worse than the fundamental limit imposed by the Heisenberg uncertainty principle. — JS
Science, this issue p. 1486

VIRUS ENTRY
How Lassa virus breaks and enters
Lassa virus, which spreads from rodents to humans, infecting about half a million people every year, can lead to deadly hemorrhagic fever. Like many viruses, Lassa virus binds to cell surface receptors. Jae et al. now show that to enter a cell, the virus requires a second receptor, this one inside the infected cell. This requirement sheds light on the “enigmatic resistance” of bird cells to Lassa virus observed three decades ago. Although bird cells have the cell surface receptor, the intracellular receptor cannot bind the virus, stopping it in its tracks. — SMH
Science, this issue p. 1506

HUMAN COGNITION
Selecting the most successful strategy
The brain’s prefrontal cortex helps us to make decisions in an uncertain and constantly changing environment. Donoso et al. present a model of human reasoning as an algorithm implemented in the prefrontal cortex (see the Perspective by Hare). Brain-imaging experiments supported this model. Depending on the prevailing circumstances, human reasoning can either adapt ongoing behavioral strategies or switch to previously learned strategies. Only when neither approach is appropriate will the brain create new strategies. — PRS
Science, this issue p. 1481, see also p. 1446

CANCER
Old drug learns new anticancer trick
Cancer researchers have been trying to develop drugs that inhibit angiogenesis, the formation of new blood vessels that nourish a tumor and allow it to grow. A few drugs that fight angiogenesis are now used for some cancers, but they are not always effective. Xu et al. report a potential addition to the anti-angiogenic armamentarium: nonsteroidal anti-inflammatory agents such as celecoxib, familiar remedies for arthritis. In mice, celecoxib inhibits blood vessel growth by a different mechanism than existing angiogenesis inhibitors. A combination of the two types of drugs was particularly effective in reducing tumor growth and spread. — YN

NANOFLUIDICS
Watching lead flow at the nanoscale
Microfluidic devices have recently become useful in commercial chemical synthesis. But what about fluid dynamics at the nanoscale? Lorenz and Zewail used an electron microscope with nanosecond time resolution to capture images of molten lead flowing through a nanotube. They flash-melted the metal with a laser pulse to begin their flow measurements at a precise time point. The experiments offered insights into viscous friction as well as heat-transfer dynamics in a channel one-thousandth as wide as a strand of hair. — JSY
Science, this issue p. 1496

CANCER
Long unwinding road to cancer treatment
Cancer chemotherapy is infamous for harming healthy cells. This collateral damage causes the side effects that range from unpleasant (such as hair loss) to life-threatening (such as increased susceptibility to infection). They can be particularly devastating for elderly patients. Promising new data may one day lead to a safer treatment for a type of acute myeloid leukemia, which first strikes patients at age 66, on average. Mazurek et al. found that when they blocked mouse genes from expressing an enzyme called DDX5, the leukemia cells died, but healthy bone-marrow cells were unharmed. DDX5 made the cancer cells proliferate; inhibiting DDX5 made the cells accumulate toxic oxygen species, which contributed to cancer cell death. — PAK
Cell Rep. 7, 10.1016/j.celrep.2014.05.010 (2014).

AGING
Metformin’s recipe for a long life
Metformin, a drug commonly prescribed to treat type 2 diabetes, has side effects, but some of these are beneficial, such as fighting certain cancers and increasing longevity. By studying the worm Caenorhabditis elegans,
Mix two types of strands that differed only by the presence or absence of two oxygen atoms. They found that the types sorted themselves remarkably well in combination with iron ions: The longer strands assembled into cross-shaped groups of four, the shorter strands into star-shaped groups of five. — JSY

**CHEMISTRY**

**Knotty questions in molecular assembly**

How would you tie a knot if you couldn’t touch either end of the rope? In the past few years, chemists have solved that problem at the molecular scale by precisely designing strand fragments, then luring them into mutually overlapping arrangements around metal ions. Ayme et al. now have tested the limits of that approach, exploring how subtle changes to the strands affect the distribution of knots produced in the reaction. Specifically, the authors mixed two types of strands that differed only by the presence or absence of two oxygen atoms. They found that the types sorted themselves remarkably well in combination with iron ions: The longer strands assembled into cross-shaped groups of four, the shorter strands into star-shaped groups of five. — JSY

**ANIMAL ECOLOGY**

**The secrets of canopy dwellers revealed**

Many mammals in tropical forests spend much of their life in the canopy, which makes their behavior difficult to document. Treetop cameras can help, Gregory et al. report. The authors attached motion-triggered cameras high in the branches of a Peruvian tropical forest. In more than 1500 photographs taken over 6 months, they recorded 20 mammal species at crossing points between trees. The animals seemed unfazed by the cameras (though fluttering leaves did tend to trigger the cameras unnecessarily). Like the more familiar camera traps at ground level, arboreal camera traps may become an important tool for recording hitherto hidden behaviors. — AMS

**MATERIALS SCIENCE**

**Tubular friction at the nanoscale**

When large-scale objects slide by each other, the amount of friction depends on their surface roughness and the contact area between them. At the nanoscale, though, different factors and forces can affect resistance to motion. Nigües et al. examine the response of multiwalled carbon nanotubes (CNTs) and boron nitride nanotubes (BNNTs) as their concentric cylindrical layers are pulled past each other. Whereas the semiconducting CNTs show almost no resistance to sliding motion, the BNNTs show viscous-like dissipation that is proportional to the contact area. The authors attribute this difference to bond character: Boron nitride forms ionic bonds, whereas the bonds in CNTs are purely covalent. Because they slide so much less slickly when they touch, the BNNTs could make highly efficient nanoscale shock absorbers. — MSL

**COSMOLOGY**

**Universe inflation or dust emissions?**

Doubt enshrouds what was supposedly the biggest discovery in cosmology in a decade. In March, researchers working with BICEP2, a telescope at the South Pole, reported that the pinwheel swirls they saw in the polarization of the cosmic microwave background—the Big Bang’s afterglow—came from gravitational waves rippling through the infant universe. That, they said, was the first direct evidence of an exponential growth spurt called inflation in the early universe. But others noted that the signal might emanate instead from dust in our galaxy. Now, in the published paper, Ade et al. write that their models of galactic dust “are not sufficiently constrained ... to exclude the possibility of dust emission bright enough to explain the entire excess signal.” — AC

**EXTINGUISH**

**Miss mammoths? Blame your ancestors**

Imagine saber-toothed tigers, giant ground sloths, and car-sized glyptodonts—an armadillo relative—ranging across the entire planet. Only a few tens of thousands of years ago, such charismatic megafauna ruled the earth. What killed them—climate change or human activity? In the first global analysis of extinctions during the Pleistocene geological epoch, Sandom et al. found that the expansion of humans out of Africa most likely caused the extinctions over the past 100,000 years. The animals were easy targets: They lacked the fear of humans that comes with years and years of co-evolution. — SNV