

CAREERS

WHALE WATCH Saving pygmy blue whales in Sri Lanka's shipping lanes **p.579**

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RESEARCH MANAGEMENT

A delicate balance

Conflicts of interest can send a researcher's reputation crashing — but resolving them needn't be as burdensome as it seems.

BY JEFFREY M. PERKEL

In more than 25 years as an academic chemist, Joseph DeSimone has spun his research findings into commercial gold by launching several businesses, including an eco-friendly dry cleaners, a stent manufacturer and a drug-particle technology company.

In each case, DeSimone, a faculty member at the University of North Carolina in Chapel Hill, provided scientific advice and held equity in those fledgling businesses.

But he'd never actually managed one of his companies until now. As is true for most academic researchers in the United States and Europe, DeSimone's employers bar him from simultaneously holding an academic post and an executive position such as chief executive, chief scientific officer or chief financial officer. The dual roles can present

huge conflicts — not just of time, but of financial interest. A researcher who straddles both positions could, for example, shunt federal grant funds into their start-up. At best, their commitment to their primary job as a faculty member could suffer.

So when DeSimone decided to run a company that he'd launched in 2013 to commercialize a 3D-printing technology, he took an open-ended leave of absence from his university role.

CONFLICT ZONES

Conflicts of interest (COIs) can arise almost anywhere, and it makes sound career sense to think about how best to manage them effectively and transparently. Researchers should disclose potential or existing conflicts across all aspects of academic life, including research, teaching, consulting, peer review, grant writing,

conference organization and publishing.

Disclosures can protect against missteps — real or perceived — in the design, conduct or reporting of scientific studies. They also assure taxpayers that publicly funded grants are not being siphoned into a private company's profits, and they boost confidence in published research from funders and colleagues.

COI disclosures can also reassure research institutions that their employees' professional efforts benefit the university and its mission.

Getting entangled in a COI dispute can damage a researcher's reputation, finances and employment prospects, and it's important to work with university administrators to ensure that conflicts are properly managed. When in doubt about a potential or actual conflict, researchers need to ask. "We expect people to do their jobs with integrity and with rigour," says Angela Campbell, associate provost ►

► at McGill University in Montreal, Canada. “If they’re not sure, they should be asking the questions before they dive in.”

In most places, COI management runs on an honour system. Researchers decide which financial holdings and relationships to disclose to university administrators. Journals and funders adopt a similar system when they ask authors and peer reviewers about potential conflicts related to manuscript or grant approvals.

These interests and relationships are not, per se, conflicts of interest, and their mere presence does not imply wrongdoing. At issue is whether that conflict creates a situation in which a researcher’s decisions — or their science — could reasonably be questioned. The university (or funding agency or journal editor) must make that determination, says Julia Campbell, director of the COI office at Northwestern University in Evanston, Illinois.

Disclosure is the first and most vital step in avoiding conflict, says Mark Del Beccaro, senior vice-president and chief medical officer at Seattle Children’s Hospital in Washington (see ‘Conflict-of-interest resources’). “Just disclosing a COI does not remove the issues around it,” he says. “Certainly, not disclosing them is an even bigger issue.”

Most research institutions have formal COI policies, offer training and have dedicated offices to help research-faculty members to understand what constitutes a potential or existing conflict. In general, researchers must report potentially conflicting financial interests to their employers annually; they should also disclose them as they occur or, preferably, before they arise. That includes interests such as intellectual property, consulting fees or company stocks that are held by spouses and dependent children.

Administrators then decide whether the interest presents a conflict, and whether that conflict can be handled. If so, they

create a management plan to address it. If not, researchers must abandon the work, partner with researchers at other institutions or — as DeSimone did — leave their university, even if only temporarily.

Perception plays a part in the definition of a potential conflict, warns David Walt, a chemist at Tufts University in Medford, Massachusetts, and the founder of two companies, including the sequencing giant Illumina. Principal investigators who develop a technology in the laboratory and then transfer it to their company could create a conflict of interest in the eyes of their students and postdocs, particularly if they continue to work with that company, Walt says.

But he points out that the potential conflict can be avoided by drawing up a licensing agreement that bars discoveries from automatically being transferred to a principal investigator’s company. He created such an arrangement to satisfy students and others that they weren’t actually working for his private companies.

Angela Campbell warns that altruistically using corporate funds to pay a student stipend could lead to the student’s work becoming company property; this could stop the student freely publishing work, even as a thesis.

The consequences of failing to disclose can range from correction of a manuscript to financial penalty or job loss. Journals faced with undisclosed COIs typically publish corrections, although retractions are possible if the conflict is particularly egregious. Funders take a similarly dim view. The UK Medical Research Council treats undisclosed COIs as acts of research misconduct, says spokesman Tony Peatfield. Repercussions for a grant recipient range from a warning to termination of employment if the university employer agrees with the council’s decree. The agency could also revoke the grant, Peatfield says.

Researchers funded by the US Public Health Service (PHS, which includes the National

Institutes of Health) who do not disclose relevant financial interests that the university considers to be a conflict must develop with their administration a management plan for dealing with the situation. The university may also require the researcher to submit their research data to the university for ‘retrospective review’. Julia Campbell likens that process to a scientific-misconduct proceeding. If the review uncovers bias or lack of objectivity, the PHS must be notified and publications might need to run corrections. Even if the review

“If you feel like you can’t be an impartial reviewer, absolutely that is considered a COI.”

uncovers no bias, the experience can be humiliating; worse, it could damage a researcher’s scientific reputation and credibility. “It’s nothing fun to go through,” says Campbell.

Although journals require disclosure of potential financial or other conflicts for manuscript submission and in peer review, no single process or standard exists for such disclosure to journal editors. “The etiquette of science,” says Natalie de Souza, chief editor of *Nature Methods*, “is that you do not act upon information that you get when you’re reviewing somebody’s paper.”

Relationships, both past and present, can pose conflicts when conference organizers are choosing speakers. Members of the American Society for Human Genetics programme committee, which selects abstracts and talks for the society’s annual meeting, must recuse themselves from considering talks by, for example, researchers at their current and past institutions, current and former mentors and mentees, close collaborators and those with whom they have personal or familial ties.

Even differing points of view can play a part. Peter Scacheri, a geneticist at Case Western Reserve University in Cleveland, Ohio, who chairs the committee, says that members who have disagreed personally with potential speakers might also be obliged to recuse themselves: “If you feel like you can’t be an impartial reviewer, absolutely that is considered a COI.”

GUIDES FOR THE PERPLEXED

Conflict-of-interest resources

Here are some guides and information sources to help you to navigate the complexities of disclosing and managing conflicts of interest (COIs).

- The International Committee of Medical Journal Editors developed a COI disclosure form that is used by hundreds of medical journals (see go.nature.com/2ms3iet).
- The US National Institutes of Health has aggregated various guidelines, regulations and FAQs concerning financial COIs (see go.nature.com/2ms5no7).
- Data collected by the US government, such as details of payments made by drug companies to physicians, can be searched at openpaymentsdata.cms.gov.

- To simplify COI disclosure and reduce errors, the Association of American Medical Colleges developed a global disclosure system called Convey (see www.convey.org).
- McGill University in Montreal, Canada, has created a document called ‘Recognizing Conflicts’, which includes some 50 examples of financial and other conflicts (see go.nature.com/2mscw3).
- A 2016 report by the US National Academies Press, *Optimizing the Nation’s Investment in Academic Research: A New Regulatory Framework for the 21st Century*, includes a chapter on regulatory issues affecting research, including COIs (see go.nature.com/2ms2dk7). **J.P.**

INVENTIVE SOLUTIONS

Start-ups and intellectual property can present a minefield of potential and existing conflicts. A researcher might have developed and commercialized a technology but still want to continue developing it. That’s likely to be forbidden. A researcher’s start-up, rather than their university lab, would have to assume the cost of further developing and commercializing the product or service.

That’s not to say the researcher cannot use the technology at all: university intellectual-property transfer agreements generally allow for non-commercial applications. Walt has a souped-up version of hardware now owned by one of his companies that he helped to develop

in his lab. “Just because I’m the inventor of the technology, I should not be precluded from using that technology to pursue scientific discovery,” he says. But, in every paper and every presentation that he publishes, he is careful to include a competing-interests statement to acknowledge that he invented and commercialized the technology.

Industry and industry-sponsored research also poses COI-management problems. Susan Zonia, research-integrity officer at the University of Chicago in Illinois, says that often researchers accept consulting fees from a company and then want to do research that is sponsored by that company. (In the United States, drug and medical-device manufacturers must typically disclose such payments at openpaymentsdata.cms.gov, a publicly searchable database.) If a company proposes to fund research by or collaborate with an academic lab, the parties typically negotiate a collaboration agreement that spells out the nature of the relationship, ownership of intellectual property and who exactly will be conducting the research.

Peter Seeberger, director of the Max Planck Institute (MPI) of Colloids and Interfaces in Potsdam, Germany, has founded half a dozen companies in the United States and Europe. Because the MPI accepts government funds, he says, its students and postdocs are generally precluded from corporate research and development unless a collaboration agreement is drawn up. When Seeberger launched one of his businesses, MPI researchers who wanted to work there had to quit their MPI jobs.

Transparency is key, says Milan Mrksich, a chemist at Northwestern who has founded four companies over the past ten years, including one that runs high-throughput screening assays for pharmaceutical clients. Each year, he meets with his team to disclose his external projects and corporate ties so that students and lab members don’t inadvertently find themselves directing their efforts towards corporate goals. “My policy is that full disclosure is the best protection,” he says.

Handling conflicts of interest can be burdensome. COI managers emphasize that the goal is not to quash innovation, but rather to expose potential conflicts so that they can be managed. “Nothing about the process is meant to be prohibitive,” says Rupinder Grewal, COI officer at the Massachusetts Institute of Technology in Cambridge. Like all institutions, she says, hers wants to enable good science and, through it, the betterment of humanity. “During that process,” she says, “if you make some money, that’s good as well.” ■

Jeffrey M. Perkel is technology editor at Nature.

TURNING POINT

Whale watcher

*Asha de Vos is fascinated by pygmy blue whales (*Balaenoptera musculus brevicauda*), a sizeable population of which breed and calve off Sri Lanka’s southern coast, one of the world’s busiest shipping lanes. A TED Fellow and National Geographic Explorer, the marine-mammal researcher works to protect the subspecies and is using her US\$150,000 fellowship from the Pew Charitable Trust, awarded last year, to create and help to fund Oceanswell, a whale-research and outreach organization in her native Sri Lanka.*

How did you first encounter pygmy blue whales?

In 2002, after doing a marine-biology degree at the University of St Andrews, UK, I was in New Zealand for field experience when I wangled my way onto a whale-research vessel that was circumnavigating the globe. On the trip, I saw my first group of six pygmy blue whales — the smallest species of blue whale.

Why did the sighting matter to you?

Scat nearby indicated that the creatures had been feeding. Typically, large whales migrate between cold feeding areas and warm breeding areas. But these were feeding, breeding and calving in the tropical waters of Sri Lanka. I decided I wanted to spend my life understanding and protecting these whales. Six years later, I launched the Sri Lankan Blue Whale Project — the first long-term research project on blue whales of the Northern Indian Ocean. It is now part of Oceanswell.

How did you go about that?

I earned a master’s degree in integrative bioscience from the University of Oxford, UK, so that I could learn field-research techniques. Then I returned home, where I worked with the International Union for the Conservation of Nature on wetland and reef projects. But I had to leave because of a lack of funding. So, in 2008, when the Sri Lankan civil war was coming to an end and the whale-watching industry was beginning, I approached a tour operator.

To do what?

I was the scientist-on-board answering questions about whales. My real motive was to sight blue whales — I hadn’t seen them in six years — and get Global Positioning System locations for them. With the data I had gathered, I went to the University of Western Australia in Perth to do postgraduate work in marine-mammal research, becoming the first Sri Lankan to earn a PhD in the subject.



What is Oceanswell doing?

We are continuing our research on Sri Lankan blue whales: we have unravelled the mysteries of what these creatures feed on and their diving and surfacing behaviours, and have identified some of the threats they face and ways to limit the number of whale deaths. With my Pew funding, we will create a training and education platform for future marine conservationists in Sri Lanka.

You were named National Geographic Explorer last year.

Yes, and this title, which comes with a cash award of \$10,000, is very close to my heart. I decided to be an adventurer–scientist at the age of six, after leafing through pages of that very magazine. I wanted to be one of the people featured in them — discovering, exploring and contributing to humanity.

What are your next steps?

Sri Lankan pygmy blue whales live all year round near shipping lanes that see heavy traffic, and their biggest threat is getting struck and killed by ships. During my post-doc at the University of California, Santa Cruz (UCSC), I gathered field data on these ship strikes and built mathematical models to try to address the problem. I’ve assembled a team of scientists from UCSC and the US National Oceanic and Atmospheric Administration to develop recommendations for reducing collisions between ships and whales.

In my new role as adviser to the minister of sustainable development and wildlife in Sri Lanka, I am using our findings to push for policy changes that will help to protect the blue-whale population in our waters. ■

INTERVIEW BY VIJEE VENKATRAMAN

This interview has been edited for length and clarity.