21 September 2012

Scientists Smell A Rat In Fraudulent Rat Study

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Chemistry Nobel Laureate Irving Langmuir related in a landmark 1953 speech his visit to the laboratory of J.B. Rhine at Duke University, where Rhine was claiming results of ESP experiments that could not be predicted by chance, and which he ascribed to psychic phenomena. Langmuir discovered that Rhine was only selectively counting the data in his experiments, omitting the results from those he believed were guessing in order to humiliate him.

Why would a scientist do that? Rhine felt that some of the scores were too low to have occurred by chance, and that it would, therefore, actually be misleading to include them. In other words, Rhine was so intent on obtaining the desired result that he ignored data that were inconsistent with it.

Langmuir dubbed this deviation from the principles of the scientific method "pathological science," the "science of things that aren't so."

Virtually all scientists would agree that Rhine's methodology crosses the line of incompetence and sloppiness and falls into the category of scientific misconduct, but that line is blurred today by some scientists whose research is driven by an obvious political agenda. Often, that agenda is intractable opposition to and obstruction of whatever research, product or technology they happen to dislike.

In a Forbes.com article earlier this year [http://www.forbes.com/sites/henrymiller/2012/02/22/the-science-of-things-that-arent-so/], Bruce Chassy, professor emeritus of food science at the University of Illinois, and I speculated that French biologist Gilles-Eric Séralini was a scientist less guilty of actually fudging data to get the desired answer than of performing poorly designed experiments and grossly misrepresenting the results. Séralini has made a specialty of methodologically flawed, irrelevant, uninterpretable (but over-interpreted) experiments intended to demonstrate harm from genetically engineered (also known as "genetically modified," or GM) plants in various highly contrived scenarios.

The experiment we wrote about purported to show toxicity in vitro on a line of cultured embryonic kidney cells exposed to two proteins commonly incorporated into many varieties of corn, soybean and cotton to enhance insect-resistance. As we discussed, because the experiment was so poorly conceived, any result would have been meaningless.

However, in another just-published experiment that has received widespread attention – and condemnation – Séralini has either crossed the line by committing gross scientific misconduct and fraud, or he has revealed himself to be the dumbest, most incompetent scientist on the planet.

Séralini claimed that his experiments found harmful effects, including a high incidence of tumors, in

laboratory rats fed genetically modified corn and/or water spiked with the commonly used herbicide, glyphosate. The treatments lasted for two years.

There is so much wrong with the experimental design that it seems an inescapable conclusion that the investigators *intended* to get a spurious, preordained result. Here are a few of the criticisms that have been raised by the scientific community:

– the investigators used a strain of rats that were bred to develop tumors as they aged (a detail they failed to disclose). Significantly, mortality rates and tumor incidence in all experimental groups fall within historical norms for this strain of laboratory rats. Therefore, the claim that the GM component of the diet or herbicide caused the tumors is insupportable.

-- there is no documentation of the rats' food intake, which strongly affects the incidence of tumors in this strain;

– the use of only 10 rats per group rather than 50 rats per group as required by international standards for chronic exposure studies to assure statistical validity and avoid misleading outcomes;

– the experiment included 90 rats fed the genetically engineered and/or herbicide-containing diets, and only 10 rats fed a standard diet. Simple common sense tells you that even if there were no actual differences between the two groups, that disparity and natural variability increases the odds that one of the 90 rats would die first (one of the parameters reported in the paper);

– the statistical methods employed were unconventional and appeared to be selected specifically in order to give a certain result. Tom Sanders, head of the nutritional sciences research division at King's College London, called the treatment of data "a statistical fishing trip";

– absence of statistical analysis for mortality or tumor incidence. Statistical analysis is basic and given that the claims of the study allege tumor and mortality effects, omission of statistical analysis is telling;

– the investigators have refused to release all the data from the experiment, which itself constitutes prima facie misconduct;

– lack of clarity about the animals in the "control group";

– insufficient information about the source and quality of corn varieties used in the rats' diet (contamination with molds could be a critical factor);

– absence of data concerning liver or kidney histopathology and liver function tests;

– insufficient explanation of the absence of a dose-response relationship between the experimental

variables and supposed effects;

– inappropriate suffering of the rats, which should have been euthanized long before the tumors became so huge – an especially egregious ethics violation, given that the study is, in any case, worthless.

-- the reported results conflict with innumerable experiments conducted by many labs around the world on both genetically engineered corn and glyphosate, and also with vast real-world experience.

Bruce Chassy has summarized this sad and infuriating situation best: "It is a well-planned and cleverly orchestrated media event. The study was designed to produce exactly what was observed and it was deliberately allowed to continue until grotesque and fear-evoking tumors developed. The way the study was conducted, including the treatment of the animals, especially those who developed tumors as these rats are known to do, raises serious ethical concerns and profound questions of possible scientific misconduct."

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