The trials of trying to survive as a researcher on soft money are recounted. Several studies on the health effects of particulate air pollution that support the U.S. Environmental Protection Agency's particulate matter standard are scrutinized. It is noted that, in spite of the fact that no research projects for the space station have been outlined, a NASA official has said that "we're going to have a dynamite research program." A study of whether being generous increases one's chances of being treated generously is discussed. And what factors might have caused changes in the carbon:nitrogen:phosphorus ratios observed in the North Atlantic are debated.

More to pollution than particulate matter.

Soft Money Is Hard to Find

One area Marcia Barinaga does not touch on in her News Focus article "Soft money's hard realities" (22 Sept., p. 2024) is that of arbitrary funding cuts by the National Institutes of Health in their grant budgets. As a former "soft money" faculty person (I gave up after 15 years), these cuts, along with a lack of institutional support and much discrimination, were the source of most of my problems. Although I had requested salary moneys in my first grant to pay for both a full-time technician and 80% of my salary, I received only salary money for the technician and 40% of my (already meager) salary. This left me essentially without technical support, because I had to pay my own salary to survive. Although I managed, after much hard work, to set up a fully functional lab with donations (more than $100,000 worth) from a nearby biotechnology company, my research progress clearly was slower than that achieved by fully supported, tenure-track scientists. Hence, I constantly battled to maintain even this insufficient level of funding.

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A Benefit of Being Big

In her News Focus article about changes in genome size ("Transposons help sculpt a dynamic genome," 1 Sept., p. 1455), Anne Simon Moffat does not include mention of research on the functional significance of genome size. An enhanced capacity for low-temperature growth has been shown to correlate with, and likely result from, a larger genome in plants (*1*). On the basis of what has been learned (*2*) from long-term field observations (*3*), this enables forecasting of differential responses among plants to certain patterns of climatic change.

Several early spring bloomers have large genomes.

CREDIT: (TOP TO BOTTOM) J. PHILLIP/AP; S. DATTA

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Consideration of Copollutants

The discussion about the recent Health Effects Institute reports (*1, 2*) on air pollution in two News of the Week articles by Jocelyn Kaiser, "Evidence mounts that tiny particles can kill" (7 Jul., p. 22) and "Panel backs EPA and 'Six Cities' study" (4 Aug., p. 711), is a bit superficial and occasionaly misleading. Both the morbidity and the mortality parts of the National Morbidity, Mortality, and Air Pollution Study II (NMMAPS II) (*1*), discussed in the earlier article, focused on particulate matter pollution and did not pay adequate attention to the role of copollutants. The morbidity study is virtually uninterpretable because it used an untested method with unknown properties and probably has little power [see p. 77 in (*1*)] to control confounding by copollutants. The mortality study, on the other hand, is ingenious in its conception, but it is flawed in its execution. Apparently, computational problems deterred a broad investigation with all pollutants treated equally in a Bayesian framework. Are there other pollutants more strongly associated with morbidity and mortality than is particulate matter? If so, how does that affect the interpretation of the particulate matter associations reported in these studies? NMMAPS II fails to address these important questions.

In the second article, about the reanalyses of studies of particulate air pollution and mortality (*2*) by Harvard researchers and by the American Cancer Society, Kaiser does not mention that the association of death rates with particulate matter is strongly modified by educational attainment. Nor does she mention that, in the American Cancer Society study, which is the only one large enough for sensitivity analyses, the strongest and most stable associations with mortality are seen, not with particulate matter, but with SO_2. In analyses with both pollutants included, the coefficient of SO_2 remains stable and significant, whereas the coefficient for particulate matter is attenuated and, in some cases, becomes insignificant [see table 6 in (*2*)]. The table accompanying Kaiser's article gives the impression that the results presented there were adjusted for "more than 30 possible confounders," whereas the table actually presents the results of the validation study, which included only the confounders considered by the original investigators and, most importantly, did not include any pollutant other than particulate matter.

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Space Station Research: Details Please

The comments in the News of the Week article "An improvement in vital signs" (by A. Lawler, 4 Aug., p. 707) by Julie Swain, deputy chief of NASA's life and microgravity sciences office, about the NASA life science research program to be mounted on the space station are notably vague. When

asked about research to be done on the station, she replied, "we're not even sure what questions we will be answering in terrestrial laboratories." But, in reference to the space station she says, "I think we're going to have a dynamite research program." This paradox reminds me of the story of the airline captain who announces bad news–good news: "We are lost, but we are making very good time," to which he adds reassuringly "and I am sure we are going somewhere!"

The space station was repeatedly rescued from termination by the assertion that it was an important facility for fundamental biomedical research, that is, other than crew adaptation factors. Contrary to Swain's comments, we do have a good, if general, idea of the research that will be going on in terrestrial laboratories in the future. We have 5-year research grants and longer-term support of centers of excellence. It's time to share the general nature of the space station research program, if there is one, with the public and the scientific community. Or will we have a facility looking for a program?

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Examining the Motivations for Generosity

In their report "Cooperation through image scoring in humans" (5 May, p. 850), Wedekind and Milinski describe an image-scoring game they conducted to test the process of indirect reciprocity (*1*). However, their experiment contains a confounding factor that may better account for the obtained findings.

Eight groups of participants played six rounds of a game in which they could repeatedly give and receive money. Each player was required to play once per round as "donor" and twice per round as "receiver," but players had no way of knowing who had helped them in previous rounds. Care was also taken so that players would never interact with each other in a directly reciprocal role. Players were provided with the receiver's history of giving or nongiving at each round, and the results showed that donations were more frequent to receivers who had been generous to others in earlier interactions. However, this observed correlation could have resulted from the effects of a third unmeasured factor, the tendency to give to those most in need (*2*). All things being equal, players who had given more in previous rounds had earned less in the game. Players may have been motivated to make donations to coplayers with a generous giving history out of a concern about their running balance of money, and therefore were acting on a perceived need, rather than reciprocity. Theoretical models (*3*) show that helping occurs when others are perceived to be in need (social responsibility) regardless of the recipient's worthiness and without an expectation of being rewarded (*4*).

Thus, Wedekind and Milinski's experiment does not clearly demonstrate indirect reciprocity. Their game confounds a player's generosity with the likelihood that they appear in relative need of a donation.

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Finding the Missing