

rallying cry that will surely be applauded in labs across the world. What scientist does not feel wronged when their valuable contribution to society is not recognized and their application for funds spurned?

As inspiring as Coveney's victory may seem to the ranks of the down-trodden and unappreciated, his case is unlikely to produce a surge of similar appeal successes. For starters, the fact that many scientists who answered our online poll did not know about possible appeals processes has made little difference to them or to their fortunes. Many big funders, including several national agencies, don't allow appeals. Just like in sport, the referee's decision is final, however unjust it might seem. And for those agencies that do allow appeals (a good way to find out is to check the funder's website) any complaint must provide concrete evidence of an error. In Coveney's case, the European Commission had mistakenly marked his application down for including something it had asked for.

Oh, and don't call your appeal a complaint. As many agencies — even those that do permit appeals — make clear, they don't respond in the same way to complaints. (Some, however, do allow appeals against results of investigations into complaints.)

The US National Institute of Allergy and Infectious Diseases (NIAID), for one, says that it prefers to start by handling any appeal as a 'grievance', which is turned into an 'appeal' only if it cannot be resolved. In that case, an authorized organizational representative (AOR) must write to the relevant NIAID programme officer. If the programme officer, who maybe working with a scientific review officer, disagrees with the AOR, then NIAID will send the appeal to its advisory council, and then on to the National Institutes of Health's Center for Scientific Review. The principal investigator does not revise the rejected application, which is re-reviewed by either the same or a different scientific review group.

Confused? Any similarities between the complexity of some appeals processes and the way that rail companies, say, make the process to claim refunds for delayed services so complicated that most people don't bother are surely coincidental. And yet, back in 1987, an article in *The Scientist* pointed out that the formal process for appealing against rejected grants was "one of the best-kept secrets in the scientific community" and added, cryptically, that "science administrators seem content to leave it that way" (see go.nature.com/d99fc5).

"A successful appeal may not guarantee extra funds."

The secret is out now, thanks to Coveney's efforts, and the decision in his favour announced last month. He and his co-applicants hired a lawyer to help them to negotiate the appeals process, but then the European Commission is known for its tortuous bureaucracy. Some research funders do, at least at first glance, seem to make the appeals process more benign. The British Academy, for example, simply invites those rejected to write to the chief executive, and then, as a last resort, to the president. Science Foundation Ireland intriguingly allows spurned applicants to appeal on the grounds of a wide range of possible failings in its procedures including the "inappropriate consideration of rumour/hearsay" by grant reviewers.

Be warned, though: a successful appeal does not guarantee extra funds. In its policy on grant-application appeals, the Natural Sciences and Engineering Research Council of Canada (NSERC) states: "If NSERC concludes that a procedural error occurred during the review of the application, the resulting funding decision could be to leave the original decision unchanged, or to increase or decrease the level and/or duration of the grant or award." Have appeals ever looked so unappealing? ■

Destination Venus

Findings from the Akatsuki mission should rekindle interest in Earth's closest neighbour.

When the first robotic probe penetrated Venus's cloud-filled atmosphere in 1967, it was designed to float. At the time, the surface of Venus was a complete mystery, and the engineers behind the Soviet Venera 4 thought it might land in a vast ocean. Science-fiction writers had imagined tropical swamps, forests or water worlds beneath the clouds. Venus's mass, density and composition were all similar to Earth's, and it was our closest neighbour, so it looked like a good bet for native life and even human colonization.

Instead, Venera 4 was destroyed before it reached the surface. The readout from its descent, and from subsequent probes, revealed extreme pressure, searing temperatures close to 500°C and an atmosphere that was 95% carbon dioxide. Even though Venus was originally very like Earth, perhaps even replete with oceans, a runaway greenhouse effect had turned it into a hellhole. No one, it seemed, would be going to holiday on Venus any time soon.

The discovery that the brightest body in the sky, bar the Sun and the Moon, is so hostile to life has helped to turn humanity's attention to Mars, our next-closest neighbour. Not only is the red planet a more viable candidate for an off-Earth base, it is much easier to study. On Venus, dense clouds of sulfuric acid mean that only radar can trace the surface from the air. Two rovers are trawling Mars right now, and more are in the pipeline; on Venus, probes designed to drop to the surface must deal with an environment that can melt metal.

So despite being the first planet to be visited by a probe, Earth's closest neighbour remains little-known. Venus's atmosphere contains a mystery substance, detected because it absorbs ultraviolet light, but so far unidentified. Scientists don't agree on how the planet's relatively

young surface is remade, or how active its volcanoes are. The mechanism behind its enormous winds — which hit at several hundred kilometres per hour — is a mystery, as is why Venus rotates on its axis in the opposite direction to Earth. Does it have lightning? The jury is out.

Venus scientists feel that their planet is neglected. Despite a flurry of visits in the first decades of interplanetary exploration, NASA hasn't been to the planet since the Magellan mission ended in 1994. The European Space Agency's Venus Express orbiter filled a gap when it observed the planet from 2006 to 2014, but at €220 million (US\$252 million) it was a relatively small mission, and it could only peer at Venus from orbit.

Now, after a rocky journey, Japan's Akatsuki mission — which many wrote off as lost when its main engine failed in 2010 — has entered Venusian orbit and is revealing intriguing results about the planet's climate (see page 157). In its wake is another glimmer of hope: two Venus projects are among five proposals shortlisted for NASA's next \$500-million Discovery mission, launching in the early 2020s. VERITAS (Venus Emissivity, Radio Science, InSAR, Topography, and Spectroscopy) is a high-resolution radar mapper that would study the planet from the sky; the DAVINCI (Deep Atmosphere Venus Investigation of Noble gases, Chemistry, and Imaging) probe would sample the atmosphere during an hour-long plunge to the surface. Project leaders hope that compelling findings by Akatsuki will generate excitement about the planet at just the right time.

Given that life and the ability to sustain it will always be a selling point for an interplanetary mission, and that the only hope for life on Venus would be in its upper atmosphere, Venus's fall from favour might be understandable. But the planet holds a trump card. Increasingly, astronomers are searching for exo-Earths — extrasolar planets that, given their similarity to Earth, are a good bet for life. There, Venus can tell a cautionary tale. Despite starting out with all the ingredients for life, at some point Venus went rogue and became the hellish, acidic, dry planet it is today. Although life might not be found in a Venusian jungle, understanding why the planet took the path it did might be crucial to finding life elsewhere. ■

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