COLD ATOMS
Making perfect atomic arrays
Arrays of atoms can be a useful resource for quantum information. However, loading atoms into arrays is typically a stochastic process, which leads to imperfections. Two groups have now performed defect-free assembly of atoms into arrays (see the Perspective by Regal). The researchers first loaded the atoms stochastically and imaged the system. They then shuttled the atoms around to form perfect arrays. Barredo et al. worked with two-dimensional arrays, creating a variety of spatial configurations. Endres et al. manipulated atoms along a line. By further cooling down the atoms and generating interactions among them, the techniques may also find use in quantum simulation. —JS

BEHAVIORAL IMMUNOLOGY
Status alters immune function in macaques
Rhesus macaques experience variable levels of stress on the basis of their position in the social hierarchy. To examine how stress affects immune function, Snyder-Mackler et al. manipulated the social status of individual macaques (see the Perspective by Sapolsky). Social status influenced the immune system at multiple levels, from immune cell numbers to gene expression, and altered signaling pathways in a model of response to infection. Macaques possess a plastic and adaptive immune response wherein social subordination promotes antibacterial responses, whereas high social status promotes antiviral responses. —LMZ

SCIENCE, this issue p. 972, p. 1021; see also p. 1024

AUTOPHAGY
Open sesame!
The autophagosome is a double-membraned intracellular structure involved in the disposal of damaged or defunct organelles. Autophagosome formation requires a number of autophagy-related (ATG) proteins. Among them, the key conjugation systems ATG8 and ATG12 are widely exploited in the detection of autophagy in many organisms. However, their precise function in autophagy remains unknown. Tsuoyama et al. identified an unexpected role of ATG3, an important enzyme in the ATG conjugation systems, in efficient degradation and opening of the inner autophagosomal membrane after fusion with lysosomes (see the Perspective by Levine). Their live-imaging system revealed the entire life of an autophagosome in mammalian cells. —SMH

Science, this issue p. 1036; see also p. 968

CANCER IMMUNOTHERAPY
Cardiac side effect
Antibodies that block CTLA-4 (cytotoxic T lymphocyte–associated antigen 4) and PD-1 (programmed death 1) allow T cells to launch antitumor immune responses. Although these checkpoint inhibitors improve survival in melanoma patients, inflammation of other tissues is a common side effect. Johnson et al. report that two melanoma patients treated with a combination of the checkpoint inhibitors developed fatal cardiac damage. Biopsies revealed that T cells and macrophages that infiltrated the heart were the same as those found in skeletal muscle and the tumor. Neither patient had cardiac risk factors other than hypertension. Review of a safety database suggests that severe

IN OTHER JOURNALS
Edited by Sacha Vignieri and Jesse Smith

Continuing the dialog via experiment
Recent discussions about reproducibility within the psychology community have been heated and, at times, acrimonious. The registered replication report by Wagenmakers et al. and the comment by Strack map out one way forward, in terms of experimental design, analysis, interpretation, and rebuttal. The original study, a classic from 1988, reported the effect of facial expressions (a smile or a pout) on a subsequent affective judgment. The replication involved 17 laboratories following a vetted experimental design and blinded analysis plan. The overall result is nonreplication, although Strack offers reasons why the original effect was not observed. —GJC


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myocarditis from such combination therapy affects less than 1% of patients. The mechanism for this rare toxic effect is not known. —LDC


CANCER THERAPY
A new direction for breast cancer therapy

Triple-negative breast cancer has the worst prognosis of the breast cancer subtypes. Aggressive forms of this cancer show elevated signaling through the transcription factor MYC, but blocking MYC activity remains challenging because of its role in normal cell function. Horiuchi et al. screened the protein kinases expressed by triple-negative breast tumors in hopes of finding a way to thwart MYC indirectly. They identified PIM1, a nonessential protein kinase that was highly active in MYC-positive tumors. Genetic depletion of PIM1 promoted cancer cell death, and preclinical drugs targeting PIM1 impaired the growth of MYC-positive patient tumors in mice. These findings pave the way for the development of PIM1 inhibitors in early-phase clinical trials. —PNK

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PLANT-ANIMAL INTERACTIONS
Ants farming plants

Mutualistic interactions between ants and plants are relatively common, most often occurring in plants that produce specific structures for ant occupation. A relationship that more closely approximates farming occurs between ants and fungi, in which ants actively create growing conditions for and propagate the fungal partner. Chomicki and Renner now describe a system in Fiji in which ants in the genus Philidris conduct such gardening activities in six different species of epiphytic plants, often simultaneously. Specifically, they not only manage growing conditions but also disperse and plant seeds and pollinate flowers. This more intensive management helps to ensure reestablishment of plants that provide fruits and resources to the ants and that might otherwise be harder to come by. —SNV


CHEMISTRY
A clean combination of CO and amines

It is rare for synthetically useful chemical reactions to proceed as though two parts are simply cut and pasted together. Wang et al. present just such a route to formamides, which are widely used as organic solvents and chemical reagents. The reaction, catalyzed by ruthenium supported on ceria, formally inserts carbon monoxide into a N–H bond of primary or secondary amines. The authors further demonstrate a continuous flow protocol for dimethylformamide preparation that proceeds for 12 days with less than 5% activity loss. —JSY


MAGNETISM
THz-driven magnetism goes nonlinear

Manipulation of magnetism in solids by terahertz (THz) radiation may enable applications in information storage and processing. Experiments so far have explored a regime in which the magneto-optical response is linear, but entering the nonlinear regime is important for applications. Baierl et al. achieved this goal in the antiferromagnetic compound NiO. The magnetic field of the THz radiation that they shone on the sample coupled to the spins in the material, causing them to precess. In addition to a dominant and expected frequency of 1THz, a peak appeared at double that frequency, signifying a nonlinear response. The advance may enable progress toward magnetic THz spin-switching. —JS


ICE SHEETS
Fast action with little effect

The ice–ocean interface helps determine how ice sheets decay.

INE Island Glacier (PIG) is responsible for a major part of Antarctica’s ice loss, with an ice stream whose rate of flow to the sea accelerated by around 75% between 1974 and 2010. Like many similar glaciers, its decay is thought to be linked to warming of the ocean with which it makes contact. Christianson et al. report subannual observations of PIG for the period 2009 to 2014, which show that glacier retreat and accelerated ice flow likely were initiated decades ago by such ocean-induced melting, and that transient ocean cooling has only a relatively minor effect on ice flow once marine ice sheet instability is under way. The long-term effects of ocean temperature variability on ice flow still are not known. —HJS


IN OTHER JOURNALS

Fast and strong – a new property of THz-induced THz spin-switching

The combination of terahertz (THz) radiation with THz transitions in magnetic materials demonstrates a fundamentally new regime of manipulation. —JS

THz-driven magnetism goes nonlinear
Jelena Stajic

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