

When his suspicions went unanswered, this biologist decided to disavow his own study

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Blowing the whistle on his first paper was “incredibly isolating,” according to Ken Thompson. “I don’t want to deal with this alone anymore.”

Mackenzie Urquhart-Cronish

By Martin Enserink Jun. 15, 2021 , 1:35 PM

A scientist’s first academic paper is usually a career milestone as well as a source of pride. For evolutionary biologist Ken Thompson of the University of British Columbia, Vancouver, it’s neither. Instead, it has become a case study in the frustrations facing a would-be whistleblower.

On 10 May, Thompson published a “technical comment” via Dropbox that reads like a frontal attack on his own first paper, published in 2014 in *Biodiversity and Conservation*. Thompson was the first author of the study, which pitted traditional techniques for identifying plant species against DNA barcoding, which uses short genetic sequences to differentiate species. But his post identified what he said were serious issues in data from his co-author and concluded: “Until and unless these matters are resolved, I feel that I can no longer stand by the results of the study.”

Thompson wrote the 2014 paper as an undergraduate student at the University of Guelph (UG), but the data came from botanist Steven Newmaster, a prominent lab leader there. Among the issues Thompson raised: Records showed the DNA data were not posted online in 2014, as the paper said, and when they were posted—in 2020, after Thompson began to raise concerns—they did not support all of the paper’s conclusions. They also

showed a striking and, in Thompson's view, implausible resemblance to a different molecular data set collected for a separate study by a researcher at the university's Centre for Biodiversity Genomics (CBG).

"I am not accusing anybody of anything untoward," Thompson wrote in a [guest post](#) on the blog *Eco-Evo Evo-Eco*, the same day he published his disavowal of the paper. But the post did appear to incriminate Newmaster, the paper's only other author, who did not respond to multiple interview requests from *Science*.

Email correspondence that Thompson shared with *Science* shows he tried for more than a year to persuade UG to investigate the paper, with little success. A university spokesperson emailed *Science* that "allegations of research misconduct are taken very seriously" at UG, but wrote that "details and outcomes of specific allegations are confidential." Last month, after *Biodiversity and Conservation* editors also declined to investigate the paper, Thompson decided to go public. "I don't want to deal with this alone anymore," he wrote in his post, describing the process as "incredibly isolating."

Thompson soon received support from Paul Hebert, founder and director of CBG and a DNA barcoding pioneer. [On Eco-Evo Evo-Eco](#), Hebert took his own university to task for not properly investigating the paper. "For me to watch a young academic who brought to light serious concerns ... I could not stand back," Hebert tells *Science*. "If I have concerns I have to speak up."

Thompson's 2014 paper set out to determine the best way to identify and survey plant species: the old-fashioned way, which relies on morphology; or by extracting DNA from leaves and using barcoding. Data from 337 plots in northeastern Ontario showed barcoding was clearly better. The method identified more species per plot and more species overall, at a lower cost per species.

Interviewed by email, Thompson wrote that he long feared something was wrong with the paper, but was afraid that airing his doubts could harm his career. On the other hand, if others raised questions about the paper, "I would have to either lie and say I had no idea or tell the truth that I did not say something even though I had substantiated suspicions," he wrote. [A scandal around social spider researcher Jonathan Pruitt](#) in early 2020 inspired him to take action.

The emails between Thompson and UG officials indicate the university did look into the matter. But on 10 September 2020, UG Associate Vice-President Karina McInnis wrote Thompson that an "initial inquiry" indicated a full investigation was not required and the case was closed. McInnis rebuffed several pleas from Thompson to revisit the case.

Thompson suspects UG may have been reluctant to investigate because Newmaster is an important asset. His research [has generated more than \\$7 million in funding](#), according to UG's website; Newmaster also founded the [NHP Alliance](#), which aims to improve authentication processes for natural health products such as herbal supplements and receives major industry funding. (The UG spokesperson says misconduct procedures "are the same regardless of the identity of the respondent and complainant.")

After Thompson began to press for an investigation, Newmaster's lab uploaded thousands of genetic records supposedly associated with the paper to GenBank. They only deepened Thompson's suspicions. The data did not support the identification of all of the species supposedly identified in the study, he says, because DNA barcoding lacks the specificity to distinguish some of them. For example, the paper claimed to have distinguished seven willow species, but the data allowed only the identification of the genus, *Salix*, and not individual willow species, Thompson wrote. Even more troubling, most of the genetic data posted in 2020 are almost identical to data for two different papers published by CBG researchers in 2012 and 2017, he wrote.

Hebert agrees barcoding alone can't identify every plant species, as the study claimed. "That's never been seen in any plant study," he says. "It's difficult to resolve closely allied plant species; this is a well-known problem in certain genera." He also confirms that "more than 6000 sequences" deposited into GenBank by a member of Newmaster's lab in 2020 "are duplicates or lightly edited duplicates of sequences" that were previously posted.

Hebert says the 2014 paper also appears to include a false claim: that the barcoding of its plant samples was done at the Canadian Centre for DNA Barcoding, where he is scientific director. The samples aren't in a database "that tracks all samples that come to the lab for analysis," he says. UG's investigation was "incomplete," Hebert concludes. "I admire Ken's determination to provoke evaluation of his concerns."

Thompson failed to persuade *Biodiversity and Conservation* to investigate the paper. "The journal is not in a position to question [UG's] investigation," a representative of the publishing company, Springer Nature, wrote to Thompson on 7 May, 3 days before he went public. "Institutions are usually in a better position to investigate such concerns," the journal's editor-in-chief, U.K. mycologist David Hawksworth, wrote in an email to *Science*. However, Hawksworth added, "We are now looking into the matter further and will take editorial action, if we conclude it is necessary."

It's not uncommon for research journals to defer to institutional misconduct investigations, in line with recommendations from the Committee on Publication Ethics (COPE). But that practice can be immensely frustrating to would-be whistleblowers, especially when universities dismiss allegations against their own scientists.

"I feel very sorry for [Thompson], who seems to have been very honorable and done the right thing," says Liz Wager, a former COPE chair and co-author of a new report on how institutions and journals can better collaborate to resolve misconduct allegations. "But equally, the journal is stuck." Unlike universities, journals can't compel authors to cooperate with an investigation, she says. Journals often lack the required expertise, and editors may worry about the legal ramifications of retracting a paper against an author's wishes. "They don't want to get involved in really expensive legal cases, which could sink a small journal."

Thompson says he is hugely relieved to have Hebert on his side, adding, “I almost fainted” when he expressed his support. But he’s disappointed by the response from both the university and the journal. “The institutions meant to uphold the process of science have utterly failed,” he says.

Thompson adds that he’s preparing a new, detailed document, with scientists at UG and elsewhere, in a final attempt to get the university to launch a formal investigation. “I am optimistic,” he wrote, that “they will take this seriously.”