RESEARCH HIGHLIGHTS

Selections from the scientific literature

ENVIRONMENTAL STUDIES

Electric cars can harm environment

Across the United States, electric vehicles are more detrimental to the environment than petrol-powered vehicles thanks to the pollution created in generating electricity.

Stephen Holland at the University of North Carolina at Greensboro and his colleagues modelled air pollution from motor vehicles by region. Nearly all electric vehicles are less detrimental to global climate than petrol-powered ones, but the team found a significant variation in benefit across the country. For example, in the western United States, where a sizeable amount of electricity comes from clean energy sources, electric vehicles produce less air pollution than petrol-powered cars. But in the Midwest the situation is reversed, because electricity comes mostly from coal-fired power plants.

The US government pays a subsidy of up to US$7,500 to people who buy electric cars, but the authors say that this should take into account the regional variation in environmental impact.

Am. Econ. Rev. 106, **3700–3729 (2016)**

BRIAN J. SKERRY/NATIONAL GEOGRAPHIC CREATIVE

ANIMAL BEHAVIOUR

Seal whiskers may sense fish breath

A harbour seal's whiskers might be sensitive enough to detect water passing through the gills of fish hiding in the sand.

Wolf Hanke and his colleagues at the Institute for Biosciences in Rostock, Germany, trained three harbour seals (*Phoca vitulina*; pictured) to swim over a platform with eight water nozzles, which generated tiny currents resembling those from flatfish gills. The seals were trained to hover over a nozzle for five seconds if they detected a current. In an open-water pen in the Baltic Sea, the seals correctly identified the tiny flows of water with their whiskers, even when they were blindfolded.

Wild harbour seals can also smell fish, but this trial suggests that they may have other ways to find prey.

J. Exp. Biol. 220, **174–185 (2017)**

CARDIOVASCULAR BIOLOGY

Mutation causes heart disease

Blood cells with specific mutations stimulate the thickening of fatty plaques — a hallmark of heart disease — in the arteries of mice.

DNA mutates more frequently with age. Many mutations occurring in later life are known to increase cancer risk, but links to cardiovascular disease are less well-defined. José Fuster and Kenneth Walsh at Boston University School of Medicine in Massachusetts and their colleagues studied the effects of mutations in TET2, a protein involved in regulating blood-cell development. They transplanted TET2-deficient blood cells into a mouse model of atherosclerosis. The mutant cells multiplied more rapidly than normal cells, and increased inflammation and the growth of atherosclerotic plaques.

TET2 mutations in blood cells have been reported in ageing humans, so the authors suggest that the protein could be a potential target for treating or preventing heart disease.

Science **http://doi.org/bxj5 (2017)**

SYNTHETIC BIOLOGY

Remote-controlled swimming bacteria

Bacteria can be made to move and communicate with each other using electrodes.

William Bentley from the University of Maryland in College Park and his colleagues introduced genes into *Escherichia coli* that can be activated by oxidants in the bacteria's environment. The team then exposed the microbes to small molecules that can be converted from a reducing to an oxidizing state by a voltage. When the researchers applied this voltage using electrodes, they activated the inserted genes, causing the bacteria to produce proteins that