Late last year, a story emerged questioning the validity of a paper that had made a big splash when it was published in Science earlier in 2016.

The paper was high profile, in large part because of its subject — the effect of plastic microbeads on fish. The authors claimed their data showed that young fish preferentially eat plastic microbeads instead of their other food options.

Other scientists said the paper was chock full of mistakes, negligence and even potential fraud. It was such a captivating story that we wrote about it in December of last year, after Science issued an “expression of concern.”

The story was perplexing, though because, even though the paper seemed like a hot mess all around, a preliminary investigation conducted by Uppsala University (the home institution of the research team) not only found no evidence for scientific dishonesty and misconduct, they also did not recommend a full investigation...

Thankfully, that recommendation fell on deaf ears and a large investigation was launched by Sweden’s Central Ethical Review Board. Well, the results are in, the verdict is guilty, and the paper will be no more. Even though it took 10 months, Science finally retracted the paper on May 3rd.

The primary source of the accusations are scientists who work in the same field and in the same space as Dr. Oona Lönnstedt. They claim several accounts of misconduct including:

- Missing data
The authors claim that the data that were included in the paper were stored in only one place - a laptop computer. Not surprisingly, that had since been stolen.

- Fabrication of methods
  - The experiments described in the paper would have required materials that were simply not in the lab at the extent needed (number of beakers or perch).
- Large discrepancies between the experimentation reported and what was conducted - based on eyewitness reports
  - For example, the time frame of the experiments reported (three weeks) was longer than Dr. Lönnstedt was in the lab. This was easy to measure because the research was done at the Ar Research Station on Gotland, an island in the Baltic Sea - not exactly an easy place to pop in and out of.

Last fall, Professor Bertil Borg of Stockholm University was appointed as an expert in the case. The investigation produced a report that was published last month. Below are some of the findings from the group.

In regards to the cooperation of the authors in the investigation:

The Expert Group notes initially that several questions were repeatedly put to Peter Eklöv and Oona Lönnstedt in order to resolve the question marks in this case. The answers received have been in all essentials deficient, at times contradictory and have not infrequently given rise to further questions.

In regards to concerns about up to date animal usage approvals.

The scientific article in Science claims that the animal ethics committee had given its approval for the experiments in question. The statement concerning approval is not consistent with the truth.

By deliberately stating that animal ethics approval was in place, Peter Eklöv and Oona Lönnstedt have been guilty of scientific dishonesty.

In regards to the missing data:

Despite repeated inquiries by the Expert Group about gaining access to this material, original data has not been provided. It is an absolute requirement that original data used in research is saved and kept available. There must therefore be some form of backing-up in case of e.g. disappearance of a computer. The fact that Peter Eklöv and Oona Lönnstedt produced no more than weak fragments of the original data and no original traceable data files, forming a basis for the research
presented in the article, leads to suspicion that the research was not conducted, at least not to the reported extent.

The Expert Group considers the deficiencies in terms of original data to be of such severity in a research ethics perspective, that Peter Eklöv and Oona Lönnstedt, by their inability to present original data for the research, have been guilty of scientific dishonesty.

They even managed to get in a small slam on *Science* for not verifying that primary data existed.

*It is worth pointing out here that the journal Science was deficient in its checking in this respect.*

On experimental design and missing necessary control experiments.

*If the experiments had been conducted in the way described by the authors, the interpretation of the entire series of experiments and of the work as a whole must be questioned due to the absence of adequate control experiments. According to the Expert Group's assessment, it is remarkable that the article, given these deficiencies, was accepted by the journal Science.*

Ouch!

*In view of the above, the Expert Group finds it remarkable that Uppsala University, in its preliminary investigation of 31 August 2016, found no support for the presence of dishonesty in the research carried out by Peter Eklöv and Oona Lönnstedt.*

So, after this scathing review, published on April 21st, the authors wrote a letter to *Science* requesting that the paper be withdrawn. They state, from a press release from their university [6], "science has to rest on solid ground and that the results of their study, even if correct, will not be trusted as long as a suspicion of misconduct remains. For this reason, the researchers request to retract the published research article."

If that isn’t the icing on the cake. It’s like when someone knows that they are going to lose a race so they fake an injury. But, before they faked an injury, they cheated. The problem is that science is not a game. Thankfully, in this case, the cheaters were caught.

References
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