

LETTERS

edited by Jennifer Sills

AAAS Position on GM Foods Could Backfire

WE ARE WRITING TO URGE AAAS TO RECONSIDER ITS POLICY AGAINST MANDATED LABELING OF so-called genetically modified (GM) foods (1). We do not, as a group, have any position on GM foods, for or against, but we are concerned that AAAS's position represents a poorly informed approach to communicating science.

Successful communication requires mutual trust and a perception of shared values. Appearing to withhold information that people want (whether they want it for reasons we agree with or not) about the food that they eat stands an excellent chance of eroding both of these. Decades of social science research on science communication processes have demonstrated that these elements are almost certainly more important than science literacy in determining public attitudes and opinions. And science itself is built on an ethos of transparency and open dialogue that appears inconsistent with AAAS's position in this situation.

The recent California vote defeating an attempt to require GM labeling was immediately followed by a pledge from its supporters to pursue this issue at the national level (2). The debate is clearly not over yet. AAAS should let citizens decide this question, which is not a matter of science per se but of public preferences, values, and concerns.

Strategically, appearing to be less than transparent is a really bad idea for the scientific community. Ethically, we believe that people, both as citizens and as consumers, have a right to information that they feel is relevant to their decisions. The most constructive way to address many people's lingering concerns about GM foods is to provide them with the information that they consistently deem relevant, even if this requires new regulation.

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References and Notes

1. AAAS, "Statement by the AAAS board of directors on labeling of genetically modified foods, 20 October 2012" (www.aaas.org/news/releases/2012/media/AAAS_GM_statement.pdf).
2. "California fails to pass genetically modified foods labeling initiative" *Time*, 7 November 2012 (<http://healthland.time.com/2012/11/07/california-fails-to-pass-gm-foods-labeling-initiative/>).
3. The authors are members of, but do not write on behalf of, AAAS Fellows, Section Y (General Interest in Science and Engineering).

In Defense of Physician-Investor Collaboration

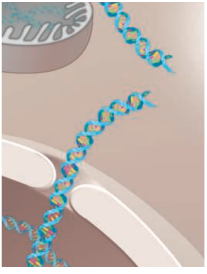
IN HIS NEWS FOCUS STORY "EXPERT FIRMS play a hidden role in connecting science and finance" (11 January, p. 137), J. Mervis reports on the inner workings of expert networks and how universities are navigating potential conflicts of interest. However, Mervis does not address the apparent disconnect in how users of expert networks are perceived by the university officials setting conflict-of-interest policy and the physician researchers providing advice.

Based on the story, physicians seem to prefer advising investors in private companies that are developing medical technology with a long investment horizon. They are more skeptical of advising Wall Street analysts who plan to use the information for short-term stock trading. Yet, academic centers such as the Cleveland Clinic do not make this distinction or consider the varying risks; they only distinguish between using expert networks and consulting directly for companies that are conducting new research or trying to improve products.

As a venture capitalist at a fund that has invested \$600 million into start-ups developing new medicines, I find it unfortunate that academic centers are discouraging participation in expert networks altogether. Many users of expert networks are venture capital investors who are hoping to finance new research to develop medicines, rather than hedge funds that seek to swap stock on public markets and profit. Although venture capitalists attend symposiums and conferences, we rely on expert networks for timely access to physicians to provide information into treatment paradigms, patient epidemiology, and their unmet medical needs.

Academic centers should not assume that all users of expert networks are financial firms, nor should they generalize the motivations of financial firms. Financial firms such as ven-





Sensing cytosolic danger

763



A piece of Mars on Earth

771

ture capitalists have very little motivation to benefit from insider information, because of multiyear investment horizons. Simply put, learning about trial data a week before a press release is not going to influence a venture capitalist to make a 5-year commitment to a new drug. Academic policy on expert networks should therefore focus on discouraging interaction with public investors such as hedge funds, not venture capitalists seeking to finance the next breakthrough medicine.

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Give Shark Sanctuaries a Chance

SEVERAL DEVELOPING NATIONS HAVE ESTABLISHED shark sanctuaries, most commonly in the form of a moratorium on both commercial shark fishing and the export of shark products in Exclusive Economic Zones (1). In her Letter “Shark sanctuaries: Substance or spin?” (21 December 2012, p. 1538), L. N. K. Davidson raises concerns that this ambitious strategy might be doomed to exist only on paper and could discourage investments in other types of shark fisheries management. We agree that enforcement will determine whether these shark sanctuaries live up to their promise, as is true of any new management regime. We disagree, however, with the argument that shark sanctuaries are more challenging to enforce or are less likely to be successful than typical fisheries management strategies, especially considering that even basic information such as fishery catch is often unknown and underestimated in developing countries (2).

Shark fisheries management is notoriously difficult and resource intensive, owing to the extreme vulnerability of sharks to over-exploitation (1). The countries that have successfully managed shark fisheries all possess substantial research, assessment, monitoring, and enforcement capacity devoted to fisheries management (1). Developing nations typically have much smaller fisheries management capacity; what they do have is national capacity to detect illicit trade of contraband

items (i.e., police, maritime authority, port authority, and customs). By making all shark products illegal, national authorities can work with their fisheries agencies to enforce the moratorium. Enforcing catch or size limits on shark fisheries is more complicated and will generally fall almost entirely under the purview of the fisheries agency on its own.

There is cause for optimism about the conservation potential of well-enforced shark sanctuaries nested within broader international management efforts. Smaller-scale marine protected areas have been shown to benefit certain inshore shark species, while other species tend to return to certain areas on a regular basis (3–6). These studies suggest that large protected areas may benefit these populations and match biological and governance scales. Well-enforced shark sanctuaries clearly have great potential for shark conservation, and we suggest that the international community and funding agencies should help those developing nations that pursue this approach to ensure that this promise is realized.

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Letters to the Editor

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4. W. D. Robbins *et al.*, *Curr. Biol.* **16**, 23 (2006).
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CORRECTIONS AND CLARIFICATIONS

News Focus: “The Tale of the TALEs” by E. Pennisi (14 December 2012, p. 1408). A fungus, not *Xanthomonas* bacteria, caused the black rot in the apple shown on page 1411.

Reports: “Cryo-EM model of the bullet-shaped vesicular stomatitis virus” by P. Ge *et al.* (5 February 2010, p. 689). On page 690, second complete paragraph, the second sentence incorrectly transposed the ends of the RNA molecule. The sentence should read, “The docked crystal structure shows that the 3’ end is at the conical tip of the bullet and the 5’ end is at the base of the trunk.” The HTML and PDF versions online have been corrected.

Reports: “Relating three-dimensional structures to protein networks provides evolutionary insights” by P. M. Kim *et al.* (22 December 2006, p. 1938). The column headings for Table 1 should be transposed.

TECHNICAL COMMENT ABSTRACTS

Comment on “Evolutionary Trade-Offs, Pareto Optimality, and the Geometry of Phenotype Space”

Pim Edelaar

Shoval *et al.* (Reports, 1 June 2012, p. 1157) showed how configurations of phenotypes may identify tasks that trade off with each other, using randomizations assuming independence of data points. I argue that this assumption may not be correct for most and possibly all examples and led to pseudoreplication and inflated significance levels. Improved statistical testing is necessary to assess how the theory applies to empirical data. Full text at <http://dx.doi.org/10.1126/science.1228281>

Response to Comment on “Evolutionary Trade-Offs, Pareto Optimality, and the Geometry of Phenotype Space”

Oren Shoval, Hila Sheftel, Guy Shinar, Yuval Hart, Omer Ramote, Avi Mayo, Erez Dekel, Kathryn Kavanagh, Uri Alon

Edelaar raises concerns about the way we tested our theory. Our mathematical theorem predicts that despite the high dimensionality of trait space, trade-offs between tasks lead to phenotypes in low-dimensional regions in trait space, such as lines and triangles. We address Edelaar’s questions with statistical tests that eliminate pseudoreplication concerns, finding that our predictions remain convincingly supported.

Full text at <http://dx.doi.org/10.1126/science.1228921>