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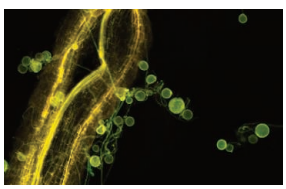
LETTERS

edited by Jennifer Sills



Arbuscular mycorrhizal fungi.

Friends in Fungi

ALTHOUGH FUNGI ARE A GREATER THREAT TO CROPS and forests than ever before ("Attack of the clones," K. Kupferschmidt, News Focus, 10 August, p. 636), we should not expel them completely. Mycorrhizal fungi are ancient and indispensable plant root mutualists (*1*, *2*) that provide not only vital nutrients to their plant hosts (about 80% of plant species) (*3*) but also such services as drought resistance (*4*), heavy metal uptake (*5*), and pathogen protection (*6*). Mycorrhizal fungi even protect plants from some emerging fungal diseases (*6*).

Mycorrhizae absorb soil minerals and exchange them for host carbon (*3*), allowing plants to survive in relatively nutrient-poor land soils (*1*). The symbiosis acts as a major carbon sink, with plants allocating up to 20% of their photosynthate to these fungi (*3*). Mycorrhizal fungi are thus key drivers of global carbon and nutrient cycles. These symbionts, which are found in association with most major crops (*7*), are a key resource for developing a more sustainable agriculture. In a world facing rapid depletion of phosphorus fertilizer (*8*), appropriate management of mycorrhizal fungi could potentially save fertilizer and increase yields (*9*).

Our fight against emerging fungal plant diseases should be strong and powerful. However, we must proceed with caution. We should not blacklist all fungi, but rather enlist those on our side. Our strategy should avoid broad-spectrum fungicides, such as propiconazole and fenpropimorph (*10*). We cannot afford to generalize all fungi as threats; we must learn to know our enemies from our friends.

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Political Science in Peril

RECENTLY, THE U.S. HOUSE OF REPRESENTATIVES passed an amendment, proposed by Congressman Jeff Flake (R-AZ), that would allow Congress to intervene in the National Science Foundation's (NSF's) merit review process (*1*). Flake's amendment would prevent NSF scientists from evaluating and supporting scientific studies of politics and government. This is a bad idea.

The program targeted by Flake supports research performed by scientists with a range of backgrounds, including statistics, applied mathematics, the neurosciences, economics, genetics, and psychology. The political science program has supported five Nobel laureates and has produced thousands of controlled experiments, precise definitions, accurate measurements, computer models, and other means of clarifying causes of what has happened in the past and the effects of organizational decisions on people's lives.

For example, the program supports experiments that differentiate seemingly plausible tactics for recovering after natural disasters from strategies that produce longer-lasting results. Another study identifies words and domestic commitments that change treaties from meaningless symbols to instruments for peace. Yet another project develops better measures of what citizens see and want, which can help governments base policy on need rather than "spin." Many other studies clarify the inner workings of other countries, which helps diplomacy and international trade.

In debates on the Flake amendment, some have claimed that you do not need science to explain government and politics. That is partially correct. Americans explain these topics in many different ways. Journalists put distant events into story form and make governmental and political phenomena easier for people to visualize. These stories energize democracy. But many storytellers are not interested in objective evaluations of their views. Scientists, by contrast, often expect to be judged by the detail and replicability of their explanations. When people's lives and livelihoods are at stake, it is not enough to spin a good yarn. Societies benefit from being able to differentiate false stories from an explanation that is consistent with logic and the best available evidence. Supporting a science that informs government and policy is critical to any modern society that wishes to become or remain effective and efficient.

Fortunately, a recently passed Continuing

Letters to the Editor

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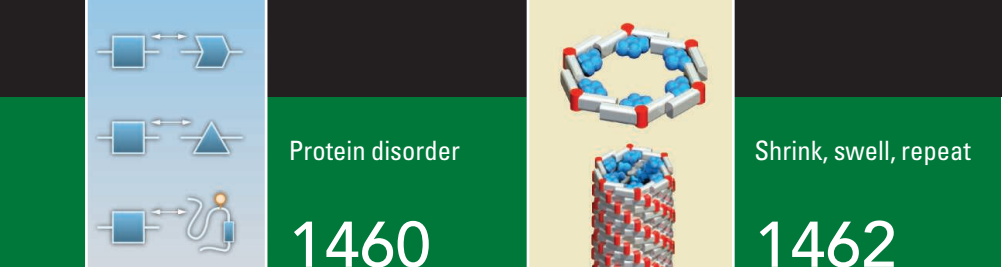

Resolution sustains NSF's current programs and has given the research community a bit of a respite. The next few months provide an opportunity for better minds to continue to support NSF's many contributions to our nation's scientific infrastructure. When the time for a new budget comes, the United States Congress will have an opportunity to follow the example set by decades of its foresighted predecessors from both parties. At that time, it should allow NSF to continue using its world-respected peer-review processes to determine when and how science can best inform America and the world about key aspects of policy and governance.

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1. H.R. 5326, Sec. 565 (www.gpo.gov/fdsys/pkg/BILLS-112hr5326eh/pdf/BILLS-112hr5326eh.pdf).

TECHNICAL COMMENT ABSTRACTS

Comment on "A Common Pesticide Decreases Foraging Success and Survival in Honey Bees"

James E. Cresswell and Helen M. Thompson

Henry *et al*. (Reports, 20 April, p. 348) used a model to predict that colony collapse in honey bees could be precipitated by pesticide-induced intoxication that disrupts navigation. Here, we show that collapse disappears when the model is recalculated with parameter values appropriate to the season when most pesticide-treated flowering crops bloom.

Full text at www.sciencemag.org/cgi/content/full/337/6101/1453-b

Response to Comment on "A Common Pesticide Decreases Foraging Success and Survival in Honey Bees"

Mickaël Henry, Maxime Béguin, Fabrice Requier, Orianne Rollin, Jean-François Odoux, Pierrick Aupinel, Jean Aptel, Sylvie Tchamitchian, Axel Decourtye

Cresswell and Thompson have suggested an elegant way to improve honey bee colony simulations when forecasting the fate of colonies exposed to pesticides. Following their recommendations, we rescaled the model on a sound empirical data set. The adjusted forecast is bleaker than their tentative scenario.

Full text at www.sciencemag.org/cgi/content/full/337/6101/1453-c

CORRECTIONS AND CLARIFICATIONS

Reports: "Shear-activated nanotherapeutics for drug targeting to obstructed blood vessels" by N. Korin *et al*. (10 August, p. 738). The Report was published online on 5 July 2012, not 28 June 2012 as indicated. The HTML and PDF versions online have been corrected.

News Focus: "The ingredients for a 4000-year-old protocurry" by A. Lawler (20 July, p. 288). In the third paragraph, the article refers to Washington State University. WSU is in Vancouver, WA, not Vancouver, BC. This has been corrected in both the HTML and PDF versions online.

theBUZZ

Honorary Authorship

In their 31 August Editorial (p. 1019), P. Greenland and P. B. Fontanarosa called on researchers to put an end to honorary authorship. Honorary authorship remains common; researchers add the names of prominent scientists to boost their paper's credibility, and senior scientists demand that their names be added to the work of younger researchers. Greenland and Fontanarosa assert that adding authors who did not contribute directly is fraudulent, and they urge journals, research institutions, and senior scientists to address the problem. Readers wrote in to add their perspectives, many with their own experiences of being pressured to add authors to their work. Excerpts from some of these comments are below. You can read all the comments at http://comments.sciencemag.org/content/10.1126/science.1224988.

A selection of your thoughts:

…[A]sking all authors to take credit for the whole of the work is potentially problematic and might dampen willingness to collaborate. Taking credit for what you have contributed and being willing and aware of the entire content of a paper might be a reasonable compromise….

—Jim Woodgett

…Since they are named on the grant, most PIs and co-investigators will want their names on project papers regardless of whether they have contributed to the published work or not….

—Nick Riviera

…If you want this to work, journals should remove author names and affiliations while sending papers for review….

—Ram Subramanian

The final paragraph [of the Editorial] suggests that it will be the senior scientists that will set an example for the younger generation. I suspect it will be the opposite, that our students will learn how to do it right despite us. As the wise man said, "Science advances funeral by funeral."

—David Barnert

…At what point should a PI be dropped from the author list? They are, after all, usually responsible for the whole research project, even if the actual number of conversations held with the first author is minimal. Should a PI who becomes essentially a manager and behind-the-scenes… advocate for the science of others never be author of a paper?…

—Julia Hargreaves

…[T]he community must close existing loopholes in academic authorship standards, such as...research projects [that] share their data only with researchers who agree to add the respective consortium to the author list of published papers using these data…. [T]hese groups declare that by including a footnote in which they renounce authorship, they are merely claiming credit as non-author contributors….Future authorship standards should, therefore, clearly state that only authors may be listed on the author byline….At the same time, incentive systems for contributions such as data or software should be created to reduce the perceived need for quid pro quo authorships. Researchers who provide resources to the community should be able to list these contributions in their résumés, and equal consideration should be given to these and traditional publications in funding and promotion decisions.

— Torsten Rohlfing

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