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LETTERS

E. coli Sequencing

Rachel Nowak (Research News, 13 Jan., p. 172) describes the current status of the *Escherichia coli* genome sequencing project and the possible termination of funding for Fred Blattner's program. While it is true that from the beginning (1989) I have been critical of the manual sequencing method used by Blattner's group for large-scale genome sequencing, this is not the time to abandon his effort. According to the article, Blattner has completed 1.4 megabases of the *E. coli* genome, with most (1.0 megabase) being completed in the last year. If the National Institutes of Health (NIH) cuts off funding to the existing *E. coli* project in the hopes of funding someone else, it could take up to 6 months for NIH to issue a Request for Proposals and have proposals written and submitted, and an additional 9 months for proposals to be reviewed and funded. During that same interval Blattner's group could sequence another 1.5 megabases of the *E. coli* genome with continued funding. This would provide partial coverage over the whole *E. coli* genome and high-quality sequence for more than 2.9 megabases.

The *E. coli* genome sequence is a key needed reference for the biology community. It is not clear, however, that our current federal system of funding science promotes good decision-making. If the *E. coli* genome project was to be redirected, it should have happened 2 to 3 years ago. If Blattner is not funded now, it will only impede progress to complete the genome. If Blattner is to be faulted for the current progress on *E. coli*, then he should be faulted for striving for higher quality data than most and for introducing biology into his annotation instead of exclusively focusing on base pair counts. Let's get *E. coli* finished!

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Nowak's article emphasizes that *E. coli* may not be the first free-living organism to have its genome fully sequenced. That may not be true. Its correctness depends on a definition of "fully sequenced." The Wisconsin group deposits sequence data when they are certain that they contain less than one frame-shift in 50,000 residues, a standard not matched for most of the sequences deposited in GenBank already. Even if *E. coli* is not first, so what? Is there some kind of molecular genetics Olympics? And if there is, what about weight categories? Blattner's critics, quoted in the article, have themselves not deposited a fraction of his finished sequence.

In the article, several people are quoted as being impatient with the rate of progress in Wisconsin. Such people appear to be ill-informed. The project has been slower to produce finished sequence than originally projected. But how many of us fulfill all the goals of our research projects in the time stated in our grant applications? Could it have been anticipated that the bits of *E. coli* sequence deposited by others would have so many discrepancies, requiring re-sequencing to determine the cause? And who anticipated the technical problem of G compressions, which took many months to solve?

Quotes by Ken Rudd at NIH and George Church at Harvard, who support Blattner's efforts, are immediately followed by what amounts to a premature press release from Craig Venter, who states that his team has sequenced 99% of the *Haemophilus influenzae* chromosome and that the finished sequence will be deposited with GenBank early this year. Where is the evidence to support such a claim? Will the sequence be annotated? With what accuracy? And what is the relevance? The *H. influenzae* genome is less than half the size of the *E. coli* genome. Indeed, comparison of the two would provide important clues to the evolution of bacterial chromosomes.

Science is supposed to be a cooperative effort. A few individuals appear to have forgotten that.

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NSF FastLane Goals

We thank *Science* for its efforts to keep the research community informed of ongoing efforts by the National Science Foundation (NSF) and other agencies to simplify

and streamline the grant-making process (J. Mervis, "NSF moves into FastLane to manage flow of grants," News & Comment, 13 Jan., p. 166). Two inaccuracies in the article concerning FastLane goals merit correction. When fully implemented, FastLane will streamline *all* processes associated with grant applications. However, merit review outcomes still will be communicated to proposers personally by program officers. Indeed, an overriding goal of FastLane is to enable faculty and NSF staff to focus more time and attention on such communications, and less on routine procedural matters.

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Shelter After Earthquakes

Our greatest resource to rescue tens of thousands of homeless families in urban disaster areas resides in suburban driveways and backyards of America, not in military warehouses. This resource is the uniquely American pickup camper. Hundreds of thousands of people are now homeless in Kobe, Japan, in the middle of winter. It will be months before temporary structures can be erected. Even temporary quarters will likely cost more than $50,000 per family in Japan. However, the Japanese government could provide most of these families with American-made pickup camper units within a few weeks. The cost would be no more than $10,000 per family. This would not be a one-time expense. It would be a long-term investment for Japan. The camper units would be available for future emergencies.

The common pickup camper would provide secure, relatively earthquake-proof sleeping quarters, drinking water storage, and basic cooking facilities for a family—all in a strong, lightweight structure that could be quickly air-lifted anywhere, if necessary, by small helicopters. It sits on the ground anywhere you want to put it. It won't collapse in an aftershock, even if it tips over. In most disasters, the pickup truck owners or commercial transport trucks can deliver thousands of them within a day after roads are opened to a disaster site. A small forklift machine (or eight soldiers) could unload a camper unit and place it anywhere desired. A typical 100-kilowatt portable generator could provide electricity for lights and small appliances to a cluster of 100 camper units. Within a few days, these camper units could be connected to temporary water and sewage lines.

A quick survey of pickup camper dealers in major cities on the U.S. West Coast alone indicates that there are at least 4000 new units available for immediate delivery to shipping ports on the West Coast. The dealers suggest that there are at least another 80,000 nearly new units for sale by owners. Many owners gladly sell these in the middle of winter. These 84,000 camper units would provide immediate, secure, warm living quarters for most of the homeless families in Kobe—within a month.

A few knowledgeable buyers could have thousands of these units sent to West Coast ports within 3 days. Every Kobe-bound container ship now idled because of the earthquake could carry 600 to 1000 camper units (several camper units fit inside a normal 8-foot-high shipping container). Or, if our government wanted to be magnanimous, we could rent the Japanese a spare aircraft carrier. One aircraft carrier to Kobe could carry 5000 camper units—with space left over for the helicopters to off-load the camper units and set them in place in downtown Kobe. If we