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Friday, 5 July 2013

On 20 June 2013, this reviewer downloaded Christie Wilcox's article, "**The Very Thick Line Between Raising Concerns And Denialism**", which is being reviewed in this article, from http://blogs.discovermagazine.com/science-sushi/2013/06/19/the-very-thick-line-between-raising-concerns-and-denialism/.

This author's review of this article follows these introductory remarks and a table-of-contents page.

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This assessment is titled, **Draft Review of: "The Very Thick Line Between Raising Concerns And Denialism"**.

Introductory Remarks

First, each portion of the writer's text is quoted in a grayed "Georgia" font.

Second, the review comments follow in a "Verdana" font and are indented.

Third, when quoting from writer's text, the text is in an *italicized* "*Times New Roman*" font.

Fourth, when quoting or referencing other sources, the text is in an "Arial Narrow" font.

Finally, should anyone find any significant factual error in this review for which they have independent[a], scientifically sound, peer-reviewed-published-substantiating documents, please submit that information to this reviewer so that he can improve his understanding of factual reality and, where appropriate, revise his views and this review.

Respectfully,

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[To whom all responses should be directed]

[a] To qualify as an independent document, the study should be published by researchers who have no direct or indirect conflicts of interest from their ties to either those commercial entities who profit from the sale of any product or practice addressed in this review or those entities, academic, commercial or governmental, who directly or indirectly, actively promote any product or practice, the development of any product or practice, and/or programs using any product or practice covered in this review.

Table of Contents for "Draft Review of: 'The Very Thick Line Between Raising Concerns And Denialism'"

Draft Review of:
"The Very Thick Line Between Raising Concerns And Denialism

By Christie Wilcox | June 19, 2013 8:00 am"

THE ARTICLE'S TITLE AND LEAD IN

The writer's title is an interesting choice of words because the thickness of the "***Line Between Raising Concerns And Denialism***" and its placement are obviously based on subjective assessments — not objective evaluations.

"The real question is, which side of the line are studies that lack scientific rigor on?"

To this researcher, the answer depends upon the nature of the question being asked and is limited to those questions that science can answer.

For the subjects that this writer discusses, this reviewer finds that there are studies that lack rigor with regard to several aspects of the dispute between those who seek to maintain and enlarge the status quo in a given controversial issue for their direct and indirect benefit and those who seek to ensure that the safety (not the often-substituted "lack of proof of harm") of any disputed practice has been rigorously proven.

THE WRITER'S INTRODUCTION TO, AND FEELINGS ABOUT, GLYPHOSATE AND GM CROPS

"Recently, Kara Moses asked Guardian readers: 'Should we wait for conclusive scientific studies before becoming concerned about an issue?' Her personal answer was no; that special interest groups should perform and publicize their own findings. 'I believe they should be given a voice,' she concluded, 'not dismissed out of hand for lacking the scientific rigour demanded by professional scientists.'

Quick to support her was Treehugger writer Chris Tackett. 'The point here is that scientific proof matters in science, but it shouldn't necessarily be what determines our actions,' he wrote. 'We can intuit that some things are unwise or dangerous or against our values without needing reams of scientific data to back up our concerns.' While Kara's piece talked only about the use of glyphosate (the pesticide known by its brand name RoundUp), Chris used it to attack both the pesticide's use *and* Monsanto GM crops.

I understand where they are coming from, but the hair on the back of my neck bristled reading those words. I think they're both getting into *very* dangerous territory (or, in the case of Chris' comments later, happily dancing around in it)."

While this reviewer would agree that the writer is entitled to "*think*" what she chooses, it is <u>not</u> clear that she understands "*where they are coming from*" or, for that matter, who is "*reading those words*".

"The trouble is, it's one thing to notice a potential danger and raise a few alarm bells to get scientists to investigate an issue — it's a whole other to publicize and propagandize an unsubstantiated fear despite evidence against it."

Here, the writer begins by confusing the noticing of "*a potential danger and …*" that is implicitly associated with "*the use of glyphosate*" or "*pesticide use and Monsanto GM crops*" with what the people have a right to do, "*to publicize and propagandize*" what they perceive as a danger even when there is purportedly "*evidence against it*".

Moreover, because this writer makes numerous assertions without providing any citations or footnotes to support or substantiate her views, this reviewer is compelled to discount the writer's statements when, without any documented proof, they attempt to discredit the views expressed by others.

"The former is important, as Kara suggests, and should occur. I have no problem with non-scientists raising honest concerns, if their goal is to have the concerns considered — so long as they're actually willing to hear what the evidence has to say."

Here, the writer attempts to restrict the role of "*non-scientists*" to that of "*raising honest concerns*", when the realities are that:

a. These "*non-scientists*" are perfectly capable of reading and understanding the published literature and

b. Some who are raising these concerns are scientists who have examined the evidence and/or conducted fundamental studies that have shown serious adverse long-term-exposure-related outcomes when "*glyphosate*" and/or "*pesticide use and Monsanto GM crops*" have been studied.

Since the writer presents <u>no</u> proof to support her assertion that these individuals have <u>not</u> appropriately examined the evidence, this reviewer must counsel the reader to ignore her caveat about hearing "*what the evidence has to say*".

"The latter, on the other hand, is denialism. You see, once scientists *have* weighed in, you have to be willing to listen to them."

As a scientist, this reviewer is appalled at the writer's unqualified claim that "*once scientists have weighed in, you have to be willing to listen to them*".

First, unless all of the raw data and supporting information, including models and adjustment factors, used to generate the published results are freely available, no one should listen to the claims made in any study.

Second, unless a truly independent review of the data and supporting documentation or a truly independent rigorous duplication of a given study for which the raw data and all supporting information are available has confirmed a given publication's findings, the results reported in the initial study should be given no scientific weight in the decision-making process.

Third, the quality of evidence rating (QER) standards[1] developed for evaluating the scientific quality of evidence clearly support the skepticism that should accompany any assertion when most all of the studies are not independent[2].

Thus, it is not the scientists that should be listened to but rather the results of those truly independent studies of "*glyphosate*" or "*pesticide use or Monsanto GM products*" that have an appropriately defined QER rating of "1" or, if the studies are toxicological in nature, an equivalent rating.

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[1] Donohoe M. Evidence-Based Medicine and Shaken Baby Syndrome Part I: Literature Review, 1966–1998. *Am J Forensic Med Pathol* 2003; 24: 239–242. Here the author stated the basis for the use of quality of evidence ratings (QERs) and what evidence should be given credence as follows (emphasis added)

"…

In assessment of the quality of the available scientific evidence, the author has taken an approach recently defined worldwide as an appropriate scale for review of quality of evidence. This approach has been described recently in context of setting Australian clinical guidelines.

Genuine hypothesis testing requires use of appropriate research methodologies, including collection of relevant control data, and suitable statistical analysis. The interpretation of individual study findings may be constrained by factors such as whether the cohort examined was adequately representative of the patient population in general. Replication across studies and in independent research centers is a key factor in the reliability of evidence.

Compelling evidence comes from consistent findings in 2 or more well-constructed, controlled trials or population-based epidemiologic studies (i.e., level I or level II evidence)."

Then he defined the QERs used for this literature review as follows:

"Quality of Evidence Ratings

I: Consistent evidence obtained from more than 2 independent, randomized, and controlled studies or from 2 independent, population-based epidemiologic studies. Studies included here are characterized by sufficient statistical power, rigorous methodologies, and inclusion of representative patient samples. Meta-analysis of smaller, well-characterized studies may support key findings.

II: Consistent evidence from 2 randomized controlled studies from independent centers, a single multicenter randomized controlled study, or a population-based epidemiologic study. Data included here have sufficient statistical power, rigorous methodologies, and the inclusion of representative patient samples.

III-1: Consistent evidence obtained from 2 or more well-designed and controlled studies performed by a single research group.

III-2: Consistent evidence obtained from more than one study but in which such studies have methodologic constraints, such as limited statistical power, or the inclusion of patient samples that may be nonrepresentative.

III-3: Evidence obtained from a single case study or a selected cohort study.

III-4: Conflicting evidence obtained from 2 or more well-designed and controlled studies.

IV: Consensus opinions of authorities according to clinical experience or descriptive reports.

[2] To qualify as an independent document, the study should be published by researchers who have no direct or indirect conflicts of interest from their ties to either those commercial entities who profit from the sale of the products being questioned or those entities, academic, commercial or governmental, who directly or indirectly, actively promote these products, the development of these products, and/or programs using these products.

PIVOTING TO THE "VACCINES AND AUTISM" ISSUE

"When it was first suggested that vaccines might lead to autism, is" [sic; it] "was a legitimate question to ask. Kids seemed to develop autism around the same age they got their vaccines — and can you imagine if the vaccines were to blame? That would have been huge news! We would have had to revolutionize the vaccine industry, to start from scratch and figure out if we can keep these life-saving shots without screwing up our kids' brains. One of the core foundations of our children's public health program would have been forever shaken."

First, this reviewer finds it odd that the writer abruptly veers away from the agricultural/food issues she has been addressing ("*the use of glyphosate*" and "*pesticide use and Monsanto GM crops*") to address an apparently unrelated issue, the putative link between "*vaccines*" and "*autism*", a neurological disorder diagnosed not by some scientifically sound tests but rather by an admittedly somewhat subjective evaluation of the symptoms and the behaviors observed in developing children.

Here, for whatever reason, the writer, Christie Wilcox, begins by laying out an "*imagine if*" scenario about the established link between the current recommended vaccination program in the USA and the chronic childhood disease epidemics that this ever-growing vaccination program has caused and is causing by focusing on one of these epidemics, the purportedly most-difficult-to-prove epidemic, the epidemic of "*autism*".

Then, without providing any proof to support her opinion, she claims that "*independent scientists investigated the concerns*" and "*kept getting the same answer*" – essentially that whatever was causing these epidemics of chronic diseases, "*it isn't vaccines*".

Nonetheless, as one of those truly independent scientists, this reviewer has been continually engaged in the study of the issues surrounding vaccine safety and vaccination effectiveness for about 14 years after having worked in a wide range of capacities in firms that produced biocides (pesticides), brand-name pharmaceuticals, generic pharmaceuticals and dietary supplements for more than two decades.

The results of this reviewer's studies have clearly established that today's FDA-licensed and CDC-recommended vaccines have not been proven to be "safe" to the standards required by the law[3] and, as such, are adulterated drugs under 21 U.S.C. § 351(a)(2)(B).

[3] "Draft Essay: Vaccines: 'the Safest of Medicines' or 'the Biggest Lie?' (1 May 2013; 24 pages)"

Moreover, an ever-growing number of independent scientists from around the world are publishing papers that clearly show that today's vaccines are not as safe as they are represented to be and/or today's vaccination programs are not effective in preventing disease and/or are not cost effective, especially in the developed countries[4,5].

Finally, based on multiple independent vaccination-related surveys comparing the health of never-vaccinated children to the health of the fully vaccinated children have, from 1977[6,7], consistently found or, for the current on-going survey study[8], are consistently finding that, depending upon the chronic diseases studied, the never-vaccinated children are, *as a group*, 2 to 5 times healthier than the comparison group of fully vaccinated children.

Clearly, the results from these independent studies and other similar studies have proven that "*the vaccines were*" and are "*to blame*" for the epidemics of chronic childhood diseases that we are now confronting[9].

Yet, this writer apparently remains in denial about these proven

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4 For some of the articles that support these assertions, the reader can read the applicable references in this reviewer's 2008-2013 publications that address vaccine issues, which can be accessed through the "Documents" web page on the reviewer's web site, http://dr-king.com.

5 See, for example, Hamza H, Cao J, Li X, Li C, Zhu M, Zhao S. Hepatitis B vaccine induces apoptotic death in Hepa1–6 cells. *Apoptosis*2012 May; 17(5): 516-527, which shows that the hepatitis B vaccines cause significant liver-cell damage in those who are inoculated with these vaccines; and footnote "**31**", which clearly shows that the US chickenpox vaccination program is not cost effective but rather significantly cost negative (by more than 1 billion US dollars annually).

6 Excerpt from the text of the 2005 report referenced in the Immunisation Awareness Society of New Zealand's published "Special Report" titled "UNVACCINATED CHILDREN ARE HEALTHIER" written by "Sue Claridge". (emphasis added), "In other research, a study of 1265 Christchurch children born in 1977 found that none of the unvaccinated children had asthma or had had doctors consultations for asthma or allergic conditions.
'The 23 children who received no diphtheria pertussis tetanus (DPT) and polio immunizations had no recorded asthma episodes or consultations for asthma or other allergic illness before age 10 years; in the immunized children, 23.1 % had asthma episodes, 22.5% asthma consultations, and 30.0% consultations for other allergic illness.
Similar differences were observed at ages 5 and 16 years.'!"

7 Though no longer available on their web site (http://ias.org/nz), in 2005, the Immunisation Awareness Society of New Zealand (IAS) published a "Special Report" titled "UNVACCINATED CHILDREN ARE HEALTHIER" written by "Sue Claridge". This report, comparing 226 vaccinated children and 269 similar unvaccinated children stated (emphasis added),
"The results overwhelmingly showed that unvaccinated children suffer far less from chronic childhood conditions than vaccinated children. The results are summarised in the table and graph on the opposite page.
The survey results showed that there was a significant difference in the incidence of asthma, eczema, and ear infections in vaccinated and unvaccinated children. While overall the incidence of grommets, tonsillitis, tonsillectomies, apnoea and hyperactivity were lower the trend is similar. Note the ten-fold increase in tonsillitis in vaccinated children and the complete lack of tonsillectomies in unvaccinated children. In the vaccinated, 73% of the cases of tonsillitis and 92% of the tonsillectomies were in children who had received the measles vaccines. As only 52% of the total vaccinated children received a measles vaccine, one would expect about 52% of the tonsillitis/tonsillectomies to occur in children to have had the vaccine. The higher rate of tonsillitis and tonsillectomy in recipients of the measles vaccine suggests that the vaccine made some children more susceptible totonsillitis"
Though not discussed in the report's text, the data for hyperactivity, epilepsy, and slow development in the figure provided indicated that vaccination was a causal factor for all three of these medical conditions and an apparently exclusive factor for cases of epilepsy.
Based on these surveys, it is clear that vaccines are a causal factor in chronic diseases.

8 http://www.nyrnaturalnews.com/children-2/2013/01/survey-shows-unvaccinated-children-get-sick-less-often/, "Survey shows unvaccinated children get sick less often" posted on 13 January 2013. Currently, in a survey project started by Andreas Bachmaire, a practicing homeopath, in 2010, data for the unvaccinated/never vaccinated children is being compared to the health outcomes reported in the national German KIGGS health study of German children in the general population, though the project has begun to also collect survey data on vaccinated children. For the most recent reporting of the on-going study's findings, please visit http://www.vaccineinjury.info/vaccinations-in-general/health-unvaccinated-children/survey-resultsillnesses.html. The most recent interim results have found that unvaccinated children are 2 to 5 times healthier than the general population of children depending on the chronic disease being compared.

9 http://dr-king.com/docs/20110330_VaccinesAndAutism__TheWrongArgument_corr1a.pdf

realities.

Given the preceding actualities, let us return to the writer's statements.

"So, like they should, independent scientists investigated the concerns. They checked and double checked the safety testing. They ran and re-ran results, but they kept getting the same answer: whatever causes autism, it *isn't* vaccines. A cumulative sigh of relief was uttered by doctors, nurses, scientists, parents and children around the world."

Then, without providing any proof to support her opinion, she claims that "*independent scientists investigated the concerns*" and "*kept getting the same answer*" – essentially that whatever was causing these epidemics of chronic diseases, including "*autism*", "*it isn't vaccines*".

Yet, as far as this reviewer has been able to ascertain in his investigations into articles that claim to have found "no evidence of harm" or assert that the "benefits of vaccination outweigh their theoretical risks", the authors of these articles are often not "*independent scientists*" and/or the studies themselves are often not independent studies.

In at least one instance, this reviewer has been able to prove that an epidemiological study in which the CDC not only participated but also, *after refusal by two major high-stature journals*, strongly recommended that this knowingly misleading study be published in the journal *Pediatrics*. The CDC made this recommendation although the assertion made in the article[10] ("The discontinuation of thimerosal-containing vaccines in Denmark in 1992 was followed by an increase in the incidence of autism") was diametrically opposed to the truth, as expressed in internal emails (where, some, if not all, of the authors in the key Danish study cited in this discussion and CDC's liaison person [Schendel] knew) that "the incidence and prevalence" [of autism] "are still decreasing in 2001")[11].

Moreover, the reality of the decrease in the prevalence and incidence of autism spectrum disorder (ASD) diagnoses was confirmed by:

a. The Danish health officials' not electing to re-introduce any Thimerosal-preserved vaccines into their national childhood vaccination program after this article was published and

b. A 2010 article[12] from which the prevalence rate for the incidence of individuals diagnosed with a "Pervasive Developmental Disorder" ["PDD"] (known as an ASD in the USA) was found to be 1 in 1272, when the 2013 estimate in the

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10 Madsen KS, Lauritsen MB, Pedersen CB, Thorsen P, Plesner A-M, Andersen PH, Mortensen PB. Thimerosal and the Occurrence of Autism: Negative Ecological Evidence From Danish Population-Based Data. *Pediatrics* 2003 Sep 1; 112(3): 604-606.

11 http://dr-king.com/docs/20120331_FalsusInUnoFalsusInOmnibusAThimerosalpreservedVaccineConundrum_b.pdf, "'Wed 13-11-2002', some, if not all, of the authors in the key Danish study cited in this discussion and the CDC's liaison person knew that 'the incidence and prevalence' [of 'autism'] 'are still decreasing in 2001'")

12 Maimburg RD, Bech BH, Vaeth M, Moller-Madsen B, Olsen J. Neonatal Jaundice, Autism, and Other Disorders of Psychological Development. *Pediatrics* 2010 Nov; 126(5): 872-878.

USA for similar children estimated an ASD diagnosis rate of one child in every 50, 6-to-17-year-old children[13].

After reading this review response and verifying its validity, the writer of this article hopefully will listen to the realities that:

a. Vaccination with Thimerosal-preserved vaccines is a casual risk factor for an ASD diagnosis and

b. The current vaccination programs collectively are major causal factors for the current childhood epidemics, at levels in excess of 10% of the vaccinated children in several instances, of many other chronic childhood medical conditions, including but not limited to, ADHD, asthma/chronic obstructive pulmonary disease, epileptic disorders, obesity, type 1 and type 2 diabetes, eczema, food allergies, serious gastrointestinal disorders, solid cancers and lymphomas, and other immune-autoimmune-linked childhood diseases, disorders and syndromes, which were non-existent or virtually non-existent in the 1930s through the 1970s.

"Except that some people didn't listen to the data. They called foul, saying every scientist that disagreed with them was under the thumb of Big Pharma and lying to the public. They released the results of unscientific, pet studies showing how they are right and everyone else is wrong. These anti-vaxers still won't give up their beliefs, even though scientists have come to consensus that vaccines are, in no way, related to autism."

Based on the facts presented by this reviewer, the writer appears to be one of those people who "*didn't listen to the data*".

Moreover, the writer fails to provide any factual citations to support her attack on those who have and are critically evaluating:

a. The safety and effectiveness of each FDA-approved vaccine,

b. The validity and data transparency, or lack thereof, for each published vaccine-related study, and/or

c. The effectiveness and cost-effective, or lack thereof, for each of the current CDC universal-inoculation-schedule's recommendations for these vaccines.

Thus, the writer essentially seems to attack all studies that do not support the vaccination *status quo* by labeling them as "*unscientific, pet studies*" even when they were published in peer-reviewed journals and their authors are willing, subject to the constraints imposed by the federal government on data sharing and medical privacy, to share the raw data and ancillary information with those who seek to confirm that

[13] Blumberg SJ, Bramlett MD, Kogan MD, Schieve LA, Jones JR. Changes in Prevalence of Parent-reported Autism Spectrum Disorder in School-aged U.S. Children: 2007 to 2011–2012. National Health Stat Reports 2013 Mar 20; 65: 1-9.

the data does support the findings reported by those authors.

In contrast, the datasets and ancillary information for the vaccine studies that "support" vaccination have either been reported as lost (e.g., the datasets for the CDC's 2003 Verstraeten, *et al.* study[14] and Fombonne's 2006 study of children in certain Montreal schools[15]) or access to the data and ancillary information has simply been denied to those seeking to verify that the data does support the reported findings, or not.

Moreover, the writer's asserting, "*scientists have come to consensus that vaccines are, in no way, related to autism*" does not make that statement true.

Finally, her attempt to cast the evidence-based concerns of those who question the safety and/or effectiveness of vaccines and/or the cost-effectiveness of vaccination programs as "*beliefs*" does not reduce the scientific validity of the evidence-based concerns raised.

A JUMBLED MESSAGE: MIXING "CLIMATE CHANGE" AND GMO ISSUES

Again, *this time mid-paragraph*, the writer changes subjects and begins to speak of "*climate change*" and of GMO issues.

"We see the same refusal to listen when it comes to climate change. It doesn't matter how many studies show the same thing, or how many consensuses are reached by scientists. They simply don't want to question their biases. They don't *want* to be informed. They stick their fingers in their ears like children, shouting 'I can't hear you!' — and sadly, the same attitude is found throughout the anti-GMO platform."

Whenever this reviewer observes a writer attempting to speak for those who are opposed to the position that the writer is trying to sell to the reader, the narrative almost invariably degenerates into an attempt to portray that opposition in a demeaning manner as in the writer's closing statements here.

Ironically, this reviewer does agree with the writer when she states, "*It doesn't matter how many studies show the same thing, or how many consensuses are reached by scientists*".

In fact, it is not the number of studies, or the number of consensuses, or even the number of scientists that matter.

What matters are the confirmed, scientific soundness of each study and the scientific validity of the consensus.

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14 Verstraeten T, Davis RL, DeStefano F, Lieu TA, Rhodes PH, Black SB, Shinefield H, Chen RT, for the Vaccine Safety Datalink Team. Safety of Thimerosal-Containing Vaccines: A Two-Phased Study of Computerized Health Maintenance Organization Databases. *Pediatrics* 2002 Nov; 112(5): 1039 -1048.

15 Fombonne E, Zakarian R, Bennett A, Meng L, McLean-Heywood D. Pervasive Developmental Disorders in Montreal, Quebec, Canada: Prevalence and Links With Immunizations. *Pediatrics* 2006 Jul; 118(1): e139-e150 (doi: 10.1542/peds.2005-2993).

After all, at one time, the scientific consensus was that the Sun was the center of the universe; the world was flat; when burned, wood lost a substance called "phlogiston"[16]; and the universe was governed by Newtonian physics.

Moreover, as the reviewer's introductory remarks clearly state,

> "Finally, should anyone find any significant factual error in this review for which they have independent[a], scientifically sound, peer-reviewed-published-substantiating documents, please submit that information to this reviewer so that he can improve his understanding of factual reality and, where appropriate, revise his views and this review.

[a] To qualify as an independent document, the study should be published by researchers who have no direct or indirect conflicts of interest from their ties to either those commercial entities who profit from the sale of any product or practice addressed in this review or those entities, academic, commercial or governmental, who directly or indirectly, actively promote any product or practice, the development of any product or practice, and/or programs using any product or practice covered in this review."

he is open to any independent, scientifically sound, peer-reviewed published documents that refute his understanding of the facts.

Thus, to the extent that this reviewer and his colleagues around the world are scientists, the writer's allegations, "*They simply don't want to question their biases. They don't want to be informed*", are pure nonsense.

ASSAILING RECENT STUDIES REPORTING HARM FROM GMO FOODS

"Instead of listening to the evidence, campaign groups conduct unrigorous, unscientific and completely biased studies, dig in their heels, and stand their ground. Just look at the recent anti-GM rat and pig studies which have been thoroughly flayed by scientists that" [sic; who] "have nothing to gain from the GM industry. The groups that performed and published these "trials" weren't asking whether GM foods are unsafe; they sought and executed sham research hell-bent on proving their beliefs, then denied any conflict of interest. I can't agree with Kara that such studies deserve equal voice. They *don't*."

Here, the writer begins by stating prejudicial claims concerning the basis and intent of studies conducted by groups or individuals who implicitly have problems with the GMOs in food that not only rats and pigs but also humans consume.

Then, she asks us to "*look at the recent anti-GM rat and pig studies*", which she claims "*have been thoroughly flayed by scientists that*" [sic; who] "*have nothing to gain from the GM industry*".

However, the links the writer provides are not to peer-reviewed journal publications establishing the validity of the claimed problems, nor to the articles in question so that we may study them, nor to the

[16] A hypothetical substance formerly thought to be a volatile constituent of all combustible substances, released as flame in combustion (see http://www.thefreedictionary.com/phlogiston).

studies' authors' published rebuttals (if there are any) to the published criticisms of the cited studies.

Instead, the links provided are to a posting in an anonymous blog (http://skeptico.blogs.com/skeptico/2013/06/the-s%C3%A9ralini-rule-gmo-bogus-study.html?utm_source=feedly), and a personal web site posting (http://www.marklynas.org/2013/06/gmo-pigs-study-more-junk-science/), which respectively attacked a long-term rat feeding study and a pig feeding study.

Unfortunately, the first link is an apparently invalid link as attempts to access it returned a "HTTP/1.0 404" error.

However, by accessing the web site, http://skeptico.blogs.com/, this reviewer quickly found the cited entry,

> "June 18, 2013
>
> The Seralini Rule
>
> I have a new rule for debating anti-GMO people:
>
> If you favorably cite the 2012 Séralini rats fed on Roundup ready maize study, you just lost the argument.
>
> If you cite this study as demonstrating any dangers in genetically modified food, you are either (a) so clueless as not to have spent 30 seconds checking to see if there are any reported problems in the study, or (b) so dishonest in citing a blatantly fraudulent study, that you are not worthy of any more serious consideration. You just lost the debate and you're done. (Obviously you don't lose the if you cite the study to demonstrate its flaws, only if you claim the study's conclusions are valid.) …".

Clearly, this intentionally anonymous blogger has an agenda that is highly biased and subjective even though this anonymous blogger claims to be objective.

From the blog entry, one can access the peer-reviewed, published article (Séralini G-E, Clair E, Mesnage R, Gress S, Defarge N, Malatesta M, Hennequin D, de Vendômois JS. Long term toxicity of a Roundup herbicide and a Roundup-tolerant genetically modified maize. Food Chem Toxicol. 2012 Nov; 50(11): 4221-4231) at,

"http://www.sciencedirect.com/science/article/pii/S0278691512005637".

While this reviewer agrees that a more-robust study design might have been preferable, this reviewer notes that the designs used seem to be a copy of the "accepted" study designs used by Monsanto scientists in similar studies except that, *unlike the short-term Monsanto studies*, these studies continued feeding the rats for an extended period of time.

Turning to the provided valid "pig study" link, this reviewer was directly connected to http://www.marklynas.org/2013/06/gmo-pigs-study-more-junk-science/, which presents Mark Lynas' views on this pig study and also provides a direct link to the peer-reviewed, published study at "http://www.organic-systems.org/journal/81/8106.pdf" (Carman JA, Vliegers HR, Ver Steeg LJ, Sneller VE, Robinson GW, Cinch-Jones CA, Haynes JI, Edwards JW. A long-term

toxicology study on pigs fed a combined genetically modified (GM) soy and GM maize diet. *J Organic Sys*. 2013; 8(1), 38-54).

Unfortunately, the information Mark Lynas provides about himself does not list any formal degrees, training or experience in the life or agricultural sciences; indicates that his major interests seem to be climatological and environmental in nature; and states that he is a "Visiting Research Associate at Oxford University's School of Geography and the Environment".

Further, although the writer's claim that these studies "*have been thoroughly flayed by scientists that" [sic; who] "have nothing to gain from the GM industry*", the articles to which she links and their comments fail to provide any hard evidence that these comment posters "*have nothing to gain from the GM industry*".

In addition, the writer's claim, "*The groups that performed and published these "trials" weren't asking whether GM foods are unsafe; they sought and executed sham research hell-bent on proving their beliefs, then denied any conflict of interest*", lacks the substantive proof needed to justify the allegations that she has made.

Moreover, since the studies seem to be effects studies, designed to identify and evaluate the effects of feeding high-GMO diets as compared to feeding low/no-GMO diets on the overall health of the animals fed an exclusive diet containing one type of feed or another, the studies were not, *per se*, designed to determine the safety of the different diets.

Thus, the writer's negative comments about these two (2) studies are, *at best*, inappropriate and, *at worst*, defamatory.

GMO FOODS: BIASES AND ABSENT PROOFS OF LONG-TERM SAFETY

"I'm not sure where Kara stands on the GM issue, but Chris' clear bias towards one side of the argument shows in the comments. 'I don't need scientists to tell me that GMOs are not a good idea,' he says. There is an astounding level of cognitive dissonance in his statements. Though Chris brings up climate change, he misses his own point. For example, he calls out deniers, saying that 'once enough peer-review science had been completed, **still maintaining disproven beliefs would not be respectable**, like in the case of global warming deniers', then *doesn't even blink* when he says 'I would dislike GMOs **whether the scientific community agreed they were bad or not.** Likewise, I think we should not use Roundup, **whether the scientific community agrees that it is dangerous or not.'** [emphasis mine]. This is exactly the problem."

Here, the writer is quick to notice "*Chris' clear bias towards one side of the argument*", while ignoring her own obvious bias.

However, it is inappropriate to use one person's biases as if they

are representative of all persons who oppose GMO crops because: **a)** the GMO crops have not been proven to be either safe in the long term or nutritionally equivalent to the non-GMO crops previously grown; **b)** the use of the GMO seed raises the levels of the pesticides used to treat the crops as the weeds and insect pests develop resistance to the pesticides; **c)** as, contrary to the claim of rapid breakdown in the environment, the levels of glyphosate and other pesticides continue to increase in our drinking water supply and food; and/or **d)** of some other GMO-related (e.g., bt-corn) or pesticide-related (e.g., intentional promotion of an off-label use) problem.

"GM crops have undergone rigorous safety testing — and *passed*."

Here, the writer makes an unsubstantiated claim, "*GM crops have undergone rigorous safety testing*", which is, at best, deliberately vague, and, at worst, patently false.

Factually, GM crops have mostly only undergone short-term toxicity, metabolism, and residue studies conducted by, or on behalf of, those firms who are marketing these GM crops.

Moreover, in some instances, the GM-crop candidate has been abandoned when it caused serious adverse effects even in the short-term studies typically conducted.

However, when it comes to long-term toxicity, metabolism, residue and environmental-impact studies, few, if any independent studies have been conducted.

Furthermore, the few independent, longer-term, feeding and environmental-impact studies that have been conducted have found evidence of serious adverse effects in rats and "unintended" transfer of pesticide resistance and other genetically inserted traits to other plants, principally "weeds" – making these weeds much harder to kill.

Given the preceding realities, this writer's views are based on other than sound science and are apparently grounded in the pro-GMO propaganda that permeates the mainstream media and academia today.

"The simple fact is our fear of GM technology is based entirely on emotion. There is no science to support it. When it comes to GMOs, the anti crowd are not 'raising concerns'—they're denying scientific consensus."

Continuing her biased attack on those individuals, groups and peer-reviewed studies that raise concerns about the safety of the

entire GMO/pesticide paradigm, the writer again makes absolutist claims that, besides being at odds with some of the scientifically sound independent studies, are obviously biased to the extreme.

Further, those who question the Establishment's GMO and/or pesticide paradigm are not denying any scientific consensus other than that "consensus" bought and paid for by the biotech and pesticide industries and their direct and indirect supporters.

Until there are appropriate, independent, scientifically sound, long-term (greater than half of the life span of the animals studied) studies on the direct and indirect effects on the consumers of the products and their residues at every level – from the microbes, to the plants and the animals, including man – which clearly prove that the GMO/pesticide -containing and -derived products are sufficiently non-toxic[17] to those non-targeted individuals who are most susceptible to the adverse effects of such products, no one can logically or scientifically assert that such are "safe".

"There is a plethora of science that supports the safety record of GM foods. As the Skeptico blog pointed out, there are more than 600 studies (>125 of which were independently funded) that stand behind the safety record of GM crops."

Accepting that there "*are more than 600 studies (>125 of which were independently funded)*", this reviewer notes that the cited blog is admitting that about 80% of these studies are industry-overseen and/or industry-conducted studies – not even "independently funded studies".

Further, independent funding does not ensure that the study is an independent study.

Given the careful choice of words by the anonymous writer of the cited blog, it would appear that very few of the studies are truly independent studies.

Finally, this reviewer has observed that any study that indicates there may be a problem with the Establishment's GMO/pesticide paradigm and its authors are attacked by those who are a part of, or favor, the biotech and/or pesticide industries.

Thus, by not stating the number of truly independent studies that address "*the safety record of GM crops*" and providing a supporting peer-

[17] To be proven sufficiently nontoxic, the level of the toxic substance or mixture of substances must be proven to be significantly below the no-observed-adverse-effect level (NOAEL) for long-term exposure in the most sensitive subgroup in any affected population segment. As far as this reviewer has been able to ascertain, there are few such independently determined NOAEL values for, for example, glyphosate formulation exposure in the developing fetus and the developing child. Most are Monsanto-involved studies, which are obviously not independent studies.

reviewed citation that supports that number, the writer seems to be hiding the scarcity or absence of truly independent safety studies.

"Scientists have been studying GMOs and their potential effects for decades. With every major scientific body saying the exact same thing, I simply don't know how else to spell it out: there is a scientific consensus that GM foods are safe."

Here, this reviewer simply reminds the reader that the tobacco industry used similar talking points in its decades-long knowing cover up and suppression of the risks associated with the smoking and/or chewing of its tobacco products, including the use of medical doctors in cigarette advertisements.

Further, making a statement, which is linked to an article that reports "the most important opposition currently facing the worldwide adoption of this technology: public opinion" clearly detracts from the assertion that "*scientific consensus*", not propaganda, is being used to prove "*GM foods are safe*".

In fact, the writer's assertion is an implicit admission that the truly independent scientifically sound safety studies on GM foods have not established that they are safe.

Finally, this reviewer notes that one of the prime tactics that propagandists use is the repetition of less-than-truthful statements because such rhetoric eventually leads to increased public acceptance of such statements by those who, for whatever reasons, do not truly study the issues.

"Continuing to act as if the science is mixed or unclear about the safety of genetic modification is not raising a legitimate concern. It's not even uninformed; it's denialist. It's right up there with the claims of anti-vaxers and climate deniers: that is, simply, flat-out, 100%, dead wrong."

Contrary to the writer's views, the independent science is clear that the long-term "*safety of genetic modification*" has not been established just as the "safety" of vaccines has not even been proven to the legal standards for such proofs as required of the manufacturers thereof by the applicable statutes and regulations[18].

Moreover, this reviewer does not know of any "*climate deniers*" – all seem to admit that climate exists.

However, based on the current understanding of the independent sound science, those who have resisted the alarmist claims of "global warming" may have been right.

[18] http://dr-king.com/docs/20130501_Vaccines_The_Safest_of_Medicines_or_the_Biggest_Liegustn_e_b_r1.pdf.

For a variety of reasons, the local climate is both changing and being actively modified but there is no independent, scientifically sound body of evidence that supports "global warming".

Further, because most of the energy that warms the Earth comes from the Sun and the Sun's energy output is currently declining, it would appear that, if anything, we might be entering a global cooling period[19].

Thus, based on the independent sound science, as he understands it, this reviewer finds that this writer's assertions here may be, as she put it, "*dead wrong*".

GLYPHOSATE AND PESTICIDE ISSUES

"As for the use of pesticides like glyphosate... that's a much more complex and difficult question. It's not as simple as 'is this pesticide toxic' because the answer to that is undoubtedly *yes*. That's what makes it a pesticide! If it wasn't toxic, it wouldn't kill anything. A better question is *how* toxic is this pesticide? Is it more or less toxic than another? Is it toxic to other species we'd like to keep around at the levels it's used, including us? And what are the consequences — in terms of yield and meeting the demand for food and nutrition in an area — if it *isn't* used? What are the alternative options?

When it comes to RoundUp, those kinds of studies have been conducted and continue to be conducted. So far, glyphosate has passed the tests, at least as well as any other pesticide (I personally think RoundUp Ready plants are a disgraceful use of GM technology, and would be perfectly happy to see them wiped off the face of the Earth and replaced with drought-resistant or nutrient-boosted GM varieties instead). Unfortunately, there still isn't a black and white answer to whether that means the use of glyphosate is warranted."

This reviewer finds that, while the writer's statements here are interesting, the writer asks the wrong questions.

The crucial questions are those that the pesticide industry and the governmental agencies have not answered – especially:

1. Are the long-term levels of exposure "safe" to the standard "sufficiently nontoxic" in the most sensitive population group, *except the targeted pests*, for all of the other populations of living organisms on the Earth, including humans?
2. Does the maximum permitted level of use of the pesticide reduce the bioavailability of nutrients, especially the trace minerals, to the plants grown on soils treated with them?
3. Does the maximum permitted level of use of the pesticide contaminate the drinking water supply?

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19 http://icecap.us/index.php/go/joes-blog/nasa_warns_earth_may_be_entering_a_period_of_global_cooling1/, published on 18 January 2013, last visited on 22 June 2013.

4. Does the maximum permitted level of use of the pesticide adversely affect the beneficial soil microbes?
5. Has the pesticide manufacturer lied about the persistence and/or toxicity of the pesticide formulation and any of its breakdown products in a material manner?
6. Does the repeated use of the pesticide reduce the soil's fertility to the point that supplemental inputs are needed to effectively raise any food crop?
7. If all use of the pesticide were banned today, how long would the pesticide's effects on the soil and humans and its presence in water persist?
8. To what degree is the use of the "neonicotinoid" pesticides and bt-modified crops causing the die off of honeybees and other beneficial insects?
9. Have genetically modified crops decreased or increased the average crop yields and/or the farmers' net profit per acre over any extended time period (of at least 10 years) as compared to the growing of the more genetically diverse non-GMO crop species using the best organic farming techniques?

As a researcher who worked for two biocide manufacturers in the development of biocides for both animal and plant pests from the mid-1970s to the early 1980s, this reviewer is well aware of the reality that industry places its profits before any safety concerns to the point that firms have knowingly provided misleading information to U.S. governmental agencies in order to get their product registered or to promote off-label uses, which increased their profits even when the off-label use posed a significant increased risk of harm to the public.

Moreover, to the extent that all corporations are profit driven and have a history of placing the short-term increase in their profits above the possible long-term risks to the public and the Earth's ecosystems, how can anyone trust such entities to tell the truth about the harm that their products may cause given their historical "track records"?

BACK TO GMO ISSUES

"That's not to say that all future GMOs or pesticides will be perfect, or even that all current GMOs or pesticides are great or the best option for every farmer everywhere. Modified foods and pesticides raise a myriad of concerns outside questions of safety, including those about agricultural politics and environmental impact. These *are* legitimate questions that

still are being answered. Monsanto and their sway over agricultural law and standard practices are definitely worth investigating. Our reliance on chemical pest control when there may be other options *is* worth investigating."

This reviewer agrees with the writer's initial comments concerning GMOs, pesticides, agri-business and Monsanto.

"But what keeps happening is that anti-GMO or chemiphobic interest groups choose to attack technology wholesale, claiming a supposed lack of safety and demanding outright bans instead of tackling the real issues. They keep saying things like 'GM crops are untested', when they're not, and they do so while, without a second thought, supporting things like alternative medicines, even though only 1/3 of those have been tested for safety or efficacy and some of those are responsible for serious negative ecological impacts. They make bold statements that all synthetic pesticides are dangerous while blindly believing in natural ones that are just as (if not more) toxic. But of course, if you point out the horrendous double standard, you're attacked and called an industry shill*. Climate change science they will listen to. Vaccine science, they listen to (at least some of them). But all synthetic pesticides and GM foods are going to kill you and they always will, *no matter what the scientists say*. The level of hypocrisy displayed in these arguments (including Chris') is simply inexcusable."

Here, this reviewer finds that this writer is simply engaging in selective reporting and stating the writer's self-generated positions as if they were those of some unidentified individuals and groups (the writer's "*they*") apparently to demonize/denigrate those who have reason to oppose "*GM foods*" and/or "*synthetic pesticides*".

Further, with respect to "*supporting alternative medicines*", whose study and use is supported by the National Institutes of Health (NIH) in the National Center for Alternative and Complementary Medicine (NCACM), she provides no citations or links to support her views.

Moreover, the writer implicitly treats the publications generated by, or at the behest of, the biocide and biotech industries and the pronouncements of the authors of such publications, peer-reviewed or otherwise, as if these were based on science.

However, all too often, at best, such papers actively slant and misrepresent the paper's scientific findings to favor the product or products studied or, at worst, simply "adjust" the published findings to support the continued marketing or market expansion of the product or products studied.

SCIENTIFIC EVIDENCE and CONSENSUS ISSUES

"To reply to Kara's original question: no, you don't need a body of scientific evidence to *raise concerns,* if that's really the goal of what you're doing. But you do need at least a shred that suggests such concerns are valid before you shout them as facts from the rooftops."

This reviewer agrees with the writer's first statement.

However, this reviewer finds that the second statement seemingly is intentionally disinformative, because it constructs an unidentified straw man, "*you*"; introduces some unidentified "*shred*" (of evidence?); and then demonizes that "*you*" in an apparent attempt to suppress the raising of some unspecified "*concerns*".

"You should support independent scientists that" [sic; who] "study what you're concerned about instead of trying to tie every one (usually in some ludicrous way) to biased funding. And if those scientists weigh in with well-designed studies that don't agree with your initial concerns, you should feel relieved, not betrayed."

Again, this reviewer supports the writer's implicit suggestion that those who have concerns about an issue that sound science can address should support independent scientists who are willing and able to conduct research that address those concerns.

However, unless the "*well-designed studies*", contrary to the writer's statement, are also scientifically sound, unbiased, and open to independent review by other scientists, this reviewer is compelled to disagree with writer's suggestion that those with such concerns should automatically "*feel relieved, not betrayed*".

After all, many of the studies designed to manipulate a study's data to get a predetermined outcome are also "*well-designed studies*".

Finally, this reviewer would suggest that, to the extent possible, those with concerns should verify the findings of any study that positively or negatively addresses those concerns.

"If scientists are in consensus on a topic, it's because the evidence is strong."

This reviewer must respectfully disagree with the writer here.

Today, "scientific consensus" is often little more that a commodity that is manufactured or purchased with little-or-no regard for: **a)** the strength of the evidence or **b)** the validity of the position on the issue.

To understand the reality of the fallacy of consensus, in addition to the previously discussed fallacies (e.g., the Sun is the center of the

universe; the Earth is flat; "phlogiston" is released when something burns; and, more recently, Newtonian physics governs the universe) about which there was a "consensus" at one time, we need only remember:

a. The medical/scientific consensus that told Americans that cigarette smoking was not only safe but also beneficial to their health – when neither claim was true, where this "consensus" was procured by the tobacco-products firms,

b. The "scientific consensus" that told us asbestos exposure was safe for decades after the insurance companies in the early 1900s began refusing to insure Johns Manville's asbestos workers because their actuarial tables told them that Manville's asbestos workers' death risks were too high, or

c. The numerous previously FDA-approved finished pharmaceutical products, including vaccines, which were subsequently recalled or withdrawn from the market when it became clear that their in-use harm exceeded their putative benefits as well as those drugs whose post-approval risk of harm qualified them for a "black box" warning and restricted use for effects that the firms' pre-approval studies failed to identify or, *in some instances*, population studies showing evidence of a possible risk were somehow <u>not</u> submitted to the approving agency during the approval process.

"It's because they've investigated and rigorously tested the possible hypotheses using different methods, and the same conclusions keep stubbornly arising. Scientists don't come to consensus easily, so when they do, you should *listen to them*."

Here, the writer's reasoning is fatally flawed because the major drivers of researchers today are access to funding and the ability to benefit from getting studies published in peer-reviewed journals.

First, after having entered into both academic and governmental partnerships as well as having populated government agencies with their employees in a recognized "revolving door" system, the industries directly and indirectly control much of the funding for "scientific research".

Thus, the major biotechnology, biocide, pharmaceutical and other industry players control much of the sources of funding as well as, in an increasing number of instances, the continued employment of the researchers.

In addition, when academic researchers do research in "partnership" with a corporation, the corporation often not only controls whether, and when, the study's findings will be published but also actually has the right to draft the wording of the papers, which the researchers will be allowed to publish.

When the product is patented, the corporations who own those patents increasingly require the purchasers of their products to get the corporation's consent for any study and, for academics at universities that have entered into partnerships with the corporations, these corporations are increasingly able to restrict researchers' access to the corporations' products and even dictate how they will be studied.

Thus, in addition to an increasing stream of biased and slanted peer-reviewed published articles that support the purported safety of pesticides, GMO crops, vaccines and other pharmaceutical products, and the actions, like aerial spraying of chemicals into the atmosphere under the guise of controlling "global warming" and/or rainfall, the industries are actively engaged in discrediting those independent researchers who dare to publish findings that question the safety of the industries' products in order to disrupt the ability of these independent scientists to do research into the safety issues associated with the industries' inherently toxic products.

THE CRUCIAL ISSUE: CORPORATE SHORTCOMINGS

"The real question is whether the charities and NGOs Kara talks about that perform and publicize these unrigorous studies are really just sounding alarm bells, or whether they're trying to push an agenda. There's a very thick line between raising concerns and denialism, though the latter will always staunchly claim that there isn't."

Here, this reviewer first observes that the writer's "*question*" is the wrong one.

For products that are currently being marketed by for-profit corporations, the "*real question*" is, Does the product that is being sold, be it a GMO, a pesticide, a pharmaceutical drug, or something else (e.g., a Bisphenol-containing product), truly have the long-term "safety" that those who produce or tout it claim that it has?

Based on the history of such products introduced in the United States of America (USA) since the late-1800s, the general answer to that question for regulated products is that our large corporations have continually misled the public and regulatory agencies about the safety

of their products and have repeatedly engaged in knowingly criminal actions in order to increase their profits.

These corporations have repeatedly acted in this manner even when they knew, should have known, or were responsible for knowing that their products and/or the processes used to produce them would be disproportionately harmful to: **a)** some of the public who used them, **b)** all of the public that was exposed to them, and/or **c)** the Earth's ecosystems.

For these knowing corporate actions, instead of their top executives being criminally prosecuted for these harms and those knowingly criminal corporations who are repeat offenders being put out of business, all that has happened in most every instance in the USA, where such harms have been revealed — including even tens of thousands of collateral deaths — or such production "accidents" have happened, is that, at worst, the corporation has had to create some "subsidiary" (dummy) sacrificial corporation that was put out of business, and paid a fine that, no matter how large, has been but a small fraction of the profit the corporation earned from knowingly producing that product or using a knowingly dangerous production process, and, in a few instances, some lower-level employees have been prosecuted.

In most instances, the public: **a)** has already prepaid the fine that is subsequently levied, or **b)** for harmful products that are allowed to remain on the market with increased warnings[20] or use restrictions[21] or that are subsequently returned to the market[22], pays the fines in the higher prices charged by the corporations for the products.

At worst, the product is simply withdrawn from the market – often being replaced by a product whose lack of safety simply has not yet been "discovered"[23].

In the corporate world that apparently rules today, these fines are simply treated as an acceptable "cost of doing business" and, for patented products, the estimated potential fines are simply added in,

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20 For example, the "Black Box" warnings routinely added to pharmaceuticals drug products after they are approved.

21 For example, the restriction of the use of a pesticide to only one crop or to one pre-planting application at some maximum level.

22 For example, the return of asbestos-containing products (like "talcum powder") to the market in the USA or the reintroduction of "manufacturer-claimed-safer" halogenated pesticides without long-term proof of safety into the USA market after the first-generations ones, like DDT, were banned because of their persistence and toxicities to birds and beneficial insects.

23 For example, the replacement of "BPA [Bisphenol A]"-containing plastic products with products that contain some other "Bisphenol" when concerns were raised about the BPA-containing products)

like projected advertising and other promotion costs, when the product is being priced for the intended market.

Given the preceding realities, this writer ignores the corporate reality that most of the studies published by, or on behalf of, these international businesses are what the writer describes with the phrase "*unrigorous studies*"[24,25,26,27,28], which are clearly designed "*to push an agenda*", the sale of a product for as much profit as possible.

Thus, the writer appears to be proverbially "straining at the gnat while swallowing the camel" when she focuses her concerns on those individuals and groups who question the safety of GMO products.

Finally, contrary to the writer's view, for the issues she has addressed, the "*line between raising concerns and denialism*" is subjective or, from Einstein's point of view, relative to the location of the observer.

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24 If the studies submitted by the producers of regulated products prior to product approval were truly "*rigorous*", then, for GMOs, these studies would have included long-term impact studies on biodiversity and the chemical and nutritional composition of the GMO products on their consumers and the environment – but they did not.

25 For pesticides, the "*rigorous*" pre-approval submission studies would include long-term environmental impact studies on the productivity of the soil and the nature and biodiversity of the population of microbes, insects, flora and indigenous animals as well as studies on the post-processing nature, toxicity and fate of the end-point metabolites produced from the pesticide – but they do not.

26 For pharmaceuticals that are non-biological drug products, the "*rigorous*" pre-submission studies would include large-scale clinical studies on patients with other health issues and the health issue that the drug is supposed to address, but they do not – such studies are allowed to be conducted after the drug product is approved so that, in effect, the drug's recipients for the first few years are the equivalent of paying "guinea pigs".

27 For pharmaceuticals that are the biological drug products known as vaccines, the "*rigorous studies*" picture is much darker. Though mutagenicity, carcinogenicity and reproductive-effects safety studies are required by law, as the package inserts admit or, by omission, suggest, the preclinical safety studies required to prove that the candidate vaccine will not cause mutations or cancers (mutagenicity and carcinogenicity) are not conducted and the pre-clinical studies required to prove that the candidate vaccine will not have any adverse reproductive effects on the recipient (male or female) are also often not conducted. In addition, in the "safety" studies, rather than requiring that the "placebo" be an innocuous solution (i.e., sterile, pH 7.1, isotonic saline or sterile, pH 7.1 isotonic saline containing a small amount of glucose), the vaccine makers are allowed to use other vaccines, even experimental ones that have not been licensed, or the candidate vaccine without the disease-related antigens as if these were "placebos" in the majority of the comparative short-term adverse-effects studies. At best, this non-science practice conceals the magnitude of the risk of each type of adverse reaction. Further, no long-term (10 years or longer) large-scale (10,000 test-subject, 10,000 control-subject) safety studies are required so that the potential longer-term adverse effects of candidate vaccine can be identified. In addition, even though the vaccine will be given to less-than-healthy individuals, only healthy individuals are allowed in the pre-approval studies. Of course, after approval, post-approval experience studies are required but these are generally limited to a period of no more than 3 years (perhaps, because the long-term adverse effects from a vaccine are known to generally begin to be noticed 4 years or more after the last dose of the vaccine was administered).

28 For highly toxic chemicals used in the manufacture of any product, rather than being "*rigorous*", the submitted studies often do not establish the NOAEL for the group that is most sensitive to the chemical in the marketed product nor that the level of that substance in the marketed product's formulation is at least 10 times lower than the established NOAEL for the most susceptible subgroup. For example, though sodium ethylmercurithiosalycilate, commonly known by the trade names Thimerosal, Thiomersal, Timerosal, Tiomersal and Merthiolate, is still being used as a preservative in vaccines administered to pregnant women and developing children, the required $NOAEL_{\text{injected vaccine "A", developing child}}$ values for each Thimerosal-preserved vaccine are not available. Worse, based on the results from a chronic toxicity study in rats that included injected Thimerosal as one of the chemicals studied (Mason MM, Cate CC, Baker J. Toxicology and Carcinogenesis of Various Chemicals Used in the Preparation of Vaccines. ***Clinical Toxicology*** 1971; **4**(2): 185-204.), the estimated NOAEL for injected Thimerosal in developing children ($NOAEL_{\text{injected Thimerosal, developing child}}$) was calculated to be less than (<) 0.0086 micrograms of Thimerosal per kilogram of child weight per day [or, on a mercury basis, < 0.0042 micrograms of Thimerosal-derived mercury per kilogram of child weight per day –values that would require the developing child "to weigh more than 2,907 kg (6,409 pounds [3.2 tons])" for a 0.25-milliliter injection of a vaccine containing a 0.01% level of Thimerosal to be safe (http://dr-king.com/docs/090812_fnldrft_TheTruthAboutTheToxicityOfThimerosalr5b.pdf)!

Based on the majority of her remarks here, it appears that this writer is located in the GM-foods-are-safe universe, which:

- Bends the "light" shining on the submitted GMO studies toward "*rigorous*" and
- Obscures the long-term harm from the GMO foods that the major corporations, portrayed as "implicitly ethical scientists doing '*rigorous*' science" rather than as the amoral greed-driven entities that their past acts have shown them to be, have unleashed and are unleashing upon the world for their profit — knowingly without proof of the long-term safety of these GMO foods (and the synthetic pesticides, which these GMOs tolerate) to the public and the Earth's ecosystems.

WRITER'S POSTURING AND SIDE NOTE

"** I can't even count how many people have attacked my scientific integrity in response to my opinions, claiming that I am being paid by Monsanto or that I'm clearly in Big Ag's pocket, even though my scientific research and funding sources are clearly stated. And, of course, I can't help but laugh at the hypocrisy of such specious arguments. Attacking my opinions by saying they're driven by money when those of the assailants are entirely based upon the unscientific claims pushed by biased and sometimes even profit-driven interest groups is simply laughable.*"

Here, this reviewer is bemused by the writer's posturing.

However, this reviewer truly does appreciate the writer's admission that her remarks are "*my opinions*"

"*Side note: I disagree completely with Kara's statement that 'charities and NGOs often don't have the resources or expertise to undertake full scientific studies and publish them in journals.' Many of the scientists I personally know are funded by The Nature Conservancy, World Wildlife Fund, and a suite of other big and small name charities and NGOs with cash to burn on the issues they care about. Which, of course, makes me a little wary when such organizations release and push results that haven't been peer-reviewed, because I know full well that they *can* afford to follow the proper scientific channels.*"

First, while this writer is entitled to her opinions about "*resources*" and "*expertise*", as a scientist, she is not entitled to introduce an non-cited statement, as she does here, "…'*charities and NGOs often don't have the resources or expertise to undertake full scientific studies and publish them in journals.*'", a statement which, if it is to be discussed, should have been introduced in the writer's published text when the source was first cited[29].

[29] To properly make this remark, the writer could have altered the first paragraph to read,

In addition, this reviewer observes that the writer fails to address the lack of "*expertise*" side of what "*'charities and NGOs often don't have'*".

Finally, as one who publishes peer-reviewed articles – some in peer-reviewed journals and some on his web site, where he invites all who read his personal publications to provide scientifically sound, applicable independent studies to correct any substantive errors that he may have made, this reviewer notes that there appear to be two (2) presumptions:

1. Only articles published in journals have been peer-reviewed and
2. The findings published in peer-reviewed journals are scientifically sound,

which implicitly underpin the writer's allegation, "*... when such organizations release and push results that haven't been peer-reviewed, because I know full well that they *can* afford to follow the proper scientific channels*".

To be clear, this reviewer publishes peer-reviewed articles on his web site in order to:

- Ensure that his science-based findings reach the widest audience in the most timely manner as well as
- Provide a direct channel for scientific discussion of said findings by his peers, those who can comprehend and verify, or challenge, the validity of those article's published findings with sound science.

The articles in which this reviewer is an author or is acknowledged for his input, which are published in peer-reviewed journals, are there to ensure his credibility among those who tend to judge this reviewer's scientific credibility by:

1. The number of articles he has published and/or
2. The stature of the journals in which those articles were published.

However, understanding the value of controlling the message, as they essentially do in the mainstream media, the major corporations have been and are:

a. Actively corrupting the peer-review process;

b. Using ghost writers to "improve" articles;

"*Recently, Kara Moses asked Guardian readers: 'Should we wait for conclusive scientific studies before becoming concerned about an issue?' Her personal answer was no; that special interest groups should perform and publicize their own findings".* In addition, she stated, 'But charities and NGOs often don't have the resources or expertise to undertake full scientific studies and publish them in journals.' "*'I believe they should be given a voice,' she concluded, 'not dismissed out of hand for lacking the scientific rigour demanded by professional scientists.'*"

c. "Cherry picking" the information that is included in the submitted articles;

d. Using convoluted statistical analyses to improve the positives and obscure the negatives in the article;

e. Buying influence over what papers are published through reprints and advertising; and,

f. Otherwise subverting the peer-review process.

Given this corruption of the soundness of the articles that are published in peer-reviewed journals, our society has reached the point that no one can rely on the validity of the information presented in any peer-reviewed published journal without:

- Carefully reading the article to see what was not said,
- Checking the result values that can be checked to ensure that they are valid, and
- Requesting all of the appropriately redacted (anonymized) source data and ancillary files so that one can verify the validity of the findings and ascertain the scientific soundness, or lack thereof, associated with the values and findings reported in the published article [30] and, in some instances, uncover relationships that the authors of the article, for whatever reasons, did not address.

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[30] In many instances, the contact author's refusal to provide the appropriately redacted complete raw data set or, if access is restricted by a governmental or commercial entity, a letter urging that agency or entity to provide the raw data requested, and/or the ancillary information is a "red flag" and those confronted with such barriers should contact the publishing journal and urge them to withdraw the paper because the published findings cannot be independently confirmed.

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(Taken from http://christiewilcox.com/cv.html)

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Doctor of Philosophy
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University of Hawaii at Manoa, Honolulu, HI

Bachelor of Science Degree with Honors
Marine Science, Biology Track, Minor in Chemistry

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Eckerd College, Saint Petersburg, FL

Publications (Follow in Google Scholar)

Andrews, KR, Moriwake, V, Wilcox, C, Frau, EG, Kelley, C, Pyle, RL, Trejo-Centwell, T, and Bowen, BW (in prep). Phylogeographic analyses of mesophotic snappers *Etelis coruscans* and *Etelis marshi* (family Lutjanidae) reveal concordant genetic structure across the Hawaiian Archipelago.

Wilcox, CL (2012). It's Time To e-Volve: Taking Responsibility for Science Communication in a Digital Age. Biological Bulletin. 222(2), 85-87. Full Text Online

Randall, JE, DiBattista JD, & Wilcox, C (2011). *Acanthurus nigros* Günther, a valid species of surgeonfish, distinct from the Hawaiian *A. nigroris* Valenciennes. Pacific Science. 65(2), 265-275. doi: 10.2984/65.2.265

DiBattista, JD, Wilcox, C, Craig, MT, Rocha, LA & Bowen, BW (2011). Phylogeographic survey of the Indo-Pacific surgeonfish, *Acanthurus nigroris*, reveals high connectivity and a cryptic endemic species in the Hawaiian Archipelago. Journal of Marine Biology. 17 pp. doi:10.1155/2011/839134

Smith, NF, Wilcox, CL & Lessmann, JM (2009). Fiddler crab burrowing affects growth and production of the white mangrove (*Laguncularia racemosa*) in a restored Florida coastal marsh. Marine Biology 156, 2255-2266. doi: 10.1007/s00227-009-1253-7

Presentations

July 2012: Wilcox, CL. 17th World Congress Of The International Society for Toxinology & Venom Week 2012, Honolulu, HI. Oral Presentation: Discovery of a Scorpaeniform toxin gene in *Cephalopholis argus.* Slides

Mar 2012: Wilcox, CL. 37th Annual Tester Symposium, University of Hawaii, Honolulu, HI. Oral Presentation: Discovery of a Scorpaeniform toxin gene in *Cephalopholis argus*: implications for ciguatoxin detection. Slides

Jun 2011: Wilcox, CL. Evolution 2011, University of Oklahoma, Norman, OK. Oral Presentation: Evidence for wide-spread hybridization between two closely related lionfishes. Slides

Mar 2011: Wilcox, CL. 36th Annual Tester Symposium, University of Hawaii, Honolulu, HI. Oral Presentation: Destruction of a species: evidence for wide-spread hybridization between two closely related lionfish species.

Feb 2011: Wilcox, CL et al. 4th Annual Norwestern Hawaiian Islands Symposium, University of Hawaii, Honolulu, HI. Oral Presentation: Hidden in plain view: A genetic survey reveals high connectivity and a cryptic endemic surgeonfish species in the Hawaiian Archipelago. Slides

Mar 2010: Wilcox, CL, DiBattista, JD and BW Bowen. 35th Annual Tester Symposium, University of Hawaii, Honolulu, HI. Oral Presentation: Phylogeographic survey of the Pacific surgeonfish *Acanthurus nigroris* reveals a cryptic endemic species in the Hawaiian Archipelago.

Nov 2009: Wilcox, CL. Sigma Xi Annual Research Conference, Orlando, FL. Poster presentation: Effect of fiddler crabs on mangrove seedling growth in Cockroach Bay, FL.

Mar 2009: Wilcox, CL. Florida Academy of Sciences Annual Meeting, Saint Petersburg, FL. Oral Presentation: Effect of fiddler crab burrowing on mangrove growth in a restored marsh in Tampa Bay.

Scholarships, Grants & Awards

2012: National Association of Science Writers Freelance Fellowship, $750
2012: EECB Maybelle Roth, $5,000
2011: Sigma Xi Grant-in-aid-of-research, $1,000
2010: CollegeScholarships.com Blogging Scholarship, $10,000
2010: Seaspace Scholarship; $2,000
2010: Honorable Mention for Best Graduate Paper, 35th Annual Tester Symposium
2009: NESCent Travel Award, $750
2006: Sigma Xi Grant-in-aid-of-research, $600

2006: Eckerd College NAS SRP, $2,000
2003: Eckerd Trustee Scholarship, $110,000

Teaching/Leadership Experience

Teacher's Assistant, Physiology for Prof. Jonathan H. Cohen (Spring 2007)
Eckerd College Marine Science Department, St. Petersburg, FL
Teacher's Assistant, Ecology for Prof. William A. Szelistowski (Fall 2006).
Eckerd College Marine Science Department, St. Petersburg, FL
Camp Director, American Go Association's Go Camp (Summer 2005)
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Society Memberships

National Association for Toxinology (board member)
International Society For Toxinology
Society of Systematic Biologists
Society for the Study of Evolution
American Society of Naturalists
International Society of Biogeographers
Sigma Xi
National Association of Science Writers
Diver's Alert Network
…"

ABOUT THE REVIEWER, PAUL G. KING, PHD, ANALYTICAL CHEMISTRY

In addition to the information that is available on his Internet web site, http://www.dr-king.com/, Dr. King is the Science Advisor to the Coalition for Mercury-Free Drugs (CoMeD, Inc., which is a 501(3)(c) not-for-profit corporation with a web site at http://www.mercury-freedrugs.org/) as well as the Science Advisor to the National Coalition of Organized Women (NCOW).

As a scientist and student of the federal regulations and statutes that govern drugs, including vaccines, Dr. King has led CoMeD, on two (2) separate occasions, in the drafting and submission of a "Citizen Petition" seeking to have the federal government comply with the law, and, based on the improper denial of the Citizen Petition submitted, a federal lawsuit seeking to have the Federal District Court for the District of Columbia compel the Secretary of the Department of Health and Human Services (DHHS) and the Commissioner of the FDA to comply with the statutes, laws (regulations) and policies that regulate the lawful conduct of the Secretary of the DHHS, the FDA commissioner and CDC and FDA official's.

In addition, Dr. King has, on several occasions, drafted legislation for submission to the Congress of the USA as well as to the legislatures of various States, submitted cogent comments in opposition to proposed changes to federal and state regulations that are not in the public interest or appear to be at odds with the law, reviewed numerous documents, and written articles on a variety of vaccine-related and other issues.

Moreover, Dr. King has provided diverse groups with his analysis of various Congressional bills, resolutions and treaty documents as well as federal and state judicial proceedings.

Further, he been an author of papers bearing on issues related to the toxicity of Thimerosal and other compounds and, if any, their connection to a range of chronic neurodevelopmental, other developmental and behavioral abnormalities that appear to be well-above (> 1 in 10 children; asthma and obesity), above (> 1 in 100 children; the autism spectrum disorders), at (> 1 in 1000 children; non-genetic childhood type 1 diabetes), or approaching (peanut allergy) epidemic childhood levels in the USA.

Most recently, Dr. King was the co-author of a paper in the journal ***Vaccine*** with Gary S. Goldman, PhD, which reviewed the United States universal varicella vaccination program

This paper established that the current CDC-recommended vaccination program was neither effective in preventing those who are vaccinated from getting chickenpox nor, since it greatly increases the public's risk of having clinical cases of shingles, cost effective for universal use[31].

[31] Goldman GS, King PG. Review of the United States universal varicella vaccination program: Herpes zoster incidence rates, cost effectiveness, and vaccine efficacy based primarily on the Antelope Valley Varicella Active Surveillance Project data. Vaccine 2013 March 25; 31(13): 1680-1684 (open access) [http://www.sciencedirect.com/science/journal/0264410X/31/13, article "6"].