lysosomes and F_0/F_1-ATP synthase in mitochondria) are present in the plasma membrane of endothelial cells.

Raul Martinez-Zaguilan
Department of Physiology, Texas Tech University, 3601 4th Street, Lubbock, TX 79430, USA. E-mail: phyrmz@physiology.ttuhsc.edu

References
1. T. Moser *et al.*, *Proc. Natl. Acad. Sci. U.S.A.* **96**, 2811.(1999).
2. R. Martinez-Zaguilan *et al.*, *Am. J. Physiol.* **265**, C1015 (1993).
3. R. Martinez-Zaguilan *et al.*, *J. Cell Physiol.* **176**, 196 (1998).
4. R. Martinez-Zaguilan *et al.*, *FASEB J.* **13**, A9 (1999); J. D. Rojas *et al.*, *ibid.*, p. A501; *ibid.*, p. A528.

Moser's paper identifies the alpha and beta subunits of F_1-ATP synthase on the surface of endothelial cells as binding to angiostatin, which is a potent anti-angiogenic factor. While this finding is indisputably noteworthy, it is perplexing that both the authors and the reporter imply that the enzyme is used to actually synthesize ATP. There are a couple of problems with this hypothesis. First, as described in both articles, it is assumed that the direction of proton flow is from intracellular to extracellular. This will simply not work. The proton motive force (PMF), which could theoretically be coupled to ATP synthesis, contains terms for both the concentration and electrochemical gradients for protons. The extracellular pH of most tumors is acidic and the intracellular pH relatively alkaline; the concentration gradient favors proton entry (*1*). Similarly, the negative membrane potential also favors proton entry. The orientation of the pump (head outside) is therefore contrary to the direction of proton flow in order for ATP to be synthesized in this fashion. Consequently, this enzyme either invokes a novel mechanism to couple proton movement to ATP synthesis, or the subunits are fulfilling some other function on the surface of endothelial cells.

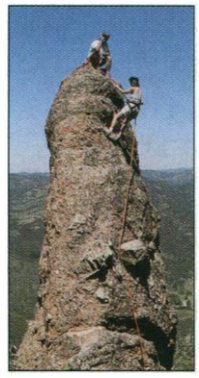
Robert J. Gillies
Arizona Cancer Center, Tucson, AZ 85724–5024, USA. URL: www.biochem.arizona.edu/gillies_lab/

References
1. R. J. Gillies *et al.*, *Am. J. Physiol.*, **267**, C195 (1994).

Climbing and Cliff Ecology

We are writing on behalf of the Access Fund (a climber's conservation and advocacy organization) to express concern regarding Kevin Krajick's article "Scientists—and climbers—discover cliff ecosystems" (News Focus, 12 Mar., p. 1623). We feel that Krajick presented only one side of the story with regard to climbing and cliff ecology. For example, Krajick points out that "the recognition of cliff life is so new, few parks have gotten around to making rules."

However, he does not mention that where "rules" such as access restrictions for climbing have been established to protect sensitive cliff-dwelling species, and where these are coupled with education and outreach, there is widespread compliance by climbers. For example, the Access Fund has details of ecologically based climbing restrictions at 94 locations, some of which have been in effect for more than two decades. Most are enforced on public lands, and all were established through the cooperation of climbers and land managers.



CREDIT: R.L. KNIGHT/COLORADO STATE UNIVERSITY

Climbers at Pinnacles National Monument, California.

Furthermore, while there have been few published studies that have directly measured the impact of climbing on cliff systems (*1*), rock-climbers themselves, through their support of the Access Fund, have contributed financial support toward this field of research for the past 10 years. This includes the studies by Nuzzo (*2*) and four new partnership projects in 1999. In addition, the Access Fund is often acknowledged in other published work for providing advice and support. Unfortunately, these commitments to cooperation and to the advancement of our understanding of cliff systems are not well reflected in Krajick's article.

As scientists continue to explore cliff systems and as this information is passed along to land managers, the climbing community should be involved at each step so that appropriate education, resource protection, and recreational use can be established. We encourage interested parties to contact the Access Fund for information about climbing-related management plans or the possibility of small-dollar grants to support cliff-related research.

Pat Jodice
Kath Pyke
Sam Davidson
The Access Fund, P.O. Box 17010, Boulder, CO 80308, USA. E-mail: info@accessfund.org

References
1. R. J. Camp and R. L. Knight, *Cons. Biol.* **12**,1302 (1998); P. E. Kelly and D. W. Larson, *ibid.* **11**,1125 (1996).
2. V. A. Nuzzo, *Am. Midl. Nat.* **133**, 229 (1995); *Can. J. Bot.* **74**, 607 (1996).

Having climbed more than 35 years, and twice in Joshua Tree Park, I would like to point out that cliff-climbing routes are generally restricted to very narrow vertical paths because they follow faults and cracks that provide hand- and footholds. Generally, less than 1 percent of the rocks are actually trod on. This would not lead to climbers "taking out" an entire species.

Congressional acts that created parks emphasized use and conservation for future users, which has resulted in many more citizens who appreciate wilderness and who promote conservation. Trying to lock up the wilderness—or the top of a pinnacle at Joshua Tree—for ideological reasons is shortsighted, not to mention unfair to users.

Warren G. Guntheroth
Department of Pediatrics, University of Washington School of Medicine, Seattle, WA 98195, USA

Do Infants Learn Grammar with Algebra or Statistics?

The report "Rule learning by seven-month-old infants" by G. F. Marcus *et al.* (1 Jan., p. 77) adds to a growing body of evidence concerning the remarkable learning abilities of infants. This evidence indicates that children acquire much more knowledge of language from experience than one might assume (*1*). However, the conclusion by Marcus *et al.* that the infants had learned rules rather than merely statistical regularities is unwarranted.

In the experiments in the report by Marcus *et al.*, infants were familiarized with sequences of syllables that conformed to patterns such as ABB or AAB (for example, "wo fe fe" versus "wo wo fe"). They were then tested on sequences containing different syllables that either matched these patterns or not. Infants preferred (*2*) novel sequences that violated the pattern to which they had been pre-exposed, and so were said to have learned the rule governing the sequences' "grammar." This conclusion rests on the fact that the test sequences contained novel syllables; thus, the infants could not have learned anything about their statistical properties. However, these "grammatical rules" created other statistical regularities. AAB, for example, indicated that a syllable would be followed by another instance of the same syllable and then a different syllable. Thus, in the pretraining phase, the infant was exposed to a statistical regularity governing sequences of perceptually similar and different events. The report's discussion focused on what the infants could learn about the particular syllables used in training, but there is no reason to deny these infants the capacity to learn these same-different contingencies.

There is also no reason to deny connectionist neural network models for this capacity. In our view, the goal of modeling is to understand children's behavior by endowing networks with the same capacities and experiences as children. The networks that Marcus *et al.* studied were not provided with either, so it is not unexpected that they be-