cyte maturation (3), while LF prevents it. Moreover, LF irreversibly inactivates both MAPKK 1 and 2, while PD09859 preferentially prevents phosphorylation and activation of MAPKK 1 (4, 5), an inhibition that can be easily overcome by upstream agonists (5) and is reversible (4). Thus, we expect that LF should be more toxic than PD09859 and that it is unlikely that PD09859 can prevent MAPKK activation to the same extent as LF. Further, the reference to PD09859 preventing nitric-oxide induced apoptosis (6) appears to be an unrelated argument, because LF induces total and rapid macrophage lysis and is not known to be apoptotic, while nitric oxide-mediated cell death is much slower and less efficient, and is apoptotic.

Hanna's comments regarding the medical and logistical difficulties of dealing with terrorist or military use of anthrax are topical and deserve the attention of policy-makers. These issues were not the subject of our research report, and we do not claim expertise in these areas. However, we believe that we were justified, during discussions with the correspondent preparing the accompanying News article, in speculating that an inhibitor of LF might limit the pathogenesis associated with anthrax infection, in the same way that protease inhibitors are effective in treating AIDS, a process that our colleagues at Frederick helped initiate.

Like Hanna, we anticipate that defense against use of anthrax as a weapon will require a combination of measures, including vaccines and antibiotics. We hope that our findings will facilitate development of inhibitors of LF protease activity, and that such drugs may constitute one additional medical intervention to limit the effects of anthrax infection.

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Early Americans

I read with great interest Virginia Morell's Research News article "Genes may link ancient Eurasians, Native Americans" (24 Apr., p. 520). The general theory that has been proposed to account for a genetic marker that appears in people from Europe and Asia Minor, and Native Americans, but not in Asians, does not seem logical to me. I have to question the concept of a small group of people remaining cohesive without detrimental inbreeding, and without leaving any trace, while traveling all the way across the European and Asian continents, and then across the Bering Strait land bridge. And what could possibly have motivated them to continue such a trek over the generations it would have taken to travel that far?

Some years ago a theory was proposed that at least some of the original settlers in the New World, probably from Asia, did not walk across the frozen desert of Beringia, but used boats to go around the edge, where the richest supply of food would have been. It was further suggested that these "boat people" may have traveled along the west coast of North American until they were south of the glaciers before they came inland, which could explain why South America (Chile, for example) apparently was populated before North America.

There has also been speculation that Europeans could have come across the North Atlantic in boats. I would think that if the moisture captured in glaciers dropped the level of the oceans some 300 feet, additional islands might have been exposed in the North Atlantic. And, similar to Antarctica, with the mass of glacial ice on the land, there could have been ice shelves extending out connecting these islands.

There would not have to have been a land bridge; it could have been an "ice bridge." And like the stories of the Irish St. Brendan, a few Europeans could have made the voyage and met some of the larger population of Asians. It could even have been an accident, a storm that blew a boatload or two of European marine mammal hunters (similar to Northwest Coast Indians) off course. That makes much more sense to me than a long trek overland by a small group of men and women across such a vast distance. At least it certainly makes a better story.

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Conceiving a Black Hole

In his Research commentary "At the border of eternity" (*Science*'s Compass, 27 Feb., p. 1321), G. S. Bisnovatyi-Kogan states, "As long ago as 1796, [the astronomer and mathematician Pierre Simon] Laplace noted that light cannot leave a star when its free-fall velocity, a function of the star's mass and radius, is larger than the speed of light." This idea occurred 13 years earlier to the natural philosopher John Michell, who described it in a 26 May 1783 letter to the chemist and physicist Henry Cavendish. Michell calculated that "if the semi-diameter of a sphere of the same density with the sun were to exceed that of the sun in the proportion of 500 to 1, a body falling from an infinite height toward it, would have acquired at its surface a greater velocity than that of light, and consequently, supposing light to be attracted by the same force in proportion to its *vis inertiae*, with other bodies, all light emitted from such a body would be made to return towards it, by its own proper gravity." Michell pointed out that this dark star could be detected because of its strong gravitational force on nearby stars.

Michell also devised the so-called "Cavendish experiment" and even built the original "Cavendish apparatus" for determining the density of the Earth and thus the universal gravitational constant G. He died before carrying out the experiment, and some years later his equipment was given to Henry Cavendish, who rebuilt the warped apparatus and carried out the measurements. Cavendish's famous paper of 1798 begins with a history of Michell's role.

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