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NSF's 'Big Pitch' Tests Anonymized Grant Reviews

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Is the U.S. National Science Foundation (NSF) turning down deserving research proposals because of potential biases in the grant-review process? The answer may be yes, if preliminary findings of an experiment being conducted by NSF officials hold up. But the officials caution against drawing any firm conclusions from what they acknowledge is limited data.

Known as The Big Pitch and launched 2 years ago by officials in the agency's Molecular and Cellular Biosciences (MCB) Division, the effort aims to find out if making proposals anonymous—and shorter—has an impact on how they fare in the review process. "We wanted to find ways to identify transformative ideas that are getting lost in the regular peer-review process," says Parag Chitnis, head of the MCB division. "So we asked: What would happen if we strip off the name of the PI [principal investigator] and institution and distill proposals down to just the big question or the core idea?"

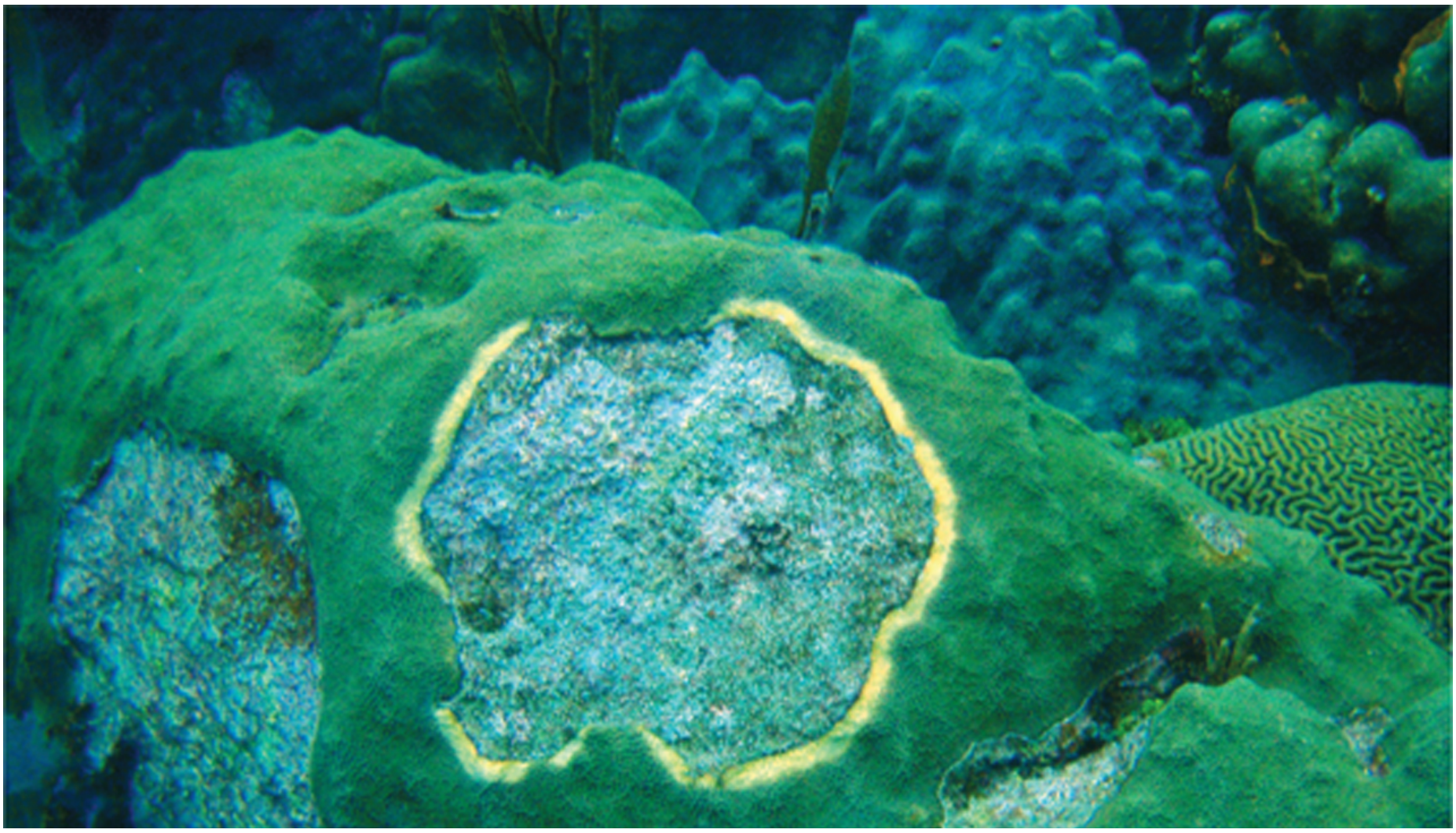
What's in a name?
Taylor (*left*) and Mydlarz (*right*) are among a handful of researchers who won NSF grants based on anonymous, two-page proposals describing the big idea behind their projects. CREDIT: COURTESY OF LAURA MYDLARZ; RICHARD MORAN

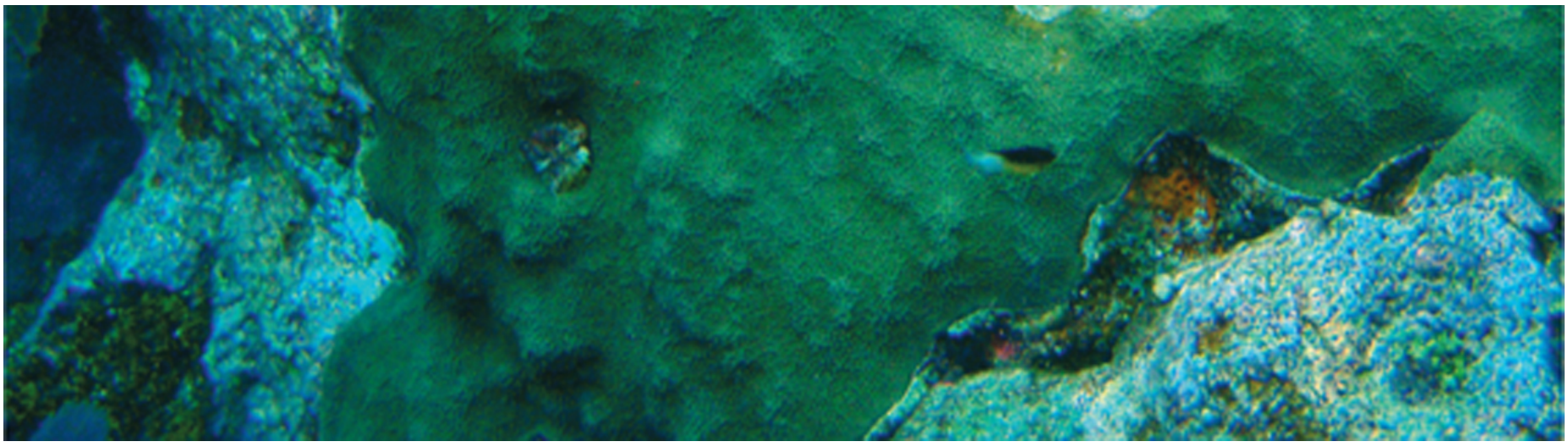
What happens is a lot, according to the first two rounds of the Big Pitch. NSF's grant reviewers who evaluated short, anonymized proposals picked a largely different set of projects to fund compared with those chosen by reviewers presented with standard, full-length versions of the same proposals.

In the first round, Chitnis and his colleagues identified 55 proposals relating to a single topic—biological effects of climate change—that MCB had received. They invited the applicants to supplement their standard, 15-page project descriptions and itemized cost estimates with two-page synopses that left out the details of each proposal but underscored the central idea. All of the applicants agreed to participate.

The division assembled two peer-review panels. One rated the traditional full proposals, while the other evaluated the two-page versions, which omitted the names and affiliations of applicants. The panel that reviewed the full proposals rated 14 proposals as "high priority." The other panel came up with its own list of 11 proposals that it judged as "high priority."

The two lists were almost entirely different, with only three proposals in common. According to a comparative analysis prepared by NSF, there was only "a weak correlation" between the two panels' ratings. In other words, the panels' assessments strongly diverged.





Sea change.
Mydlarz's grant will help study coral immunity CREDIT: LAURA MYDLARZ

In the fall of 2011, the division repeated the experiment with 50-odd proposals for research concerning evolution. NSF has not released details of the results, but officials there say that once again, there was little overlap between the two panels' choices.

In the climate change round, the division ended up funding three out of five projects chosen exclusively through the two-page reviews, five out of eight projects chosen through the full proposal reviews, and two out of the three projects that were rated "high priority" by both review panels. Likewise, in the evolution round, NSF program managers divvied up the 18 awards between the sets of "high priority" projects identified through the two review mechanisms.

The experiment was not designed to separate out the effect of anonymity, but it may have been a factor. In both Big Pitch rounds, reviewers evaluating the anonymous two-pagers were later told the identity of the applicants. In some cases, Chitnis says, panelists were surprised to learn that a highly rated two-pager had come from a researcher they had never heard of. In others, he notes, reviewers "thought they knew who this person is going to be" only to find that the application came from a former student of the presumed bigwig, working at a small institution.

Noting that their grant-review process is anonymous and confidential, NSF declined to make any of the panelists available to explain their choices and would not identify any of the losing proposals. But *Science* spoke to some of the awardees about the process.

Shirley Taylor, an awardee during the evolution round of the Big Pitch, says a comparison of the reviews she got on the two versions of her proposal convinced her that anonymity had worked in her favor. An associate professor of microbiology at Virginia Commonwealth University in Richmond, Taylor had failed twice to win funding from the National Institutes of Health to study the role of an enzyme in modifying mitochondrial DNA.

Both times, she says, reviewers questioned the validity of her preliminary results because she had few publications to her credit. Some reviews of her full proposal to NSF expressed the same concern. Without a biographical sketch, Taylor says, reviewers of the anonymous

proposal could "focus on the novelty of the science, and this is what allowed my proposal to be funded."

The Big Pitch format could "remove bias and allow better support of smaller, innovative research groups that otherwise might be overlooked," Taylor adds. "The current system is definitely a 'buddy system' where it's not what you know but who you know, where you work, and where you publish. And the rich get richer."

Making proposals anonymous could help researchers from institutions that are not known for research, says J. Gary Tallman, a biologist at Willamette University in Salem, Oregon, whose proposal to study how global warming could hurt thermotolerant plants was funded through the Big Pitch. Tallman notes that he has seen prejudice against small universities like his own while serving on grant-review panels.

Not everybody who was funded through the Big Pitch's two-page proposal review believes anonymity is desirable for grant-making decisions. Laura Mydlarz, a cell biologist at the University of Texas, Arlington, whose two-pager won her a grant to study how global warming is affecting a Caribbean coral species, says review panels need to look at applicants' track records to judge whether they "can really do the work." In her case, she adds, true anonymity was impossible anyway: "If anybody on the panel knew anything about corals, they would have figured out who the PI was."

Chitnis says the division is planning to conduct a third round of the Big Pitch, possibly redesigned to get cleaner insights on the impact of anonymity versus summarizing. For example, a third review panel might review the short versions along with the biographical sketches of the applicants.

Two divisions within NSF's Directorate for Biological Sciences are already applying one insight gained from the Big Pitch: Shorter might be better. In January, the divisions of Integrative Organismal Systems and Environmental Biology began inviting four-page preproposals that reviewers evaluate before soliciting full proposals from a subset of applicants. (The Big Pitch grant reviewers told NSF officials that four pages of information would be better than two.) Chitnis says his own division, MCB, plans to institute the same system soon. But names of proposers and their institutions won't be whited out from applications—at least for now.

Whether the Big Pitch format truly helps identify good ideas that would otherwise get rejected may take years to find out. To do that, Chitnis says, the agency intends to track the success of the different proposals deemed high priority and funded by the pairs of review panels. "We can't immediately change wholesale how we do grant reviews," he says. "But we definitely want to do some more analysis."

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