



Science

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FOREST ECOLOGY

Losing trees despite the forest

When we think of human impacts on forests, we usually think of whole-scale destruction from logging or other habitat destruction. However, loss of individual trees within a persistent forest can have unforeseen effects. Such losses occur through drivers such as disease and drought and can occur within a specific tree species or across species. Fleming *et al.* conducted a large meta-analysis of mostly North American and Australian studies and found both positive and negative impacts on forest animal abundance. Species that rely on specific living tree resources such as nectar and pollen declined, whereas those that rely on resources such as tree cavities, open canopies, and ground resources increased. Impacts also shifted over time, with individual tree deaths leading to increases that eventually shifted to overall decline. Although sometimes occurring in opposite directions, species responses were substantial enough that increased tree loss could lead to altered forest communities. —SNV *Biol. Rev. Camb. Philos. Soc.* 10.1111/brv.12725 (2021).

A fallen dead and rotted tree in the Białowieża Forest

targets for controlling metabolic diseases in the future. —GKA

Cell Metab. 10.1016/j.cmet.2021.05.002 (2021).

BIOMATERIALS

Magnetic guidance for nerve repair

After an injury, peripheral nerve regeneration is possible but often fails to fully restore function, in part because of the need for slow-moving axons to traverse long distances. Although adult stem cell therapies have shown some promise, there is a challenge in getting enough cells to the injury. Soto *et al.* enhanced adipose-derived mesenchymal stem cell delivery by loading the cells with citric acid-coated superparamagnetic iron oxide nanoparticles. Tests were done in rats using a Wallerian degeneration model of the sciatic nerve. By magnetically guiding the cells to the injury site, they were able to improve recovery, with partial conservation of the nerve structure and indications of remyelination. —MSL

Acta Biomater. 10.1016/j.actbio.2021.05.050 (2021).

COSMOLOGY

Sounding out the Universe

Propagation of sound waves in the early Universe imprinted characteristic density fluctuations known as baryon acoustic oscillation (BAO). Galaxies preferentially form in higher-density regions, so BAO can be measured using galaxy redshift surveys. Alam *et al.* report the final cosmological parameters from the extended Baryon Oscillation Spectroscopic Survey (eBOSS) both independently of other datasets and in combination with alternative cosmological techniques. The authors found strong support for standard cosmology with cold dark matter, a flat Universe, and dark energy described by a cosmological constant. The only notable inconsistency was the well-known tension in measurements of the

constant, which persists in *acta*. —KTS
Rev. D 103, 083533 (2021).

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SOLAR CELLS

Efficient organic solar cells

There is currently considerable interest in the development of organic solar cells (OSCs) because of the emergence of so-called non-fullerene acceptors, which has pushed the power conversion efficiencies of OSCs close to those of inorganic and hybrid semiconductor solar cells. Chen *et al.* combined experimental and theoretical study of more than 30 non-fullerene OSC devices to

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the relationships between these parameters and the nonradiative voltage losses, and show that these losses can be reduced without sacrificing the charge-generation efficiencies. This work opens the way for the future rational design of high-efficiency OSC materials. —YS

Nat. Energy 10.1038/s41560-021-00843-4 (2021).

METABOLISM

Innervating the gut

Sensory neurons that detect

metabolic responses to food. When such gut-brain signaling is impaired, overeating, weight gain, and metabolic dysfunction can occur. Borgmann *et al.* investigated feeding and glucose regulation by different sensory neurons that innervate the gut of mice. Their findings enabled reconstruction of peripheral and central sensory neuron projections and revealed differential innervation of the mucosal and muscular layers of the intestine and different regions of the gastrointestinal tract. Like


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Sciatic Nerve Regeneration After Traumatic Injury Using Magnetic Targeted Adipose-derived Mesenchymal Stem Cells

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