Lawler also reports that "NRC Executive Officer William Colglazier says he was not aware of the meeting." Although Colglazier was not aware of the conversations at the meeting, he was fully aware that the meeting was to be held (indeed, it is on the 6 December agenda, reproduced in the committee's report), but could not attend because he lacked the DOE clearances for the level of classified information required for this study.

The headline of Lawler's article and the article itself also distort reality by implying that the committee prematurely revealed its findings. The senior DOE officials were told only that the committee to date had found nothing that would warrant stopping further work on the National Ignition Facility (NIF), but that its investigations were continuing. Given that every phase of the NIF project had been subject to continuous scientific and technical scrutiny, this observation was hardly revelatory. The committee also made it clear that its conclusions had not yet been formulated and that its report had yet to be written and peer-reviewed.

The main issue is the NRC report itself, which was vetted through the National Academy of Science's rigorous review process. The committee's primary task was to assess the technical statutes of the NIF project and to make technical recommendations that would increase the likelihood that a national goal endorsed by both the Administration and Congress would be achieved. We believe that the report does so, making the legal barriers to its use by the DOE antithetical to the national interest. Those who are interested can judge the report for themselves at www.nas.edu/cpsma/icf.htm.

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Response: Koonin's and Colglazier's arguments are with each other, not with *Science*. The main issue in my article was not the quality of the report, but whether the NIF committee abided by NRC rules. Disclosure by NRC panels of preliminary results to sponsors is a violation of academy procedures, as Colglazier noted in the article and as he continues to affirm. He still maintains that "what was done [by the Koonin panel] was not what the Academy wants." Whether or not the preliminary findings were "hardly revelatory," Koonin and Colglazier acknowledge that the NIF panel provided them to DOE managers before they were seen by NRC reviewers.—**Andrew Lawler**

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Lamp Enlightenment

Being professionally concerned with fluorescent lamp phosphors, I was interested to read the report on silica-based metal-free phosphors by W. H. Green *et al.*, "White phosphors from a silicate-carboxylate sol-gel precursor that lack metal activator ions" (20 June, p. 1826). Green *et al.* assert that mercury vapor plasmas are used in fluorescent lamps *because* the available phosphors *require* the short-wave 254-nanometer ultraviolet light (UV) excitation (emphasis mine). Of the two references cited for this assertion, Ropp (*1*) appears not to mention the matter, and Leverenz (*2*) asserts the converse.

The current suite of lamp phosphors was selected and adapted to the 254-nanometer excitation wavelength, not vice versa, in order to take advantage of the remarkable ability of the low-pressure mercury discharge to convert electrical energy to pho-

tons. Approximately 65% of the electrical energy dissipated in the positive column of such a discharge emerges in that one spectral line (3). Lamp designers are well aware of the potential energetic advantage of a similarly efficient source of longer wavelength UV. If such a source were found that was otherwise practical (that had an acceptable operating temperature, for example), some phosphors now in commercial use (4) would work well with long-wave UV excitation and others could quickly be developed from current knowledge. Also, a broad-band, "white" emitting phosphor is not the most energy efficient in terms of matching human visual sensitivity and color perception (4, 5).

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References

1. R. C. Ropp, *Luminescence and the Solid State* (Elsevier, Amsterdam, Netherlands, 1991), pp. 283–352.
2. W. H. Leverenz, *An Introduction to Luminescence of Solids* (Dover, New York, 1968), pp. 407–420.
3. J. F. Waymouth, *Electric Discharge Lamps* (Massachusetts Institute of Technology, Cambridge, MA, 1978), p. 20.
4. K. H. Butler, *Fluorescent Lamp Phosphors* (Pennsylvania Univ. Press, University Park, PA, 1980).
5. J. M. P. J. Verstegen, D. Radielovic, L. E. Vrenken, *J. Electrochem. Soc.* **121**, 1627 (1974).

Response: DeBoer brings up an important and valid point regarding the limitations of current fluorescent lights. It appears that we did erroneously "put the cart before the horse" in our statement suggesting that the more important efficiency limitation in fluorescent lamps is the phosphor and not the lack of a gas whose discharge has an appropriate long-wavelength emission line. As DeBoer points out, there are phosphors that can operate at longer excitation wavelengths, such as the "white" cerium-doped yttrium aluminum garnet, although we are unaware of any (besides the material we reported) that do not contain expensive or toxic metal ions. The material we described contains only silicon, oxygen, and carbon (and also nitrogen and hydrogen, in the case of materials derived from aminopropyl triethoxysilane). There are also applications where phosphors that can be excited in the blue or near-UV are of current interest. For example, a "white" light-emitting diode (LED) produced by Nichia consists of a conventional blue LED that excites a "white" phosphor.

With regard to the references we cited, we believe they were appropriate, although our interpretation was not correct. For example, Leverenz (reference 2 in our report) states on page 408 that "Although shorter-wavelength [254-nanometer] UV may be produced more efficiently, the intensity of available [254-nanometer] sources is even lower than that of the available [365-nanometer] sources," which led us to conclude that the suitable long-wavelength phosphors have not been developed to take advantage of higher-intensity long-wavelength UV sources. We were mistaken. We included the reference by Ropp (reference 1 in our report) because he devotes a large section to describing the relation between lamp phosphors and the available excitation sources, and, in particular (pp. 327–328), lists the various commercial lamp phosphors that are excited by 253-nanometer light. His discussion is an appropriate reference for more detailed information on this topic, although DeBoer is correct that Ropp does not assert that the 253-nanometer phosphors are used because there is not a good alternative long-wavelength phosphor.

It should also be pointed out that the silicate materials we described have only half the quantum efficiency of many commercially available phosphors (we described a maximum measured quantum yield of 45%). The important point of the discovery is that it represents a fundamentally new

photoluminescent material made from simple components. As we stated in the concluding paragraph, it is "surprising that the efficient [photoluminescence] of silicate sol-gels . . . has not previously been reported." We are not qualified to comment on the engineering economics of this material for fluorescent lighting or any other applications, and regret any misunderstanding we may have caused in that regard.

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Letters to the Editor

Letters may be submitted by e-mail (at science_letters@aaas.org), fax (202-789-4669), or regular mail (*Science*, 1200 New York Avenue, NW, Washington, DC 20005, USA). Letters are not routinely acknowledged. Full addresses, signatures, and daytime phone numbers should be included. Letters should be brief (300 words or less) and may be edited for reasons of clarity or space. They may appear in print and/or on the World Wide Web. Letter writers are not consulted before publication.

Corrections and Clarifications

In the "Nota Bene: Cancer Biology" item "The importance of telomerase" by Katrina L. Kelner (24 Oct., p. 600), the last sentence in the first column (carrying over to the second column) should have begun, "Careful analysis of cultured fibroblasts from the transgenic mice by fluorescence in situ hybridization shows that about 4.8 kb of telomeric DNA is lost with each generation [not "cell division"] and that . . . ."

In the News article "Gene mutation provides more meat on the hoof" by Steven Dickman (26 Sept., p. 1922), John Bass's last name (in the eleventh paragraph) was spelled incorrectly as "Baff."

Parts A and B of figure 4 (p. 64) in the Research Article "Crystal structure of the cytochrome bc_1 complex from bovine heart mitochondria" (4 July, p. 60) were printed incorrectly. The correct parts A and B of the figure appear below.