Microtus agrestis and its main winter food source, *Deschampsia caespitosa*, at four sites in a forest in northern England.

Grasses contained the most silica where the density of voles had been high in the previous spring but was declining during the study period. Meanwhile, little silica was found where the vole population had been low in spring the year before but had since begun to rise.

The team proposes that munching voles prompt grasses to store more silica, which reduces the ease with which voles can digest the plants. So vole growth and reproduction rates fall, and the population tumbles. Grasses then reduce their silica content and the cycle begins again.

GENETICS

Self defence

Science **320,** 935–938 (2008)

An 'immune system' embedded in *Escherichia coli's* genome protects the bacterium against injurious genes acquired from other organisms.

A protein called Rho helps *E. coli* produce some RNA molecules because it indicates when to stop making them. Evgeny Nudler of New York University School of Medicine, Max Gottesman of Columbia University Medical Center, New York, and their team exposed *E. coli* to an antibiotic called bicyclomycin that inhibits Rho. Without this stop signal, many genes that viruses and other bacterial species have transferred into the *E. coli* genome were newly expressed, often with toxic effects.

One such gene, acquired from a virus, inhibits cell division. Taken together, the findings suggest that Rho blocks the expression of harmful foreign genes.

INORGANIC CHEMISTRY

Towards a noble line

J. Am. Chem. Soc. **130,** 6114–6118 (2008)

For decades chemists have known that noble gases can subvert their name by forming chemical compounds. No compound demonstrates this point as emphatically as HXeOXeH, a molecule prepared by Leonid Khriachtchev at the University of Helsinki in Finland and his colleagues.

The compound is almost unique in containing two noble-gas atoms in a single, small molecule, and is possibly the simplest molecule of this type. The structure is like that of a water molecule with a xenon atom inserted into both of the bonds between oxygen and hydrogen. HXeOXeH forms in a photochemical reaction between xenon and water at 45 kelvin. The researchers hope their finding will be the first step towards designing polymers with alternating xenon and oxygen atoms.

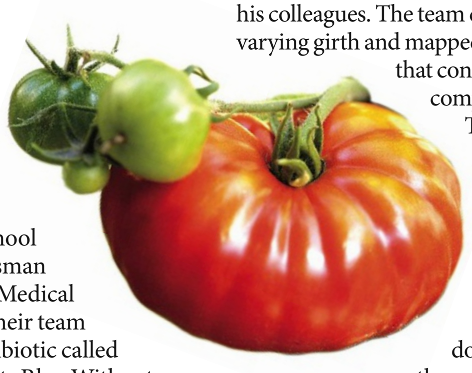
PLANT SCIENCE

Monster fruit

Nature Genet. doi:10.1038/ng.144 (2008)

Fat, juicy tomatoes may be the norm in modern supermarkets; wild tomatoes can be 1,000 times smaller. Biologists at Cornell University in Ithaca, New York, have identified a major genetic determinant of large tomato size that increases the number of female reproductive organs in a tomato flower, and thus the number of compartments in the fruit.

The determinant, 6-8-kilobases long, is in a gene called *fas*, named by Steven Tanksley and his colleagues. The team crossed tomatoes of varying girth and mapped the genetic region that conferred the tomatoes' compartment number. The insertion in *fas* is probably a mutation that occurred during tomato domestication; it was not present in 30 lines of the wild tomato from which domestic tomatoes are thought to descend.



MANCEAU/PHOTOCUISINE/CORBIS

HUMAN REPRODUCTION

Fertile tones

Evol. Hum. Behav. doi:10.1016/j.evolhumbehav.2008.02.001 (2008)

American women in the fertile stage of their menstrual cycle speak with voices that are more attractive than those of women who are passing through their infertile stage.

Nathan Pipitone and Gordon Gallup at the University at Albany, part of the State University of New York, recorded the voices of 51 women at four points in their menstrual cycles. Voice samples were then played to 34 male and 32 female participants who rated the attractiveness of the voices.

Participants of both genders scored the voices as more attractive when the women were fertile, suggesting that although women do not obviously advertise their fertility, they unwittingly send subtle cues. Perhaps unsurprisingly, such variation was absent in women taking the contraceptive pill.

JOURNAL CLUB

Andrea Manica
University of Cambridge, UK

A zoologist traces flu across the globe.

In winter, everybody recognizes a stuffy nose, a fever and an achy body as influenza. But experts still grapple with where the flu virus goes during the summer. One theory has it that flu lays low, holding out until the following season in a small number of asymptomatic people. Another idea — that flu strains tend to become extinct locally but shift around geographically — carries more weight. A recent paper by Derek Smith of the University of Cambridge, UK, and his colleagues helped nail the latter hypothesis by plotting the results of antigen-binding assays and genetic sequencing of more than ten thousand viruses on a map (C. A. Russell *et al. Science* **320,** 340–346; 2008).

The researchers call this approach 'antigenic cartography'. Their antigenic time charts contain data crunched from the portion of the World Health Organization's enormous 'Global Influenza Surveillance Network' database that details strains classified as 'H3N2' between 2002 and 2007. First, they confirm flu's source–sink dynamics by showing that winter flu strains are more closely related to (and thus more likely to have evolved from) strains found elsewhere than to last season's local contagion. Second, the team pinned down H3N2's spread. Temperate regions are regularly seeded by strains from east and southeast Asia, where many strains circulate continuously and asynchronously in a pattern probably driven by varying climatic conditions.

These findings suggest that close surveillance of emerging strains in east and southeast Asia could enable us to predict those that will later affect the rest of the world. Yet it also poses a question: why do flu strains not return to this region after spending time (and thus evolving) elsewhere? Now that we know where new strains come from, we need to find out why they never go back.

Discuss this paper at **http://blogs.nature.com/nature/journalclub**