

## This Week

- 164 Craft Finds New Evidence of Magnetars  
*Ron Cowen*
- 165 Culture of honor reveals a violent streak  
*Bruce Bower*
- 165 Sight unseen: Quantum errors found, fixed  
*Peter Weiss*
- 166 Tamoxifen clears hurdle to preventive use  
*Janet Raloff*
- 166 A sugarfree beet that tastes just as sweet  
*Corinna Wu*
- 167 Single gene invites worms to dinner party  
*John Travis*
- 167 A protein is pivotal in prostate cancer  
*Nathan Seppa*

## Articles

- 170 The Color of Honey  
A sweetener that bee-devils food spoilage  
*Janet Raloff*
- 174 The Science of EEEEEK!  
What a squeak can tell researchers about life, society, and all that  
*Susan Milius*

## Research Notes

- 168 Biology  
Why are so many bumblebees male?  
How fish find brothers and sisters  
For longer life, give her a choice
- 168 Behavior  
Social disconnections on-line  
Moving clues to dyslexia
- 169 Astronomy  
The sounds of spirals
- 172 Biomedicine  
Drug smokers have precancerous signs  
Two embryos are better than three

## Departments

- 162 Science News Books
- 163 Letters



**Cover:** Antioxidant-rich honeys, usually the darker ones, may find a new use as preservatives in fruits, meats, and even skin-care products. **Page 170** (Photo: National Honey Board)

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## Letters

### Footwear fashion

The study discussed in "Do high heels boost arthritis risk?" (SN: 6/13/98, p. 382) explains men's and women's propensity for osteoarthritis of the knee by their respective heel height.

An interesting control experiment could be performed here in the West, where both men and women frequently wear high-heeled boots.

*Paul Etzler  
Mountain Springs, Nev.*

### Confusing cohosh

How are we to reconcile the statement that black cohosh "showed no activity" in a test competing for estrogen receptors ("Medicine for Menopause," SN: 6/20/98, p. 392) with the later statement that it "spurred uterine cells to grow"?

Is it possible for such herbs to latch onto only estrogen receptors in the uterus, not elsewhere? Is it possible that black cohosh is similar to tamoxifen—which turns off estrogen receptors in the breast but nevertheless

causes uterine cancer? Women trying alternative therapies need to know.

*A.G. Farnell  
Petaluma, Calif.*

*The question is a good one. Unfortunately, the researchers don't know whether black cohosh acts like tamoxifen (see p. 166). Until more is known about how such herbal remedies work, the researchers advise caution.*

—K. Fackelmann

### Life in miniature

In response to the discussion on the size of putative "nannobacteria" ("The Bacteria in the Stone," SN: 8/1/98, p. 75), let me set a few matters straight. When I first discovered nannobacteria in rocks, this was indeed a novel finding to geologists as well as to microbiologists, as this discovery extended the putative limit of bacterial life down to the range of 5 to 250 nanometers.

The 1996 revelation of similar objects in the Martian meteorite set off a firestorm of opposition among microbiologists, who generally consider the lower limit of bacterial life to be somewhere around 200 nm. But now, however, Neelson indeed recognizes

the possibility of bacterial forms in the 50-200-nanometer range. Thus, there seems to be no longer any disagreement about there being some form of life in that size range, and the Finnish group under O. Kajander has successfully retrieved genetic material from objects that small.

More recent work by myself and colleagues has shown that small balls exist in great abundance down to sizes as small as 20 or 30 nm, about the limit of our scanning electron microscope. Whether these really minute objects are true "nannobacteria," viruses, some new form of biotic particle, nonliving organic molecules, or something inorganic, it is too early to say.

Surely, it is vitally important to resolve this question. One could say "we are certain that nothing that small can possibly be alive, so let's not even try to look for them in Martian samples." Or one could say "hmmmm . . . I wonder if life really could exist that small, let's try to solve that question first on Earth. Then we can risk returns of Martian samples carrying possible minute bionts." Not only the Martian meteorite but

*Letters continued on p. 169*