is precisely the reason I addressed my letter to the Health and Safety Executive
In August 2013, we had samples of water tested for glyphosate. There was glyphosate in our drinking water and six times the level in the Clyne River draining from previous industrial areas where glyphosate had been used on Japanese knotweed. Although there were only low concentrations in our tap water, these were of the order of concentrations found in a study in

[1] http://www.theguardian.com/society/2013/jan/23/antibiotic-resistant-diseases-apocalyptic-threat
[2] http://www.monsanto.com/products/Documents/glyphosate-background-materials/Agronomic%20benefits%20of%20glyphosate%20in%20Europe.pdf
[3] https://secure.pesticides.gov.uk/pestreg/prodlist.asp?pageno=1&origin=prodsearch

2013 which showed that breast cancer cell proliferation is accelerated by glyphosate in extremely low concentrations:[4] "*The present study used pure glyphosate substance at log intervals from 10^{-12} to 10^{-6} M. These concentrations are in a crucial range which correlated to the potential biological levels at part per trillion (ppt) to part per billion (ppb) which have been reported in epidemiological studies."* In the UK the incidence of breast cancer almost doubled between 1975 and 2010. I do not know the breast cancer figures for Swansea but perhaps Dr Ruth Hussey, the CMO for Wales could enlighten us.

Glyphosate was patented in the US, first as an antibiotic in 2002[5] then as an antiprotozoal agent in 2003[6]

REFERENCE TO RELATED APPLICATIONS

This application claims the benefit of U.S. provisional application Ser. No. 60/407,032, filed Aug. 30, 2002, the entire disclosure of which is herein incorporated by reference.

SUMMARY OF INVENTION

Among the various aspects of the present invention is a method for treating a subject infected or susceptible to an infection by a pathogen containing the enzyme 5-enolpyruvoylshikimate-3-phosphate synthase. Briefly, therefore, the present invention is directed to a method for therapeutically or prophylactically treating a subject for a pathogenic infection, the method comprising administering to the subject glyphosate or a salt, ester or other derivative thereof and a dicarboxylic acid or a derivative thereof.

The present invention is further directed to formulations for the treatment of pathogenic infections in a subject in need thereof. The formulation comprises a glyphosate or a salt, ester or other derivative thereof, a dicarboxylic acid or a derivative thereof, and a pharmaceutically acceptable vehicle. There is a long list of pathogens, (which include parasites) that are susceptible to glyphosate.

Another patent for glyphosate was filed in 2003 for its use as an anti-protozoal agent (against diseases such as malaria) Assignee: Monsanto Technology; Filed 2003 and granted 2010.

The Department of Health Campaign and European Antibiotic Awareness Day (EAAD) 'Antibiotic-resistant diseases an apocalyptic threat'[7]

When the CMO Prof Dame Sally Davies ran her campaign against the misuse of antibiotics leading to antibiotic resistance ('*an apocalyptic threat*') in March 2013, I wrote to her to say I thought that chemical contamination of the environment posed a more critical risk. In fact technically we were both correct. She blamed doctors, vets and farmers for antibiotic overuse but this is a drop in the ocean compared with the massive amounts of glyphosate used globally. Glyphosate is a very powerful antibiotic and those eating foods that are not organic are consuming residues every day in staple foods. EAAD, held on November 18th, is a Europe-wide public health initiative which encourages responsible use of antibiotics. The initiative is supported in England by the Department of Health and its Advisory Committee on Antimicrobial Resistance and Healthcare Associated Infections (ARHAI).

Glyphosate-Resistant Super-weeds: an economic reason for not spraying chemicals

It is a waste of the Council's money to spray glyphosate on invasive weeds every year, because as we explained in detail in our letter to Judith Hackitt of HSE,[8] invasive weeds in

[4] http://www.ncbi.nlm.nih.gov/pubmed/23756170

[5] http://www.google.com/patents/US7771736

[6] http://patft.uspto.gov/netacgi/nph-Parser?Sect1=PTO1&Sect2=HITOFF&d=PALL&p=1&u=%2Fnetahtml%2FPTO%2Fsrchnum.htm&r=1&f=G&l=50&s1=7771736.PN.&OS=PN/7771736&RS=PN/7771736

[7] http://www.theguardian.com/society/2013/jan/23/antibiotic-resistant-diseases-apocalyptic-threat

the UK are like the Glyphosate-Resistant Super weeds which have developed in GM herbicide-tolerant crops in the US. Even the Chemical Companies have admitted to weed resistance. A press release from Dow in January 2014 urges the USDA to authorise their new GM corn and soy tolerant to a combination of 2,4-D (part of the Agent Orange defoliant) and glyphosate.[9] "*New data from November of 2013 indicate an astonishing 86 percent of corn, soybean and cotton growers in the South have herbicide-resistant or hard-to-control weeds on their farms. The number of farmers impacted by tough weeds in the Midwest has climbed as well, and now tops 61 percent. Growers need new tools now to address this challenge.*"

Northern Indiana. Giant Ragweed (3 m) resistant to glyphosate. Farm workers have to weed it by hand. This is one of nine different weeds that commonly occur. (By 2014, 22 have been documented)

2012 Japanese knotweed invasion around a proposed building site in the Swansea Valley[10] "*They were 2-3 metres in height and formed a closed canopy*."

[8] http://farmwars.info/?p=12491 or http://tinyurl.com/put7ew3

[9] http://newsroom.dowagro.com/press-release/dow-agrosciences-statement-about-usda-announcement-regarding-draft-environmental-impac

[10] http://www.swansea.gov.uk/index.cfm?articleid=15838

No glyphosate usage records are kept by the City & County Council
Unable to obtain historical usage figures, we were given a one-month "snap shot" from the Contractor: April to May 2013 from which had some idea of the vast amounts sprayed each year and to which the citizens of Swansea are exposed.

The problem of super weeds in GM crops was admitted by the CEO of Syngenta
Even Michael Mack, CEO of Syngenta, admitted on Hard Talk[11] with Stephen Sackur, that the GMO Industry had got it wrong. GM crops did not reduce the amount of pesticide used, they in fact increased it. In the US the total herbicide volume applied to GM Corn, Cotton and Soybeans increased from 240,500,000 lbs/year in 1994 to 301,000,000 lbs/year in 2010.[12] Has the CEO of Syngenta admitted this to Environment Minister Owen Paterson? I doubt that he has, otherwise the Government might not be so keen on foisting GM Glyphosate-tolerant crops on farmers.

A Report published in 2014 by the USDA on GMO crops.[13]
Since the introduction of GMO crops in 1996 "*questions persist regarding their economic and environmental impacts, the evolution of weed resistance, and consumer acceptance."*
In that case, why has the British Government joined forces with Monsanto, EFSA and the EU Commission[14] to fight civil society in the EU Court to defend the right to import Monsanto's transgenic soybean Intacta® which produces an insecticide and is resistant to glyphosate herbicides such as Roundup®?

There are no independent Regulatory Bodies
I presume that you read our letter to Judith Hackitt.[15] In it we have shown that all the Committees that you quote as being independent have members with conflicts of interest; the Advisory Committee on Pesticides (ACP), the European Safety Authority (EFSA) and the European Commission (EC). Professor Anne Glover Chief Scientific Officer to the European Union also has conflicts of interests.[16] In fact the Rapporteur Member State (Germany) (BfR) regulatory body that you mention, which has just given glyphosphate a preliminary clean bill of health,[17] has two members from Bayer CropScience, (which manufactures Super Strength Glyphosate) and two members from BASF (which makes a chemical used in glyphosate production).[18] In addition, members of the EFSA GMO Panel have close associations with the International Life Sciences Institute (ILSI), the membership of which comprises 61 Global Corporations[19] (including the six Agrochemical Giants) with massive resources that are seeking to control the world's food supply. The Chairman of Cancer Research UK founded Syngenta and the CRUK website states that there are no links between pesticides and cancer. The WHO World Cancer Report 2014 on the Global Battle against Cancer[20] mentions

[11] http://www.bbc.co.uk/iplayer/episode/b03p7zmn/HARDtalk_Mike_Mack_CEO_Syngenta/
[12] http://www.motherjones.com/tom-philpott/2014/01/usda-prepares-greenlight-chemical-war-weeds
[13] www.ers.usda.gov/publications/err-economicresearch-report/err162.aspx
[14] http://www.testbiotech.de/en/node/898
[15] http://farmwars.info/?p=12491 or http://tinyurl.com/put7ew3
[16] http://farmwars.info/?p=12491 or http://tinyurl.com/put7ew3 page 52
[17] http://www.bfr.bund.de/en/the_bfr_has_finalised_its_draft_report_for_the_re_evaluation_of_glyphosate-188632.html
[18] http://www.bfr.bund.de/en/members_of_bfr_committee_for_pesticides_and_their_residues-53534.html http://www.bfr.bund.de/en/members_of_bfr_committee_for_pesticides_and_their_residues-189322.html 2014
[19] http://www.ilsi.org/Europe/Pages/currentmembers.aspx
[20] www.iarc.fr.en/media-centre/pr/2014/pdfs/pr224_E.pdf

air pollution, but not pesticide pollution. In the Report prepared for the United Nations Environment Program and the World Health Organization compiled by a group of 50 experts: An assessment of the State of Science of Endocrine Disruptors[21] the chemical glyphosate was not even considered as a candidate, despite reports of its endocrine-disrupting effects[22] and the fact that the amounts of glyphosate used on crops in the US has increased almost 10-fold; from 27 million pounds in 1992 to 250 million pounds in 2009.

Endocrine-related disorders in humans have increased over the past 40 years

Were the 50 scientists chosen by WHO and UNEP to search for a chemical to explain the following statistics looking in the wrong direction?

- Increases in low semen quality in young men (up to 40%)
- Incidence of genital malformations has increased over time
- Adverse pregnancy outcomes and birth defects has increased in many countries
- Neurobehavioural disorders related to thyroid dysfunction has increased
- Endocrine-related cancers (breast, endometrial, ovary, prostate, testicular and thyroid cancers) have been increasing over the past 40‑50 years
- Earlier onset of breast development in young girls which leads to breast cancer
- The prevalence of obesity and type 2 diabetes is increasing. The WHO estimates that 1.5 billion adults worldwide are overweight or obese and that the number with type 2 diabetes increased from 153 million to 347 million between 1980 and 2008.

The German Federal Institute of Risk Assessment (BfR) Symposium on reassessment of the health effects of glyphosate-containing pesticides

This was held in Berlin on 20/01/2014. The press release announced an odd conclusion by the BfR.[23] Glyphosate: no more poisonous than previously assumed, although a critical view should be taken of certain co-formulants. *The BfR has included a toxicological assessment of these tallowamines in the report*. Previous independent assessments have found these chemicals, which function as detergents or surfactants whose purpose is to help the herbicide to penetrate the plant, are very toxic to humans. In the first paper nine formulations were studied.[24] They showed that all formulations are more toxic than glyphosate alone. Among them, POE-15 appears to be the most to be the most toxic principle against human cells, even if others are not excluded. A paper in 2014 confirmed that G formulations have adjuvants working together with the active ingredient and causing toxic effects that are not seen with acid glyphosate.[25]A paper published in December 2013[26] showed that: "*Roundup® was by far the most toxic among the herbicides and insecticides tested. Most importantly, 8 formulations out of 9 were several hundred times more toxic than their active principle. Our results challenge the relevance of the Acceptable Daily Intake for pesticides because this norm is calculated from the toxicity of the active principle alone.*" However, the European Commission and the European Crop Protection rejected the paper. Frédéric Vincent, the spokesperson for Health and Consumer Affairs, stated that: "*the report did not provide any*

[21] http://unep.org/pdf/9789241505031_eng.pdf
[22] http://www.ncbi.nlm.nih.gov/pubmed/19539684
[23] http://www.bfr.bund.de/en/press_information/2014/03/glyphosate__no_more_poisonous_than_previously_assumed__although_a_critical_view_should_be_taken_of_certain_co_formulants-188898.html
[24] Ethoxylated adjuvants of glyphosate-based herbicides are active principles of human cell toxicity. Toxicology 2013. http://dx.doi.org/10.1016/j.tox.2012.09.006
[25] http://www.ncbi.nlm.nih.gov/pubmed/24434723 Glyphosate Commercial Formulation Causes Cytotoxicity, Oxidative Effects, and Apoptosis on Human Cells: Differences With its Active Ingredient. Chaufan G et al.
[26] http://www.hindawi.com/journals/bmri/aip/179691/

new information." He said: "*It looks like that, in this paper, the test design is very much targeted towards provoking an expected effect, so no reason for a 'crisis-intervention.*" The European Crop Protection Association (ECPA) - whose members include many of the world's largest pesticides manufacturers, including BASF Chemicals, Dow Agrosciences, Monsanto and Syngenta - said the new research paper was not up to sufficient standards of scientific enquiry to contribute to the literature on pesticide safety. "*The testing model used by the authors is inappropriate for drawing any conclusions regarding real life toxicity relevant to humans*"

In a document written on 13th December 2013 we predicted that glyphosate would be whitewashed for its review in the EU and US[27]
We were correct. Séralini's 2-year feeding study in rats published in the Journal *Food and Chemical Toxicology* showed what was happening in humans and animals. Significantly, many of the most damaging effects came after 90 days, the officially mandated feeding period of feeding trials by regulatory approval of GMOs. On 27 November 2013, more than a year after it had been published and after a Monsanto scientist had been appointed to a newly created post of associate editor to the FCT, Editor Wallace Hayes wrote to Séralini's team asking them to retract their paper, not because there was fraud or error, but on the grounds that it was 'inconclusive'.[28] This action, which violates science and ethics, has attracted a chorus of condemnation from scientists around the world. A letter was presented to the Committee on Publication Ethics (COPE) requesting them to reverse the decision.

Professor Andreas Hensel, President of the Federal Institute of Risk Assessment (BfR)
In a press release in March 2014, Professor Dr Dr Andreas Hensel said on behalf of BfR: *These new studies do not suggest that glyphosate has carcinogenic or embryo-damaging properties or that it is toxic to reproduction in test animals. The data do not warrant any significant changes in the limit values of the active ingredient.*

However, a statement in the BfR press release shows the ignorance of the pesticides industry about the physiology of absorption from the gut of humans and animals
Worldwide, glyphosate is one of the most common active ingredients in pesticides used to prevent unwanted plant growth in plant cultivation or to accelerate the ripening process of crops (desiccation). Glyphosate inhibits an enzyme which is essential for the biosynthesis of certain amino acids. This enzyme is not found in animals and humans.
Humans and animals can only absorb nutrition via the bacteria in their gut; the gut microbiome. Ask any up-to-date gastrointestinal physician or physiologist. Glyphosate residues cause inflammatory changes in the gut lining and destroy its absorptive ability in humans and animals, chelating minerals and interfering with multiple metabolic processes.

The gut microbiome; the collective genome of organisms inhabiting our body
Chatelier, E.L. *et al.* Richness of human gut microbiome correlates with metabolic markers *Nature* 29 August 2013; 500: 541-550. [29]
"*We are facing a global metabolic health crisis provoked by an obesity epidemic*." In a multi-author study of obese and non-obese individuals, those with "*low bacterial richness in the gut (23% of the population) are characterized by more marked overall adiposity, insulin resistance and dyslipidaemia and a more pronounced inflammatory phenotype when*

[27] http://farmwars.info/?p=12169
[28] Retracting Seralini Study Violates Science and Ethics. Dr Mae Wan Ho and Prof Peter Saunders Science in Society 61 Spring 2014: Page 20 for a full account.
[29] http://www.nature.com/nature/journal/v500/n7464/abs/nature12506.html

compared with those with high bacterial richness." "*Low richness of gut microbiota has been reported in patients with inflammatory bowel disorder*". "*Also notable diversity differences were observed between the urban US population and rural populations from two developing countries*". Current research is underway to try to find the links between obesity, type 2 diabetes and cancers.

Diet rapidly and reproducibly alters the human gut microbiome[30] "*Long-term dietary intake influences the structure and activity of the trillions of microorganisms residing in the human gut*"… *In concert, these results demonstrate that the gut microbiome can rapidly respond to altered diet, potentially facilitating the diversity of human dietary lifestyles*.

An obesity-associated gut microbiome with increased capacity for energy harvest[31]

"The worldwide obesity epidemic is stimulating efforts to identify host and environmental factors that affect energy balance. Comparisons of the distal gut microbiota of genetically obese mice and their lean littermates, as well as those of obese and lean human volunteers have revealed that obesity is associated with changes in the relative abundance of the two dominant bacterial divisions, the Bacteroidetes and the Firmicutes."

Effects on pathogens in farm animals: evidence that glyphosate destroys beneficial bacteria and allows harmful ones, such as salmonella, and clostridium, to flourish

There are several papers that describe the action of glyphosate in suppressing beneficial pathogens in farm animals, thus allowing dangerous pathogens to take over.[32] This has been shown to occur with poultry.[33] Glyphosate suppresses the antagonistic effect of Enterococcus spp. on *Clostridium botulinum*.[34]

"In the search for the causes of serious diseases of entire herds of animals in Northern Germany, especially cattle, glyphosate has repeatedly been detected in the urine, faeces, milk and feed of the animals."[35] Even more alarming, glyphosate has been detected in the urine of both farmers and city dwellers.[36] This could explain why the incidence of food poisoning is not decreasing in humans.

When humans ingest glyphosate residues occurring in staple foods and in GM foods, they are continually having their beneficial bacteria destroyed

This was the basis of Samsel & Seneff's paper[37] which showed that Glyphosate's suppression of Cytochrome P450 enzymes and amino acid biosynthesis by the gut microbiome has led to a variety of conditions which globally are assuming epidemic proportions in those on a Western diet, including gastrointestinal disorders, obesity, depression, autism, infertility, cancer and Alzheimer's disease.

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[30] http://www.nature.com/nature/journal/vaop/ncurrent/full/nature12820.html

[31] http://www.ncbi.nlm.nih.gov/pubmed/23571517

[32] http://link.springer.com/article/10.1007/s00284-012-0098-3 Clair, E. *et al*. Effects of Roundup® and Glyphosate on Three Food Microorganisms: *Geotrichum candidum*, *Lactococcus lactis subsp. cremoris* and *Lactobacillus delbrueckii subsp. bulgaricus*.

[33] http://link.springer.com/article/10.1007/s00284-012-0277-2 Shehata, A.A. *et al.* The Effect of Glyphosate on Potential Pathogens and Beneficial Members of Poultry Microbiota *In Vitro*

[34] https://www.ncbi.nlm.nih.gov/m/pubmed/23396248/?i=4&from=/15071029/related

[35] http://www.ithaka-journal.net/druckversionen/e052012-herbicides-urine.pdf

[36] http://www.ithaka-journal.net/herbizide-im-urin?lang=e
http://www.foeeurope.org/weed-killer-glyphosate-found-human-urine-across-Europe-130613

[37] http://www.mdpi.com/1099-4300/15/4/1416 Samsel and Seneff (2013) Glyphosate's suppression of Cytochrome P450 enzymes and amino acid biosynthesis by the gut microbiome: Pathways to Modern Diseases

Lord de Mauley wrote to Lord Hylton about this paper
"The review paper by Samsel and Seneff referred to by Dr Mason suggests possible links between exposure to glyphosate and a wide range of human diseases. CRD notes that many of the proposed associations between glyphosate and human disease seem hypothetical rather than being based on convincing evidence to support cause and effect."
Nevertheless the CRD agreed to submit this paper to Germany, the Rapporteur Member State for glyphosate for its review of the chemical. Did you do so?

As Head of Regulatory Policy at the CRD, was this your personal assessment?
In fact, these are some of the diseases that we have in Swansea. There are global epidemics of obesity, autism, type 2 Diabetes, cancers, Alzheimer's and other neurological degenerative disorders, such as Parkinson's and Motor Neurone Disease. This morning (10/03/2014) on BBC Wales the Obesity crisis in Wales was described as "a tsunami."

We sent the HSE a further Review by Samsel and Seneff: Glyphosate, pathways to modern diseases II: Celiac sprue and gluten intolerance.[38]
Abstract: *"Celiac disease, and, more generally, gluten intolerance, is a growing problem worldwide, but especially in North America and Europe, where an estimated 5% of the population now suffers from it. Symptoms include nausea, diarrhea, skin rashes, macrocytic anemia and depression. It is a multifactorial disease associated with numerous nutritional deficiencies as well as reproductive issues and increased risk to thyroid disease, kidney failure and cancer. Here, we propose that glyphosate, the active ingredient in the herbicide, Roundup®, is the most important causal factor in this epidemic. Fish exposed to glyphosate develop digestive problems that are reminiscent of celiac disease. Celiac disease is associated with imbalances in gut bacteria that can be fully explained by the known effects of glyphosate on gut bacteria.*
Characteristics of celiac disease point to impairment in many cytochrome P450 enzymes, which are involved with detoxifying environmental toxins, activating vitamin D3, catabolizing vitamin A, and maintaining bile acid production and sulfate supplies to the gut. Glyphosate is known to inhibit cytochrome P450 enzymes.
Deficiencies in iron, cobalt, molybdenum, copper and other rare metals associated with celiac disease can be attributed to glyphosate's strong ability to chelate these elements. Deficiencies in tryptophan, tyrosine, methionine and selenomethionine associated with celiac disease match glyphosate's known depletion of these amino acids. Celiac disease patients have an increased risk to non-Hodgkin's lymphoma, which has also been implicated in glyphosate exposure. Reproductive issues associated with celiac disease, such as infertility, miscarriages, and birth defects, can also be explained by glyphosate. Glyphosate residues in wheat and other crops are likely increasing recently due to the growing practice of crop desiccation just prior to the harvest. We argue that the practice of "ripening" sugar cane with glyphosate may explain the recent surge in kidney failure among agricultural workers in Central America. [39]*We conclude with a plea to governments to reconsider policies regarding the safety of glyphosate residues in foods.*

Did you see Dr Nancy Swanson's Zip file with graphs and information about how glyphosate and planting with GE crops correlates with disease processes in the US?
Total glyphosate applications to wheat

[38] http://sustainablepulse.com/2014/02/19/roundup-linked-global-boom-celiac-disease-gluten-intolerance/#.UxTmlnzivcu
[39] http://www.nature.com/ki/journal/v68/n97s/full/4496413a.html

Alzheimer's Disease Age-adjusted Deaths from Alzheimer's
Autism Number of Children (6-21) with Autism served by IDEA
Congenital birth defects (US)
Celiac Disease Hospital diagnosis discharge diagnosis of Celiac Disease
Senile Dementia Age-adjusted deaths from Senile Dementia
Diabetes Annual incidence of Diabetes
Diabetes % US population with Diabetes – age adjusted
End Stage Renal Disease Deaths Age-adjusted End Stage Renal Disease Deaths
% GE Crops grown in the US
Glyphosate applications to corn and soy
Hepatitis C Hospital discharge diagnosis of Hepatitis C
Hypertension Age-adjusted Deaths due to Hypertension
Inflammatory bowel disease Hospital discharge diagnoses of Crohn's and Ulcerative Colitis
Intestinal infection Age-adjusted deaths due to intestinal infection
Deaths due to intestinal infection against glyphosate on wheat
Kidney and Renal Pelvis Cancer incidence age adjusted
Disorders of lipoprotein metabolism Age-adjusted deaths due to Hyperlipoproteinaemia and Hypercholesterolaemia
Liver and intrahepatic Bile duct cancer incidence (age-adjusted)
Obesity Age-adjusted deaths due to obesity
Parkinson's Disease Age-adjusted deaths due to Parkinson's Disease
Peritonitis Hospital discharge diagnosis of Peritonitis
Stroke Age-adjusted deaths due to stroke
Sweetener delivery US per capita sweetener delivery

The British Government[40] has joined forces with Monsanto, EFSA and the EU Commission to fight civil society in the EU Court to defend the right to import Monsanto's transgenic soybean Intacta® which produces an insecticide and is resistant to glyphosate herbicides such as Roundup®.

THREE DIFFERENT VIEWS OF GM CROPS

Defra's response to Steve Yandall's FOI request on GM crops Ref: DWOE000335317

Q3: *Defra has not undertaken a specific review of research on GM health impacts… However we do try to keep abreast of any significant new research in this area, and from this are not aware of any reliable evidence that existing GM foods or feeds pose a health concern. The EU risk assessment process for proposed GM products will take account of any relevant published research. With a robust assessment regime in place, there are no plans to introduce specific liability provisions in relation to GM food or feed safety.*

Q8*: The issue of weed resistance needs to be seen in context. The potential for resistance to develop is not an issue specific to GM crops, and it is something that can be managed by adopting an appropriate mix of weed control strategies. If in due course GM herbicide-tolerant crops were to be grown here, Defra would expect to work with the farm sector to ensure that good practice is followed for resistance management.*

Q9*: We do not understand why you think that GM crops would mean less land for wildlife in the UK. The risk assessment of proposed GM crops considers their likely impact on biodiversity, and they will not be approved if the evidence suggests that there would be a negative effect.*

[40] http://www.testbiotech.de/en/node/898

EFSA's GMO Panel recommendations to the European Commissioners to authorise
Although EFSA had stated in Abstracts with regard to previous GM authorisations that there were no effects on human or animal health or the environment, in the main body of the document, the Panel had admitted to the *"problems of reduction in farmland biodiversity, selection of weed communities and selection of herbicide resistant weeds and destruction of food webs and the ecological functions they provide."* Nevertheless, each time EFSA GMO Panel has approved the relevant GM, but covered itself by saying*: "The magnitude of these potential adverse environmental effects will depend on a series of factors including the specific herbicide and cultivation management applied at farm level, the crop rotation...etc. and recommends "case-specific monitoring."* Presumably Defra acquired their inaccurate information about super weeds directly from the EFSA Reports.

The reality in the US[41]
"The vast majority of Glyphosate Resistant (GR) weed populations have emerged in Roundup® Ready cropping systems since the year 2000…The first GR weed population confirmed in the U.S., reported in 1998, was rigid ryegrass, infesting several thousand acres in California almond orchards. Beginning in the year 2000 in Delaware, GR mares-tail (horseweed) rapidly emerged in Roundup® Ready soybeans and cotton in the East and South. Less than a decade later, GR biotypes of nine species are now found in the U.S., and infest millions of acres of cropland in at least 22 states (see Table 4.3). The emergence of glyphosate resistance has accelerated in recent years. By early 2009, as many as 14,000 sites on up to 5.4 million acres were documented to be infested by populations of nine Glyphosate-resistant weeds. This represents more than a four-fold increase in the number of sites, and roughly a doubling of acreage, plagued by resistant weeds. Increasing glyphosate application rates and/or the number of applications will usually buy a little time, but invariably accelerates the emergence of full-blown resistance. This is the classic definition, and regrettable outcome, of what scientists call the "pesticide treadmill." Below, we present case studies of three particularly troubling GR weeds: pigweed, horseweed and giant ragweed. GR Palmer amaranth infestations can trigger abandonment of cropland. Some 10,000 acres of cotton in Georgia in 2007 were abandoned because of the presence of GR Palmer amaranth,[42] 20 examples of farm fields pushed over the "cliff" by resistant weeds.

A mechanism for weed resistance has been identified
Two articles appeared in the same issue of PNAS. In a commentary on the second, Bowles stated: [43] *"Now an important new resistance mechanism is evident in glyphosate resistant populations of the particularly damaging weed species, Amaranthus palmeri. This weed infests large areas of US crop land, can devastate crop yield, and, together with some other Amaranthus species, must be controlled to ensure productivity of global crops. The report by Gaines et al. in this issue of PNAS, documents that this weed species has shown yet another evolutionary tool, gene amplification, to resist an herbicide. Although gene amplification is a well-characterized phenomenon in plant evolution, here we see this response evolving in plants under anthropogenic selection pressures."*

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[41] Critical Issue Report: Impacts of Genetically Engineered Crops on Pesticide Use in the United States: The First Thirteen Years. Nov 2009 Charles Benbrook
http://www.organic-center.org/science.pest.php?action=view&report_id=159#

[42]
http://www.pnas.org/content/107/3/1029.abstract?ijkey=e2066eddc44aa8e0f054b2e1ccb0fdcc5a6b000c&keytype2=tf_ipsecsha Gene amplification confers glyphosate resistance in *Amaranthus palmeri*

[43] http://www.pnas.org/content/107/3/955.full Accompanying article by Gene amplification delivers glyphosate-resistant weed evolution by Stephen B. Powles.

USDA Report on GM Crops in 2014: the US finally displays some disenchantment[44]
Extract from Summary: *"Despite the rapid increase in the adoption of corn, soybean, and cotton GE varieties by U.S. farmers, questions persist regarding their economic and environmental impacts, the evolution of weed resistance, and consumer acceptance.*"

Uncontrolled spread of GE crops: Report on the spread of GE Oil Seed Rape[45]
GE plants have been grown for 30 years and commercially for 20 years. The Report provides a global overview of the uncontrolled escape of GE oil seed rape (OSR) in various regions of the world (US, Canada, Japan, Australia, Switzerland and Germany). In Switzerland where no imports of GE OSR have been allowed since 2008: "*Transgenic OSR was able to survive along rail tracks for long periods because extensive glyphosate spraying of these areas offer them selective advantages.*" In Japan: "*plants that proved to be resistant to glyphosate or glufosinate were found at ports and along transportation routes to industry plants where OSR is processed*."

Transgene Escape: Global atlas of uncontrolled spread of genetically engineered plants[46]
This report makes several recommendations. Most importantly, measures should be put in place immediately to stop any further uncontrolled spread of genetically engineered plants into the environment as far as possible. Comprehensive regulation should be established to strengthen the precautionary principle and the release of genetically engineered organisms should not be allowed if they cannot be retrieved.

Immune suppression in both invertebrates and vertebrates due to pesticides; massive declines in wildlife secondary to epidemics of disease from emerging pathogens
We wrote the following on 09/04/2013 "*Why are scientists who write about massive declines in global wildlife due to emerging pathogens and biodiversity losses (since 1998) still looking for the 'magic bullet'? There are sinister events that signify that the environment is acutely sick; catastrophic (but little publicised) declines in a wide variety of species in the US (and later in Europe); honey bees, frogs, bats, bumblebees, butterflies and birds due to diseases from fungal and other pathogens. At least eight papers have been published in the journal* ***Nature*** *in the last 2 years on these topics; but only climate change is put forward as the cause. Why has no-one mentioned pesticides?* We found that when conditional registration was given to the registrant of clothianidin (Bayer) by the US EPA Registration Division one of the data gaps was: *Additional studies on Developmental Immunotoxicity and Mutagenicity*. Were these ever done? Regulators were sent our hypothesis of immune suppression in wildlife caused by the neonicotinoids: the CRD, the ACP, Sir John Beddington, the European Commission, the Australian Pesticides and Veterinary Medicines Authority and the US EPA. We were told it was only a hypothesis and it couldn't be proved. The paper was published in a peer-reviewed journal,[47] but it was ignored.

Conditional Registration of clothianidin; scientists had found immune suppression in rats with juveniles more susceptible to these effects [48]

[44] www.ers.usda.gov/publications/err-economicresearch-report/err162.aspx
[45] www.testbiotech.de/node/891
[46] http://www.testbiotech.org/sites/default/files/Testbiotech_Transgene_Escape.pdf
[47] http://www.stmconnect.com/jeit/content/1/1/jeit1.abstract Immune suppression by systemic neonicotinoid insecticides at the root of global wildlife declines.
[48] http://www.epa.gov/opprd001/factsheets/clothianidin.pdf

On May 30, 2003, Daniel C Kenny of the US EPA Registration Division granted conditional registration for *clothianidin* to be used for seed treatment use on corn and canola (oil seed rape) to Bayer Corporation. In the 19-page document, the EPA scientists had assessed the risks as: *Clothianidin is highly toxic to honey bees on an acute contact basis. It has the potential for toxic chronic exposure to honey bees, as well as other non-target pollinators, through the translocation of clothianidin residues in nectar and pollen. In honey bees, the effects of this toxic chronic exposure may include lethal and/or sub-lethal effects in the larvae and reproductive effects in the queen. The fate and disposition of clothianidin in the environment suggest a compound that is a systemic insecticide that is persistent and mobile, stable to hydrolysis, and has potential to leach into ground water, as well as run-off to surface waters. There is evidence of effects on the rat immune system and juvenile rats appear to be more susceptible to these effects."*

Neonicotinoid clothianidin was found to adversely affect insect immunity and the molecular mechanism is described; the mechanism for imidacloprid is similar

In December 2013, 10 years after conditional registration in the US, and eleven years following registration in the EU, DiPrisco *et al.* showed that clothianidin promotes replication of a viral pathogen in honey bees.[49] "*We describe the molecular mechanisms through which clothianidin adversely affects the immune response and promotes replication of a viral pathogen in honey bees bearing covert infections. The honey bee immunosuppression is similarly induced by a different neonicotinoid imidacloprid.*"

Plants are also susceptible to immune suppression by pesticides[50]

"*Here we demonstrate that applications of neonicotinoid insecticides, one of the most important insecticide classes worldwide, suppress expression of important plant defense genes, alter levels of phytohormones involved in plant defense, and decrease plant resistance to unsusceptible herbivores, spider mites Tetranychus urticae (Acari: Tetranychidae), in multiple, distantly related crop plants. This study adds to growing evidence that bioactive agrochemicals can have unanticipated ecological effects and suggests that the direct effects of insecticides on plant defenses should be considered when the ecological costs of insecticides are evaluated.*"

An expert on plant immune systems said: "*Many of these proteins (in plants) fall into a class of proteins that has related members which function in innate animal immunity...Thus activation of plant immune systems is akin to that of animal immune systems where 'modified self' can be recognised to trigger an appropriate response…*" .

Massive contamination of the environment with chemical immunosuppressants: Are the diseases affecting trees, farm animals and humans all part of the same problem? The Government, the Public Health and Veterinary Authorities and the Media blame global warming and badgers - but never mention pesticides

In the US, in a study to elucidate how crop pollination exposes honey bees to pesticides which alters their susceptibility to the gut pathogen *Nosema ceranae* Pettis *et al* wrote:[51]
"*We detected 35 different pesticides in the sampled pollen, and found high fungicide loads. The insecticides esfenvalerate and phosmet were at a concentration higher than their median lethal dose in at least one pollen sample. While fungicides are typically seen as fairly safe for*

[49] www.pnas.org/content/early/2013/10/18/1314923110.full.pdf+html
[50] http://www.researchgate.net/publication/236666790_Neonicotinoid_insecticides_alter_induced_defenses_and_increase_susceptibility_to_spider_mites_in_distantly_related_crop_plants
[51] http://www.plosone.org/article/info%3Adoi%2F10.1371%2Fjournal.pone.0070182

honey bees, we found an increased probability of Nosema infection in bees that consumed pollen with a higher fungicide load. Our results highlight a need for research on sub-lethal effects of fungicides and other chemicals that bees placed in an agricultural setting are exposed to."
In the UK Prof Dave Goulson, the eminent bumblebee researcher, after a year of studying what happens to bees in the countryside, reveals a chemical blitz.[52] He found that an ordinary arable field in Sussex is sprayed with pesticides 22 times over a single growing season and wonders how the bees can survive this toxic onslaught. He asks the question: exactly who benefits? *It's hard to escape the conclusion that current farming practices are not designed to benefit farmers, who pay through the nose for expensive pesticides. Nor do they benefit consumers, who are offered expensive, pesticide-drenched food. Nor again the environment, which is continually contaminated with a cocktail of chemicals. It is hard to see how they are arranged for any benefit other than maximising agrochemical company profits.*

Who is to blame? A lot of the blame lies with government
Prof Goulson goes on to say: *"We used to have a number of state-funded experimental farms in the UK, where crop research was conducted, and there used to be an independent agricultural advisory service. But almost all have been sold off.*
One consequence is that Integrated Pest Management research is not funded - instead the agrochemical industry has been allowed to fill the gap. Now, 75% of agronomists who provide advice to farmers work for agrochemical companies. Small wonder that farmers use lots of pesticides!
I think I might head home early today and finish digging over my veggie plot. At least I can control what goes into that."

The use of pesticides around the world has produced biological deserts
Here is a description of a 600 acre farm in Ohio with GMO corn on which Craig Childs[53] spent a long weekend and found virtually nothing. "*I listened and heard nothing, no bird, no click of insect. There were no bees. The air, the ground, seemed vacant…It felt like another planet entirely,"* he said, *"a world denuded."*
Robert Krulwich's blog commented on Craig Child's description:[54] "*Yet, 100 years ago, these same fields, these prairies, were home to 300 species of plants, 60 mammals, 300 birds, hundreds and hundreds of insects. This soil was the richest, the loamiest in the state. And now, in these patches, there is almost literally nothing but one kind of living thing. We've erased everything else. There's something strange about a farm that intentionally creates a biological desert to produce food for one species: us. It's efficient, yes. But it's so efficient that the ants are missing, the bees are missing, and even the birds stay away. Something's not right here. Our cornfields are too quiet.*" In England in 2012 on a warm August evening, in a garden surrounded by arable crops, no moths came to the candles.[55] There was not a single insect. In our small nature reserve in Wales in 2006 we had migrant flocks of 250-400 greenfinches flying in to feed on the sunflower seeds in autumn. By 2007, there were many fewer and by 2011, we found two dead ones which we sent to the Zoological Society of London. They confirmed that the birds showed signs compatible with infection caused by

[52] http://www.theecologist.org/blogs_and_comments/commentators/2258103/revealed_the_chemical_blitz_of_pesticides_in_our_fields.html
[53] Craig Childs Apocalyptic Planet
[54] 120 http://www.npr.org/blogs/krulwich/2012/11/29/166156242/cornstalks-everywhere-but-nothing-else-not-even-a-bee
[55] Personal observations

Trichomonas gallinae, a protozoal organism which invades the bird's crop and mucosal lining of the beak. The populations throughout Europe have been devastated since 2005. We had no feeding greenfinches through the winter of 2013. In the UK, reports of chaffinches appearing in gardens with white, crusty growths on their legs and feet caused by a *papilloma* virus began in 2005; the mortality is said to be about 20%, so the disease kills more slowly than with the greenfinch *Trichomonas* infections. We began to observe them under our bird feeders in 2011, easily detected because in the latter stages of the disease they consume seeds sitting down.
Our loss of contact with the environment is such that few people have noticed, or even care much about their disappearance, nor that of insects that have similarly declined. But flying insects are the visible manifestation of a massive iceberg of trillions of invertebrates working away unseen in soil and water. They are the 'canaries in the cage'. The neonicotinoid insecticides attack the nervous system receptors of all invertebrates. They also act on mammalian nicotinic acetylcholine receptors as well, but it was considered that the selective nature of its binding (i.e. less affinity than in insects) made it safe for human exposure. Many independent papers have shown mammalian toxicity, particularly in the developing foetus. Glyphosate is an antibiotic and destroys the absorptive capacity of the mammalian gut microbiome. Fungicides are poisonous to fungal infections in plants. These chemicals are designed to kill and they are non-selective in what they kill, be it bees, other pollinators or beneficial insects such as ladybirds. Invertebrates are the small things that run the world. Destroy these and you ultimately destroy life itself, at least as a planet fit for humans.

Why does David Cameron hate Wales?
Polly Toynbee wrote in the Guardian on Friday March 7th 2014:[56] "*David Cameron has mentioned Wales 29 times in Prime Minister's Questions, which sounds reasonable because he is its prime minister too – except that every single mention has been derogatory and contemptuous. The Conservatives detest everything Welsh."*

Are there reasons for Prime Minister David Cameron's regular attacks on Wales?
Polly Toynbee goes on to say: "*Most poisonous have been Tory scares on health, driven by need to prove that Welsh refusal to put its services out to tender to private companies produces worse results.…Wales has the oldest and sickest population in Britain, with the highest post-industrial disease and thousands moving there to retire*."
We can add some other possible reasons. The Wikileaks' Paris Cables exposed the fact that Monsanto was using US Ambassadors to punish EU countries for opposing GM crops. Does David Cameron's aggressive attitude arise from the fact that the Welsh Government is opposed to GM cultivation? However, so is the Scottish Government and indeed the Scottish Health figures were only marginally better than those of Wales (or England for that matter). But Scotland must be wooed in case it runs off with the UK oil and gas supplies, whereas David Cameron does not think that Wales has any assets to benefit "growth in the economy", unless of course he had Wales in mind to be 'fracked'.

The population of Wales is sicker than England because the English Chemicals Regulation Directorate authorizes glyphosate (an antibiotic, we have recently discovered) to be sprayed on invasive weeds (super weeds) on former industrial sites in such quantities that we have glyphosate in our drinking water. The contractor sprays around houses and in villages, past schools, libraries and surgeries where children are exposed. The public is receiving this exposure to glyphosate in addition to that now found in residues in their staple foods.

[56] http://www.theguardian.com/commentisfree/2014/mar/07/lessons-real-job-creation-wales

Little choice of glyphosate-free food in Swansea: supermarkets backtrack on promises
In January 2013, M&S, Sainsbury's, Co-Op and Tesco announced that they will no longer require that the farm animals in their supply chains are fed a non GM diet.[57] According to Peter Melchett of the Soil Association: "*Tesco and the Co-Op are misleading their customers by claiming that the GM feed will not be detectable in products like eggs, milk or chicken. This is not true. Several research studies have found that GM DNA in animal feed is taken up by the animal's organs and can then be detected in the milk, meat and fish that people eat. This has been confirmed today by the Government's Food Standards Agency*.

M&S, Co-Op and Tesco are also misleading their customers by claiming that non-GM feed isn't available. They are wrong. In Brazil alone, there is enough non-GM animal feed to supply the whole of Europe. The quantity of non-GM imported feed into Europe is going up year on year, because supermarkets in countries like France and Germany are avoiding GM feed because their customers don't want it. The British public also don't want it. A survey last week found that 70% of consumers don't trust supermarkets when it comes to GM and a recent FSA survey found 67% of consumers wanted meat, eggs and dairy labelled if they come from animals fed on GM feed."

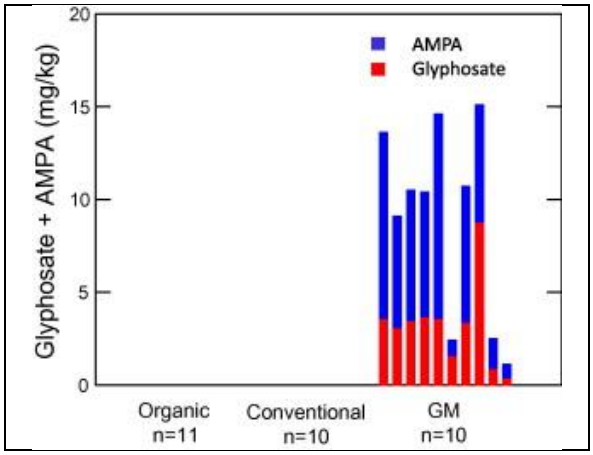
Prime Minister Cameron has plenty of choice in London; he has refused to say whether or not his family would eat GM foods. Parliament has a GM free policy in its restaurants and Hugh Grant CEO of Monsanto said that: "*GM food is only for the poor*."

US FDA is responsible for regulating the safety of GM crops that are eaten by humans or animals. According to a policy established in 1992, FDA considers most GM crops as "substantially equivalent" to non-GM crops.[58]
A new study from Norway rejects the US claim that GM soy is "substantially equivalent" to non-GM soybeans. It describes the nutrient and elemental composition, including residues of herbicides and pesticides, of 31 soybean batches from Iowa, USA.
T. Bøhn *et al*.[59] found:

- Glyphosate tolerant GM soybeans contain high residues of glyphosate and AMPA (mean 3.3 and 5.7 mg/kg, respectively).
- Soybeans from different agricultural practices differ in nutritional quality.
- Organic soybeans showed a more healthy nutritional profile than other soybeans; more sugars, protein, and zinc. Organic soybeans also contained less total saturated fat and total omega-6 fatty acids than both conventional and GM-soy.

"*Using 35 different nutritional and elemental variables to characterise each soy sample, we were able to discriminate GM, conventional and organic soybeans without exception, demonstrating substantial non-equivalence" in compositional characteristics for' ready-to-market' soybeans*"

[57] http://www.theguardian.com/commentisfree/2014/jan/16/america-gm-backlash-consumers-farmers-britain
[58] http://www.fas.org/biosecurity/education/dualuse-agriculture/2.-agricultural-biotechnology/us-regulation-of-genetically-engineered-crops.html
[59] http://www.sciencedirect.com/science/article/pii/S0308814613019201 Compositional differences in soybeans on the market: glyphosate accumulates in Roundup Ready GM soybeans



From: Compositional differences in soybeans (Organic, Conventional and GM.) from Iowa, USA. By kind permission of Prof Thomas Bøhn, Genøk, Centre for Biosafety, Norway.

In Wales, the public is not aware that there are glyphosate residues in staple foods, and even if they were, it is difficult to avoid them. Cheap, high-sugar processed foods come from the US where GM ingredients are not labelled. Those are some of the reasons we have high levels of obesity, depression, autism, dementia, type 2 Diabetes and cancers.

Wildlife Law: Control of Invasive Non-native Species[60] from the Law Commission
"*On 11 February 2014, we published our final report, Wildlife Law: Control of Invasive Non-native Species. This is the first item to be delivered from the full project. This element of the project was brought forward at the request of Defra and the Welsh Government to enable them to consider whether to introduce early legislation*."
If landowners do not comply, this new law will give the relevant body (Defra, the Welsh Government and statutory bodies such as the Environment Agency, Forestry Commission, Natural England and Natural Resources Wales) the power to enter land for the purposes of species control. Japanese knotweed is among the plant species specified. But the law appears to be coy about specifying the method of eradication.

I hope that Defra and the Welsh Government are not going to use chemical control, because we have demonstrated that Japanese knotweed is a super weed and has developed its own genetic resistance -. and Monsanto US (from 2010) has glyphosate patented an antibiotic and an antiprotozoal.

Rosemary Mason MB ChB FRCA on behalf of a global network of independent scientists, beekeepers and environmentalists

10/03/2014

[60] http://lawcommission.justice.gov.uk/publications/2612.htm