RESEARCH HIGHLIGHTS

Selections from the scientific literature

MOLECULAR EVOLUTION

Genetic traces of selection

The history of human evolution is written in the genome, and researchers have now pinpointed gene variants that may have helped humans to adapt to their environment.

Sharon Grossman and Pardis Sabeti of the Broad Institute in Cambridge, Massachusetts, and their colleagues used a computational tool to root out single-letter changes in the human genome that have been under selective pressure in the past 50,000 years. They found that one such variant seems to temper the immune response to certain types of bacteria, and may have been selected for when humans were exposed to high levels of infections.

In a separate paper, Sabeti and her co-workers introduced another of the gene variants that they uncovered into mice. The resulting animals had thicker hairs and a higher number of active sweat glands — traits borne by humans with the same variant. However, whether extra sweat glands benefited early humans is a matter of speculation.

Cell 152, **703–713; 691–702 (2013)**

REPRODUCTIVE BIOLOGY

Broken DNA in ageing eggs

The quality of egg cells declines as women age, probably partly because the cells' ability to repair DNA damage becomes impaired.

Kutluk Oktay at New York Medical College in Rye and his collaborators found that egg cells from older women have more DNA damage and lower expression of four DNA-repair genes, than those from younger women.

When the authors silenced these genes in mouse egg cells using short interfering RNA molecules, the egg cells were more prone to DNA damage and death. When they overexpressed one of these genes, *BRCA1*, the old mouse eggs became as robust as the young ones.

These results indicate that the decline in egg-cell quality may be reversible and could lead to treatments that prolong female fertility, say the authors.

Sci. Transl. Med. 5, **172ra21 (2013)**

SETH RESNICK/SUPERSTOCK/CORBIS

ATMOSPHERIC SCIENCE

Harder rains in a hotter climate

The amount of rain delivered in intense spurts, such as in thunderstorms, will probably increase more than that from drawn-out showers, as the climate warms.

As temperatures rise, so does the frequency of extreme precipitation events, but scientists have had trouble untangling which type of precipitation contributes most to these changes in weather. Jan Haerter of the University of Copenhagen and his colleagues used radar measurements and data from gauges, taken as often as every five minutes over many months, to study how much rain fell over parts of Germany. Cloud observations were used to distinguish between the two types of rain.

The amount of rain delivered in extended showers increased with temperature at about the expected rate. However, the volume produced in intense bursts increased faster than the rise in the atmosphere's water-holding capacity, which also rises with temperature. Such erratic precipitation patterns may dominate in a warmer future.

Nature Geosci. **http://dx.doi.org/10.1038/ngeo1731 (2013)**

ZOOLOGY

Bright nights speed birds' lives

Exposure to low levels of artificial light at night can cause birds to become ready for reproduction earlier than those that experience dark nights.

Davide Dominoni and his colleagues at the Max Planck Institute for Ornithology in Radolfzell, Germany, attached miniature devices to wild European blackbirds (*Turdus merula;* **pictured**) to record the light levels that the birds experience in city and forest environments. On the basis of these data, the authors exposed adult male blackbirds captured from both settings to either dark or low-light conditions at night. Birds kept in the brighter-night environment developed reproductive physiology nearly a month earlier and moulted sooner than their dark-dwelling counterparts.

IMAGEBROKER/FLPA