



A volcanic caldera on Isabela Island, Galapagos Islands, Ecuador

FORAGING ECOLOGY

Bees also like a sticky mess

Flowers produce all kinds of cues that attract bees and alert them to the presence of nectar, indicating that bees are highly attuned to flower signals. But contrary to expectations, bees do not solely rely on flower signals to look for nectar. Meiners *et al.* found that bees' ability to find resources is likely much more flexible than we have realized. After observing large numbers of bees visiting nonflowering chamise shrubs, they discovered that 42 bee species were collecting honeydew produced by scale insects found on the shrubs. Bees also swiftly located sugar daubed on shrub limbs. As for how they locate an unadvertised resource such as honeydew, the authors suggest that they may be using social cues from other foraging bees. —SNV
Am. Nat. 10.1086/692437 (2017).

CANCER ETIOLOGY

In cancer, it's not just about the genes

After a decade of productive cancer genome projects, few experts would question the role of genetics in human cancer. Yet environmental factors also contribute. One intriguing hypothesis is that carriers of certain genetic alterations develop cancer because they are less able to cope with environmental or endogenous carcinogens. Tan *et al.* identified a gene-environment interaction involving BRCA2, a protein that functions to maintain genomic integrity. Inherited mutations in one copy of BRCA2 confer susceptibility to several cancers, including breast cancer. The authors found that exposure of cultured cells to naturally occurring levels of formaldehyde or acetaldehyde induces selective degradation of wild-type BRCA2 protein. This could exacerbate the effect of heterozygous BRCA2 mutations and result

in the accumulation of cancer-causing mutations. —PAK
Cell 169, 1105 (2017).

REPRODUCTION

All's fair in love and war

Ejaculates not only deliver sperm; other components promote sperm survival and control female reproductive physiology. Insects produce complex ejaculates in packages called spermatophores, which also act

as plugs to prevent sneaky mating by rival males. Meslin *et al.* discovered that spermatophores are the object of an evolutionary arms race in cabbage white butterflies. These plugs have tough outer proline-rich capsules, but the female butterflies have evolved a range of proteases that can digest them and thus hasten the time when she can become receptive again. This butterfly has taken back control of her reproduction. —CA

Proc. Natl. Acad. Sci. U.S.A. 10.1073/pnas.1707680114 (2017).

MATERIALS SCIENCE

Framework materials can dew it

Although filtration or distillation can desalinate water, these approaches can require large amounts of energy, great quantities of saline water, and extensive piping and distribution networks. They are thus impractical in a desert setting where extraction from the atmosphere is the primary source of water. Rieth *et al.* constructed a metal-organic framework (MOF) material that can pull 0.8 grams of water per gram of MOF from air at only 30% humidity, using the day-to-night temperature swing to drive adsorption and desorption. The key to the design was having pores wider than the critical diameter for capillary action to allow free flow of the water molecules. —MSL

ACS Cent. Sci. 10.1021/acscentsci.7b00186 (2017).



Female cabbage white butterflies have evolved methods to break down spermatophore plugs, thus hijacking control of when they can mate again.