



Feather Features

Feathers in the fossil record provide morphological clues to help understand selection or behavior of extinct birds and dinosaurs. Determining the coloring and structure of fossil feathers could add further insight, but preservation issues often cloud interpretations (see the Perspective by **Norell**). **Wogelius et al.** (p. 1622, published online 30 June) mapped the distribution of trace metals likely to be associated with melanin pigments in fossilized feathers in several species of birds and nonavian theropods, revealing distinct correlation patterns. In a *Confuciusornis sactus* fossil, the metal patterns suggest that its flight feathers were mostly white with dark tips. **McKellar et al.** (p. 1619) found an assemblage of amber-preserved feathers from the Late Cretaceous that preserves feather structure and hints of feather pigmentation.

Antibodies' Long and Winding Road

Over time, some HIV-infected individuals develop antibodies that show great potency against diverse strains of the virus. Passive transfer of such antibodies can protect against infection in monkeys, so there is great interest in creating a vaccine that could elicit such antibodies in vaccinated individuals (see the Perspective by **Korber and Gnanakaran**). **Wu et al.** (p. 1593, published online 11 August; see the cover) and **Scheid et al.** (p. 1633, published online 14 July) used different approaches to demonstrate the presence of broadly neutralizing antibodies

with similar specificities in multiple, unrelated HIV-infected individuals. These antibodies were derived from a small number of germline immunoglobulin genes, and bound their epitope on the gp120 envelope protein of HIV in a similar fashion.

A Planet Around Two Stars

Based on data from the Kepler space telescope, **Doyle et al.** (p. 1602) report the detection of a planet orbiting two stars in a binary system. The planet transits both stars, which eclipse each other, allowing the precise determination of the mass, radius, and orbital parameters of all three bodies. The stars are less massive than the Sun, and the planet resembles Saturn but with a higher mean density. It is likely that the planet and stars formed together within a disk of gas and dust.

Of Alkenes and Alcohols

Alkenes and alcohols are versatile building blocks of more complex organic molecules and polymers. In acid, the two are rather easily interconverted—fragmentation of water across the carbon-carbon double bond of an alkene produces an alcohol—but the OH group nearly always ends up on the carbon with fewer hydrogens in asymmetrical alkenes. **Dong et al.** (p. 1609) present a tandem set of three catalysts that act together to invert this regioselectivity, adding the OH group of water to the less-substituted carbon of an alkene. **Lee et al.** (p. 1613) focus on a different transformation—pairing up different alkenes and alcohols to make carbon-carbon bonds with the alcohol's OH group and one of the alkene's H atoms departing as water.

Filling a Hole

Hydroxyl radicals have been called the “atmospheric broom” because of their central role in eliminating many airborne pollutants. They are produced in large part by the photolysis of atmospheric HONO. However, observations have been unable to account for a significant fraction of atmospheric HONO production. **Su et al.** (p. 1616, published online 18 August; see

the Perspective by **Kulmala and Petäjä**) show that HONO can be produced from biogenic nitrite in soils, which can fill the hole in the atmospheric budget. Fertilized soils with low pH are particularly strong sources of HONO. Thus, agricultural activity and changes in land use could be causing enhanced production of HONO and thereby increasing the concentration of hydroxyl radicals.

Rise of the Jellyfishes

Human-induced changes to marine systems, such as overfishing, habitat destruction, and climate change, have resulted in large declines in top fish predators. In some such systems, a correlated increase in large jellyfishes has occurred, leading some to suggest that anthropogenic impacts on marine systems may result in a shift

from planktivorous fish-dominated to jellyfish-dominated trophic webs. This shift seems paradoxical because actively swimming and hunting fish appear much more efficient than slow, drifting jellyfish. **Acuña et al.** (p. 1627), however, show that in terms of relative prey consumption rates, fish and jellyfish are similar. It seems that jellyfish make up for their inability to track prey actively by being large and thus encounter a greater number of prey items.

Modulating Myelination

How neural impulse activity can regulate myelin formation is unclear. **Wake et al.** (p. 1647, published online 4 August; see the Perspective by **Araque and Navarrete**) cultured neurons taken from mouse dorsal root ganglia with rat oligodendrocyte precursor cells. After inhibition of neuronal neurotransmitter release, myelination was also inhibited. Neuronal activity affected localized translation of myelin basic protein at the periphery of the myelinating cell. This interaction would stimulate myelin formation preferentially on individual axons that are electrically active—the critical requirement for myelin participation in activity-dependent development, information processing, and learning.