

The Dangers of Transgenic Mosquitos: Scientific Study Under Attack

Why is an Oxitec-linked author leading an attack on her own paper? Report by Claire Robinson and Jonathan Matthews

By [GMWatch](#)

Global Research, October 15, 2019

[GMWatch](#)

Region: [Latin America & Caribbean](#)

Theme: [Biotechnology and GMO](#), [Science and Medicine](#)

A recent journal [article](#) about GM mosquitoes has caused [quite a stir](#). It showed that some of the male mosquitoes that Oxitec Ltd released experimentally in Brazil had successfully interbred with the local mosquito population, and that their hybrid offspring were now spreading and propagating beyond the release area. This despite Oxitec claiming its mosquitoes had a lethal gene that made them “[self-limiting](#)”.

The paper came under immediate [attack](#). No surprise there, you might think, as many [studies](#) drawing [attention](#) to problems with [GMOs](#) have come under ferocious attack following publication. Often this involves demands for retraction and the deluging of journal editors with irate correspondence – campaigns of attack for which there is good [evidence](#) of corporate orchestration.

But this time there's a difference because the attacks by Oxitec, the company behind the GM mosquitoes, have since been [joined](#) by one of the paper's co-authors, biochemist Margareth Capurro from the University of São Paulo in Brazil.


Indeed, according to an article for Science, [Dissent splits authors of provocative transgenic mosquito study](#), Capurro isn't just complaining about the paper – she and “several co-authors have reportedly requested that it be retracted”.

SCIENTIFIC REPORTS

Article | [Open Access](#) | Published: 10 September 2019

Transgenic *Aedes aegypti* Mosquitoes Transfer Genes into a Natural Population

Benjamin R. Evans, Panayiota Kotsakiozi, Andre Luis Costa-da-Silva, Rafaella Sayuri Ioshino, Luiza Garziera, Michele C. Pedrosa, Aldo Malavasi, Jair F. Virginio, Margareth L. Capurro & Jeffrey R. Powell 

Scientific Reports **9**, Article number: 13047 (2019) | [Download Citation](#) 

So who are the paper's authors and why are they apparently at war with each other? The

study was conducted by a Yale University team led by population geneticist Jeffrey Powell, who collaborated with Brazilian researchers to collect and analyze DNA from mosquitoes before, during, and after the release of Oxitec's GM mosquitoes. Powell's collaborators included Capurro and colleagues at the University of São Paulo in Brazil, and these appear to be the authors demanding the retraction.

It's worth mentioning though that these Brazilian co-authors are not as independent of Oxitec as one might assume. Capurro and her colleagues had an [agreement](#) with Oxitec to monitor the effects of the Brazilian release. Indeed, Capurro seems to have been collaborating with Oxitec for years. She is the [coordinator](#) for the evaluation of all the field releases of Oxitec GM mosquitoes in Brazil. And she has co-authored [papers](#) with multiple Oxitec [affiliates](#).

It is also worth noting that Capurro is the "principal investigator" for a completely separate project, not involving Oxitec, to produce transgenic [mosquitoes](#). A [press release](#) notes that the project Capurro is leading "has already inspired the creation of several biofactories to produce transgenic insects around the world." In other words, Capurro's research centres almost entirely on projects that are completely dependent on public acceptance of GM mosquito releases.

So what are Capurro's reasons for objecting to her own paper? Although she only seems to have engaged with the journal Science about this through her [lawyer](#), she has spoken "exclusively" and in some detail about why she wants a retraction to the Brazilian science publication [Questão de Ciência](#) (A Question of Science).

Here Capurro distances herself from the paper by placing the blame for its contentious content entirely on the lead author, Jeffrey Powell, claiming "not to have been part of – and least of all approved – the final version of the manuscript". This is somewhat surprising as the submission process normally demands an assertion from the submitting author that all co-authors have seen and approved the final manuscript.

Capurro's main complaint about the published paper is that there is nothing unexpected about its results, even though the study shows that many offspring of the GM mosquitoes survived and are spreading and propagating. According to the paper, between 10-60 percent of the mosquitoes in the region concerned inherited parts of the genome of the mosquitoes released in the trials. These findings are also confirmed in neighbouring regions where no such trials were conducted.

Capurro doesn't dispute these findings but [argues](#) instead that "it was already known that up to 4% of the males escaped the lethal gene and developed into adults. Some degree of mating with the local population with healthy offspring was completely anticipated and poses no surprise." In other words, nothing to see here – no reason for concern. This was all entirely to be expected.

Except this is not what Oxitec has been telling the world. Take for instance this [statement](#) on their website explaining "Our Science" and specifically their lethal gene: "The self-limiting gene is at the heart of our method of insect control. When our male insects are released and reproduce with wild females, *all* of their offspring inherit a copy of this gene" (our emphasis).

Similarly, as Christophe Boëte, who works on host-parasite interactions with a particular

focus on vector-borne diseases, has [pointed out](#), even in the scientific literature the Oxitec mosquito (OX513A) has been presented as “sterile”. He gives the example of a [paper](#) by Lacroix et al, which in its title describes the OX513A mosquito as a “Genetically Engineered Sterile Male Aedes aegypti” and in its text describes it as “an engineered ‘genetically sterile’ (OX513A)” strain.

If this is how Oxitec’s mosquitoes have been described in the scientific literature, then it seems plausible that people living in the areas where these field releases have been taking place have also been given the impression that Oxitec’s mosquitoes are incapable of successfully reproducing.

And there is clear evidence that this is indeed the case in a [paper](#) published in the journal Emerging Infectious Diseases. It reports on the findings of a survey into local residents’ “awareness and support” for the field release of Oxitec’s OX513A mosquito in two places in Florida. The authors write that because these male mosquitoes’ mating “results in death of offspring in the larval or pupal stage of gestation... outreach activities in the area preceding the survey referred to the mosquitoes as ‘sterile.’”

So local residents were given the impression Oxitec’s GM mosquitoes could NOT produce viable offspring. Indeed, because of this, the survey team themselves included the word “sterile” in the survey that they did with local residents, “because this term had been used in community awareness activities and should have been familiar to those who had heard of the proposed release”.

If this was the impression given to the communities in Florida, then there is little reason to think that the communities in Brazil will have been provided with more accurate information. We know this because after the Powell et al paper was published, the views of a former Brazilian regulator who had written a detailed report on the concerns the project raised were [reported](#) in the Brazilian press.

In his report Dr José Maria Gusman Ferraz had called on his fellow regulators to suspend the release of Oxitec’s GM mosquitoes until further health and environmental impact studies had been undertaken. And Dr Ferraz specifically noted Oxitec’s failure to make clear the survival rate of their mosquitoes, and the lack of studies on their mating with local mosquito populations. He accused Oxitec of reducing local people to mere guinea pigs who were neither properly informed nor meaningfully consulted about the risks involved.

And Oxitec may not be the only ones failing to properly inform and consult people affected by GM mosquito releases. Just in the last week, the UK’s Telegraph newspaper ran the headline [‘We don’t want to be guinea pigs’: how one African community is fighting genetically modified mosquitoes](#). The article about a [Target Malaria project](#) in Burkina Faso reported how “several villagers anonymously told the Telegraph they had not been made aware of any risks associated with the experiment. ‘They didn’t tell us about the risks, only the advantages,’ a farmer said.”

A [film](#) made in Burkina Faso about the Target Malaria project also argues that the project does not have proper consent from the affected communities for its experiment, and it includes interviews with local people who say that they have not been properly informed. These concerns around consultation and consent have also been [raised](#) by a group of 43 civil society organisations from Africa and around the world.

The issue of informed consent in relation to such projects is also raised in a recent [article](#) by a group of experts specifically interested in fostering public engagement on the environmental release of genetically modified organisms intended to alter wild species. They point to the “unknown risks” involved in GM mosquito releases and directly accuse Oxitec of failing both to adequately assess and properly consult on those risks:

“Given that ‘around 5 per cent or less’ of the GM mosquito population was expected to survive, shouldn’t Oxitec have made plans to assess the risk of gene transfer to wild populations during their initial trials? And shouldn’t the Brazilian government have required such an assessment as part of the regulatory approval process, given their awareness of the risk?

“Instead, with approval from Brazilian authorities, Oxitec released nearly half a million GM mosquitoes every week into shared environments in Jacobina over a two-year period from 2013 to 2015. This was done without the benefit of adequate risk assessment and without proper public consultation.”

But like Oxitec, Dr Capurro [argues](#) that neither the survival nor the gene transfer are of any concern. They say the genes transferred by the Oxitec mosquitoes to their surviving offspring are not transgenic. They also claim that as OX513A mosquitoes are a laboratory strain, their offspring will be less fit for survival in the wild, and both attack the Powell et al paper’s claim that the offspring may instead have “hybrid vigour” as mere speculation. But their claims about the impact of gene transfer to wild populations are equally speculative. They’re based on assumptions, not evidence.

Despite this, Oxitec has [filed](#) a complaint about the paper with the journal, Scientific Reports. On 17 September, the journal added an editor’s note to the study, promising “a further editorial response” to criticisms raised about the conclusions.

Powell told Science magazine that he stands by the validity of the paper’s data and analysis. He said the paper clearly states that the effects of DNA spread from the Oxitec strain aren’t known and it raises some possible consequences without claiming that they’ve been proven. And indeed, the wording of the paper does seem to be far more cautious than Powell’s critics imply, e.g. “Thus, Jacobina Ae. aegypti are now a mix of three populations. It is *unclear* how this *may* affect disease transmission or affect other efforts to control these dangerous vectors” (our emphases).

We suspect that if the GM mosquito developers’ interests were not involved, objections to Powell et al’s paper would have been far less strident. We are particularly baffled by the extremity of the demands for retraction of the paper, rather than the more proportionate and customary approach, which is to request the journal to publish a correction or clarification. No one has produced any evidence that the Powell paper meets any of the proper criteria for the retraction of a study. [These are](#) unreliable findings (involving misconduct or honest error), redundant publication, plagiarism, and unethical research.

The criteria for retraction do not include “failure to further qualify an already qualified hypothetical statement” or “upsetting a GMO developer company and those affiliated with it”. So if the paper does end up being retracted, someone is going to have to come up with some creative reasoning as to why.

In the meantime, the concerns are unlikely to go away about how adequately the

uncertainties around these GMO releases are being explored and disclosed, and the extent to which those affected by these experimental releases are being involved in the decision-making about them.

*

Note to readers: please click the share buttons above or below. Forward this article to your email lists. Crosspost on your blog site, internet forums. etc.

Featured image is from GMWatch

The original source of this article is [GMWatch](#)

Copyright © [GMWatch](#), [GMWatch](#), 2019

[Comment on Global Research Articles on our Facebook page](#)

[Become a Member of Global Research](#)

Articles by: [GMWatch](#)

Disclaimer: The contents of this article are of sole responsibility of the author(s). The Centre for Research on Globalization will not be responsible for any inaccurate or incorrect statement in this article. The Centre of Research on Globalization grants permission to cross-post Global Research articles on community internet sites as long the source and copyright are acknowledged together with a hyperlink to the original Global Research article. For publication of Global Research articles in print or other forms including commercial internet sites, contact: publications@globalresearch.ca

www.globalresearch.ca contains copyrighted material the use of which has not always been specifically authorized by the copyright owner. We are making such material available to our readers under the provisions of "fair use" in an effort to advance a better understanding of political, economic and social issues. The material on this site is distributed without profit to those who have expressed a prior interest in receiving it for research and educational purposes. If you wish to use copyrighted material for purposes other than "fair use" you must request permission from the copyright owner.

For media inquiries: publications@globalresearch.ca