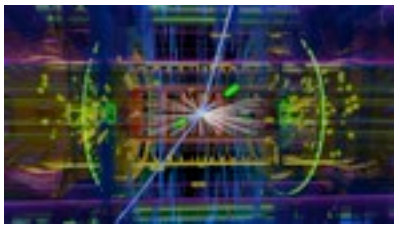
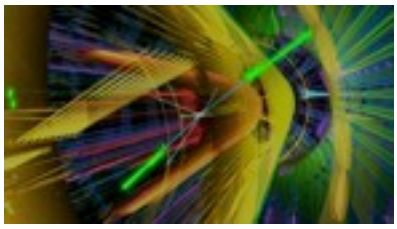


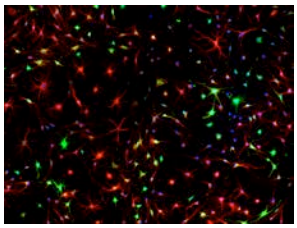
A visualization of a Higgs boson candidate decaying to 2 electrons and 2 muons in the ATLAS detector at the Large Hadron Collider.
Beate Heinemann on behalf of the ATLAS collaboration



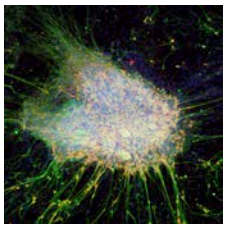
An visualization of a Higgs boson candidate decaying to 2 photons in the ATLAS detector at the Large Hadron Collider.
Beate Heinemann on behalf of the ATLAS collaboration

The ATLAS detector at the Large Hadron Collider during construction in 2005.
Beate Heinemann on behalf of the ATLAS collaboration

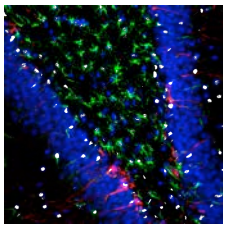
One endcap of the silicon strip detector of the ATLAS experiment at the Large Hadron Collider. This part of the ATLAS detector is used for detecting electrically charged particles.
Beate Heinemann on behalf of the ATLAS collaboration



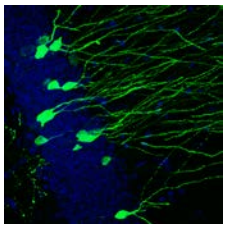
Culture dish of differentiated adult rat neural stem cells at 10X magnification. Neurons (red) and astrocytes (green) are two of the main types of cells found in the brain. Cell nuclei are shown in blue.
Anthony Conway, Schaffer Lab



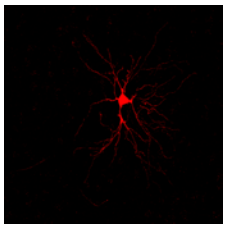
Confocal image of a single colony of neuronally differentiated human embryonic stem cells at 10X magnification.
Anthony Conway, Schaffer Lab



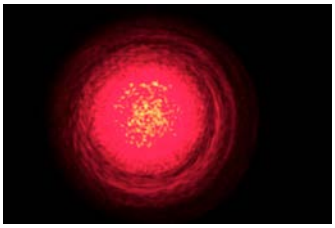
Confocal image of an adult rat hippocampus, the area of the brain where new memories are formed, at 25X magnification. Astrocytes (green) signal to neural stem cells (white) to differentiate into immature neurons (red). Cell nuclei are shown in blue.
Anthony Conway, Schaffer Lab



Confocal image of an adult mouse hippocampus, the area of the brain where new memories are formed, infected with lentivirus at 100X magnification.
Anthony Conway, Schaffer Lab



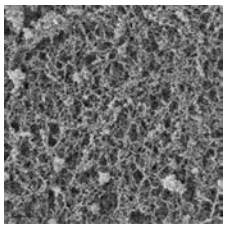
Confocal Image of adult mouse brain at 100X magnification. A mature neuron differentiated from a neural stem cell in the hippocampus expressing the reporter β-galactosidase.
Anthony Conway, Schaffer Lab



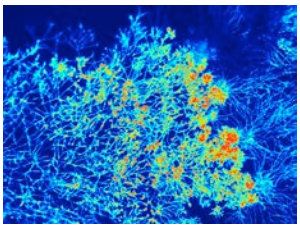
The Cryogenic Dark Matter Search attempts to detect dark matter in our galaxy. These pictures come from the calibration of our laser beam.
Nathan Earnest, Sadoulet Lab, Physics

Another laser beam calibration image.
Nathan Earnest, Sadoulet Lab, Physics

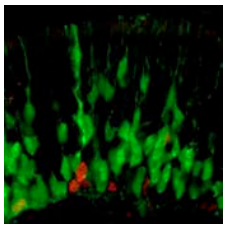
A rainbow is an arc because it refracts light at a fixed angle for a fixed color. If you have the right conditions, you can see the entire circle around the sun.
Zach Gainsforth, Space Sciences Lab



An electron image of aerogel showing the nanostructure of aerogel, used as a mitt for catching comet particles in NASA's Stardust mission. It gently captures particles that are traveling 5 km/s (here to SF in about two seconds).
Zach Gainsforth, Space Sciences Lab

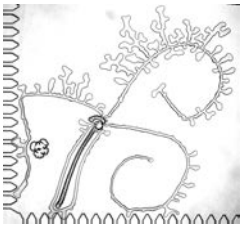


This microscopic image shows the hyphae of the filamentous fungus Neurospora crassa taken with a dissecting microscope. A protein in the fungus was labeled with green fluorescent protein.
J. Philipp Benz, Somerville Lab, Energy Biosciences Institute



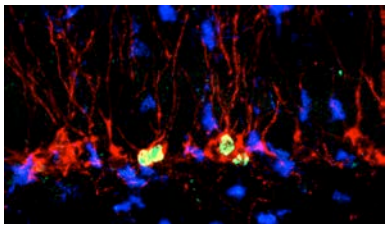
Elongated green cells are sensory neurons – which sense smells and relay that information to the brain – that originated from olfactory stem cells in the nose.
Russell Fletcher, Harland Lab

In this image of a composite galaxy cluster, blue galaxies near the outskirts are actively forming stars and often show clumps and spiral features, while those in the dense inner regions tend to be redder and rounder with older stars.
Matt George, Astronomy Department

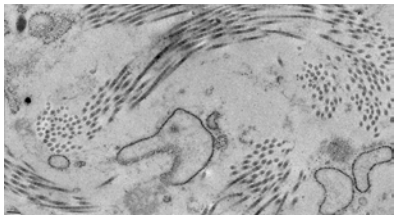


Art can be found in scientific failures. This is a microscope image of bubbles that appeared after polyacrylamide gels were formed inside a glass microdevice, rendering the devices unusable. At least the bubbles look cool.
Augusto Tentori, Herr Lab, Dept of Bioengineering

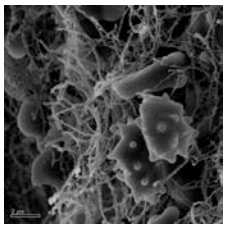
Another view of the bubbles.
Augusto Tentori, Herr Lab, Dept of Bioengineering



Newly born (green) and immature nerve cells (red). Astrocytes are blue. The brain's emotional center, the amygdala, induces the hippocampus to generate new neurons. This image shows how memories of fear are "burned" into the brain.
Daniela Kaufer, Biology / Helen Wills Neuroscience

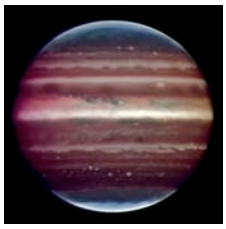


Transmission electron micrograph of the stroma surrounding the mammary duct of a mouse. Within the stroma, beautifully organized collagen fibrils are seen in cross-section and longitudinally.
Danielle Jorgens, Manfred Auer Lab, LBNL

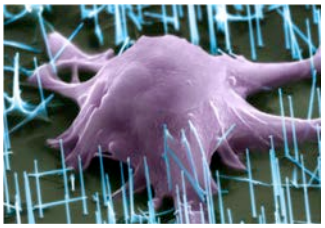


The Simpsons-like spikes on these cells found outside a mammary tumor always pique my interest. This is a scanning electron micrograph of a the mammary tumor found in a mouse. The spiky cells are likely some kind of immune system cell.
Danielle Jorgens, Manfred Auer Lab, LBNL

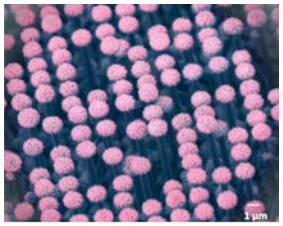
The inside of an electron microscope as seen by a sample in the microscope. In the center is a view "up the barrel" of the electron source. Other objects are various sorts of detectors. In the lower right hand is a slice of meteorite.
Zach Gainsforth, Space Sciences Lab



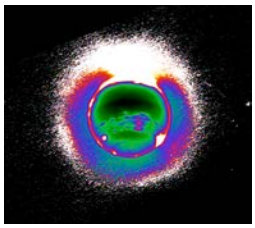
High-altitude hazes in Jupiter's atmosphere are shown in this image taken at the Very Large Telescope. Data in three filters are mapped to a common time to compensate for Jupiter's rotation, and combined to create a false-color image.
Mike Wong, Astronomy Department



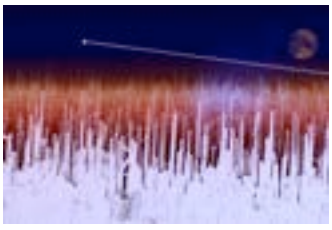
Scanning Electron Microscope (SEM) image of a mouse embryonic stem cell grown on silicon nanowires. The nanowires can be potentially utilized as a powerful tool for studying intra- and intercellular biological processes.
Peidong Yang, Chemistry



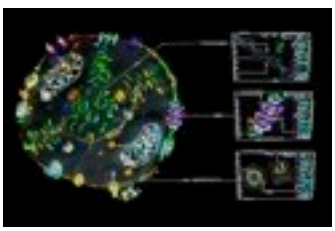
Scanning Electron Microscope (SEM) image of InGaN (indium-gallium-nitrogen) nanorods grown on the tip of patterned silicon wire arrays. InGaN is a semiconductor material used in the light-emitting layer in modern blue and green LEDs.
Yun Jeong Hwang, Chris Hahn, Peidong Yang, Chemistry



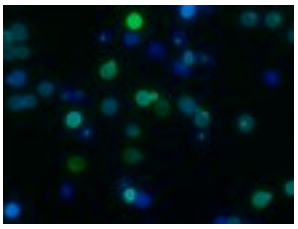
The ratio of two images is shown here using a custom color table. The two frames are an infrared image of Neptune taken by Imke de Pater using the Keck II telescope, and a synthetic image used to determine the latitude and longitude of cloud features.
Mike Wong, Astronomy Department



Nanoscale frontiers hold great promise for addressing humanity's energy needs. This Silicon Carbide Nanowire Cityscape reminds us that patterns are made clear by perception from the proper scale.
John P. Alper, Chemical Engineering



Yeast is used in food and large-scale commercial ethanol production, and in time it could produce medicine, green chemicals, and new fuels. This rendering is intentionally abstract to suggest that yeast's potential is still being determined.
Milt Altschuler, Energy Biosciences Institute

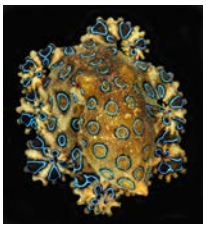


This fluorescent microscope image shows a field of view of budding yeast, S. cerevisiae, tagged with different combinations of colors localized to various organelles.
Robert Chen, Energy Biosciences Institute

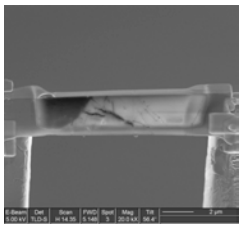
A female stomatopod from Indonesia, Gonodactylaceus ternatensis, flashes a threat at a passing male.
Roy Caldwell, Integrative Biology

A large (11 inch) California stomatopod scrubs down its eyes using brushes mounted on a pair of cleaning appendages especially suited for the task.
Roy Caldwell, Integrative Biology

First discovered by divers in Indonesia, this octopus's dramatic coloration and fluid motion soon made it a favorite of underwater photographers who dubbed it "Wunderpus". A few years ago, it was given the official scientific name Wunderpus photogenicus!
Roy Caldwell, Integrative Biology



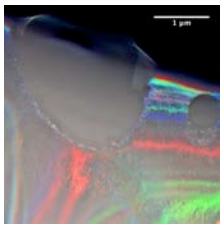
Blue-ringed octopus, common on the reefs of Indonesia, contain enough tetrodotoxin, a powerful neurotoxin also found in puffer fish, to kill a human in a matter of minutes. When disturbed, they display their brilliant blue rings as a warning.
Roy Caldwell, Integrative Biology



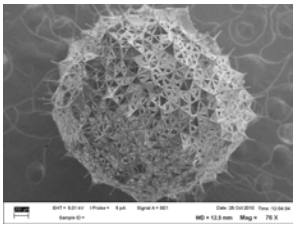
A thin slice of a meteorite (about 200 nanometers thick) that experienced a collision in space producing a split second pressure of a few hundred thousand atmospheres. This resulted in cracking and melting of the crystal.
Zach Gainsforth, Space Sciences Lab

Cal astronomers discovered an exploding star (called a supernova), PTF11kly a mere 11 hours after it exploded, allowing the earliest observations of a supernova ever.
Jeffrey Silverman, Astronomy Department

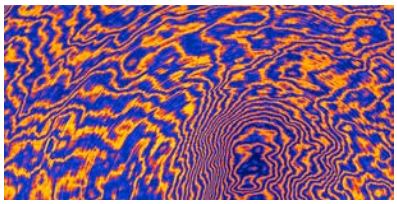
This image shows the result of one of the highest resolution dark matter simulations ever performed, of a galaxy similar to our own Milky Way.
Michael Kuhlen, Astronomy Department



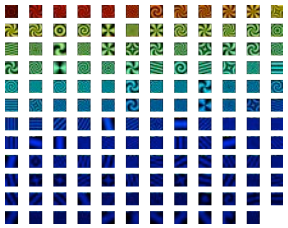
An electron microscope view of a quartz crystal with a glass core (center). As the crystal is tilted, electrons are preferentially deflected from those areas where the crystal structure interacts with the electron.
Zach Gainsforth, Space Sciences Lab



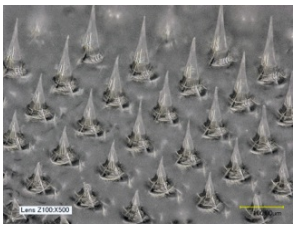
Radiolaria is a type of zooplankton that builds its shell out of glass. This one was found while filtering samples in October 2010 off the coast of San Diego at 910 meters.
Gabrielle Weiss, Earth and Planetary Science



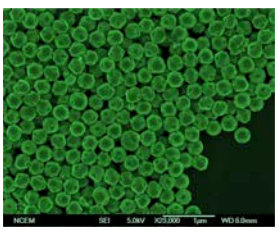
The “happy bunny” (lower right) is an artifact in this pre-flight image taken by the WFC3/UVIS detector, an instrument now installed on the Hubble Space Telescope.
Mike Wong, Astronomy Department



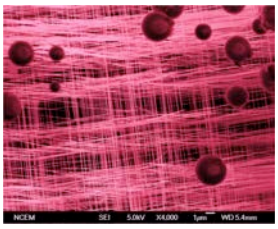
Stimuli used in a computational experiment, sorted (and color-coded) by the amount that a simulated visual neuron responded to each. The cell appears to "like" (fire more in response to) curved lines.
Mike Oliver, Gallant Lab



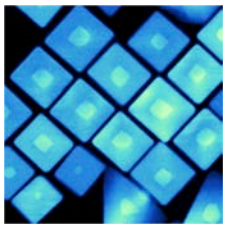
Microneedles are long enough to penetrate the skin but too small to trigger any nerves. These needles are made of protein that will dissolve after insertion, delivering drugs in a pain-free way.
Brendan Turner, Luke Lee Lab, Bioengineering



This is a Scanning Electron Microscope (SEM) image of etched silver nanoparticles, which are currently used in catalysis, optics, electronics, antibacterial/antifungal and textile engineering.
Marty Mulvihill and Peidong Yang, Chemistry

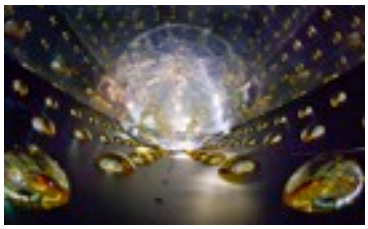


The PbS (lead-sulfur) nanowires shown in this SEM image make freestanding arrays in which the wires are either perpendicular or parallel to one another. PbS nanowires are mainly applied in new generations of solar cells.
Melissa Fardy and Peidong Yang, Chemistry

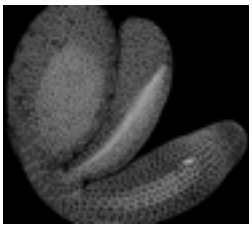


This is a Transmission Electron Microscopy (TEM) image of platinum / palladium cubes. This alloy has been mainly used in catalysis. Catalysis is the change in rate of a chemical reaction due to the participation of a substance called a catalyst.
Susan Habas and Peidong Yang, Chemistry

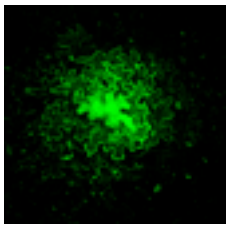
This image documents construction of the experiment in late June 2011. The Daya Bay Experiment is a China-based multinational particle physics project studying neutrinos. The team includes scientists from Lawrence Berkeley National Laboratory.
Roy Kaltschmidt, Lawrence Berkeley National Lab



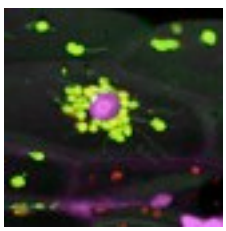
This photo shows the final phase construction in Hall 3 with the filling of water into the pool holding four antineutrino detectors. The experiment measures neutrino oscillations.
Roy Kaltschmidt, Lawrence Berkeley National Lab



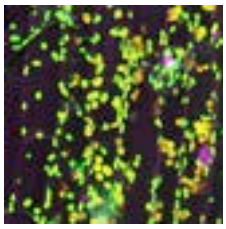
Plant embryo with cell walls stained with fluorescent dye to reveal individual cells.
Solomon Stonebloom, Plant and Microbial Biology



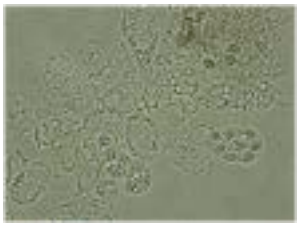
Puzzle-shaped leaf epidermal cells showing cell-to-cell movement of green fluorescent protein away from the center cell (via invisible plasmodesmata channels).
Jake Brunkard, Plant and Microbial Biology



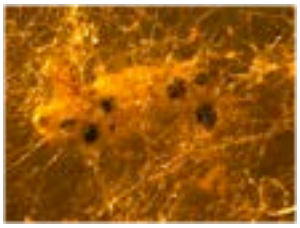
Rectangular epidermal cells in the leaf stem. Violet fluorescent dye labels the nucleus and cell walls. Chloroplasts are green due to fluorescent protein; fluorescence in the chloroplasts reveals dynamic extensions called stromules.
Jake Brunkard, Plant and Microbial Biology



Lower magnification image of the same region revealing numerous chloroplasts (green) that sometimes display stromule extensions.
Jake Brunkard, Plant and Microbial Biology



The next generation of fungi for sustainable transportation fuels is on the way. Squeezed rip fruiting bodies of a cross of two Myceliophthora thermophila strains. The progeny ("Ascospores") are shown to reside in a bag.
Timo Schuerg, Energy Biosciences Institute



Progeny of a cross of two Myceliophthora thermophila strains is breeding in spherical black fruiting bodies.
Timo Schuerg, Energy Biosciences Institute

Images assembled and video produced by Steve Croft, Dept. of Astronomy with assistance from Rachel Winheld, Science@Cal

http://www.stevecroft.co.uk/art_in_science