**SCIENCE**

Colliding Light Beams

Under normal conditions, photons don’t interact with each other very much. For instance, the light beams from two laser pointers pass through each other without trouble. Ramping up the power of the beams, however, changes that somewhat standoffish behavior. High-powered-laser beams can form self-focusing filaments in air that propagate without dispersion. These light bullets or light sabers are finding use in a diverse range of applications from triggering lightning to remote spectroscopic sampling. Finding ways of controlling propagation on the wing rather than tinkering with the laser on the ground would offer much more flexibility.

Bernstein et al. take two high-powered laser beams and collide them. Rather than passing through each other unscathed, the beams couple and exchange energy, up to 7%, with one beam amplifying the other at its own expense. Being able to tune the output of the collision in terms of the energy and frequency distribution of the modified light pulses should provide a powerful and flexible method for remote sensing applications. — ISO

*Helen Pickersgill is a locum editor in Science’s editorial department.

---

**CELL BIOLOGY**

A Store Manager

Cells stockpile nutrients and metabolites in storage compartments that can be raided when environmental conditions change. Lipid droplets are dynamic cellular caches of neutral lipids, such as triacylglycerol, which can be used as high-energy reserves, signaling molecules, and membrane building blocks. On the other hand, lipid droplets have been implicated in devastating metabolic diseases, such as diabetes and atherosclerosis, and are found in almost all cells from yeast to mammals. Nevertheless, relatively little is known about how they are formed.

Eastman et al. have established that the protein SPG20 (also known as spartin) regulates lipid droplet formation. Using cultured human cells, they found that SPG20 localized to lipid droplets and interacted with the lipid droplet–associated protein TIP47. SPG20 localization was regulated by WWP1, a member of the HECT-ubiquitin ligase family that modulates diverse cellular functions by tagging proteins with ubiquitin. Further, mutations in SPG20 have been linked to the rare neurological disease Troyer syndrome, which is characterized by muscle spasticity and limb paralysis; a disease-associated SPG20 mutant did not localize to lipid droplets. — HP


**EDITORS’ CHOICE**

**PHYSICS**

Colliding Light Beams

Under normal conditions, photons don’t interact with each other very much. For instance, the light beams from two laser pointers pass through each other without trouble. Ramping up the power of the beams, however, changes that somewhat standoffish behavior. High-powered-laser beams can form self-focusing filaments in air that propagate without dispersion. These light bullets or light sabers are finding use in a diverse range of applications from triggering lightning to remote spectroscopic sampling. Finding ways of controlling propagation on the wing rather than tinkering with the laser on the ground would offer much more flexibility.

Bernstein et al. take two high-powered laser beams and collide them. Rather than passing through each other unscathed, the beams couple and exchange energy, up to 7%, with one beam amplifying the other at its own expense. Being able to tune the output of the collision in terms of the energy and frequency distribution of the modified light pulses should provide a powerful and flexible method for remote sensing applications. — ISO

*Helen Pickersgill is a locum editor in Science’s editorial department.

---

**PALEONTOLOGY**

Tracks in the Sand

Animals evolved the ability to breathe air and then colonized the land in the Silurian period about 430 million years ago; however, curious tracks preserved by Cambrian microbial mats sitting atop mudflats and dunes seem to imply that arthropods or other animals ventured ashore before then. Hagadorn and Seilacher provide considered thoughts about who made these tracks and how. The tracks show a distinctive tail trace and other marks suggesting that the animals scurried along via the synchronous action of pairs of legs. The tracks, and in particular the tail trace, imply that the animal carried only a small shell, in contrast to, for example, the capacious shell used by a modern-day hermit crab. The authors suggest that an early chelicerate—possibly an eurypterid (sea scorpion)—used a mollusk shell to protect its gills and to keep them hydrated; a larger shell would not have been necessary as there were no other land predators yet. — BH

*Geology* 37, 295 (2009).
Tracks in the Sand
Brooks Hanson

*Science* **324** (5925), 315.
DOI: 10.1126/science.324.5925.315a