

SCIENCE PILGRIMAGES

Eight labs and science relics worth a visit

By Laura Kiniry

Cartoonist Matthew Inman, the man behind *The Oatmeal* and avid Nikola Tesla fan, started a fundraising campaign this week aimed at purchasing the inventor's former Long Island lab and turning it into the first U.S. Tesla museum. After one day, the effort blew up on Reddit and garnered the support of Tesla Motors founder Elon Musk. While we await its opening, here are 8 other laboratories that are definitely worth a trip.

NASA Jet Propulsion Laboratory, Pasadena, California

JPL, which gained a slew of new fans when it landed *Curiosity* on Mars, is a federally funded research and development center and NASA field center managed by Caltech (our senior editor Joe Pappalardo was at JPL for the landing). The lab builds planetary spacecraft and operates astronomical missions such as *Curiosity* from onsite. Basically it's a hotbed of invention and discovery. Though not often open to the public, JPL leads guided tours once a week on either Monday or Wednesday. These 2- to 2.5-hour tours include a visit to the Mission Control room and a stop in the Clean Room, a hangar-like space where technicians dressed in bunny suits assemble robot vehicles in an environment free from dust or other contaminants.

Los Alamos National Laboratory, Los Alamos New Mexico

In the early 1940s scientists from around the world descended on Los Alamos, N.M., to work on the top-secret atomic bomb project. Today, Los Alamos National Laboratory is home to the Bradbury Science Museum, which highlights the history of Los Alamos Lab, its national security mission, and its current research in energy, computing, and defense research. Inside the

galleries, check out the replicas of Little Boy and Fat Man, the atomic bombs dropped on Japan. New Mexico is also home to the Trinity Test Site, where scientists detonated the world's first atomic bomb on July 16, 1945. This national landmark is open to the public twice annually, in October and April.

Biosphere 2, Tucson, Arizona

The weird saga of Biosphere 2 is not over.

Initially designed to imitate Earth and create an enclosed, self-sustaining world, Biosphere 2 was a mini world about a half-hour outside of Tucson filled with mangrove wetlands, savannah grassland, fog desert, and a 20,000-plus-square-foot rain forest, encased behind 7,200,000 cubic feet of glass and atop a 500-ton welded stainless-steel liner. During its heyday, Biosphere 2 was the site of two missions—one in 1991 and the other in 1994—that studied the survivability of the human researchers who lived inside. But during the first mission technical problems kept the enclosure from becoming truly self-sufficient, and the crew left not speaking to one another. The second mission lasted just five months; by the time they left, Biosphere 2 was a national punchline.

Now owned by the University of Arizona and operated as a research facility for the school's own projects, Biosphere 2 attracts tons of visitors. Guided walking tours include the campus's biomes, as well as its Technosphere, a 3.14-acre basement housing all the electrical, plumbing, and mechanical systems that help the Biosphere to "breathe." Tours conclude in Biosphere's custom-built underwater ocean viewing gallery, offering a behind-the-scenes look at the campus's million-gallon ocean and a real coral reef.



Surgeons' Hall Museum, Edinburgh, Scotland

Scotland's major medical museum dates back to the late 17th century, when local surgeons decided to start a collection of "natural and artificial curiosities." The center consists of the Surgeons' Hall Pathology Museum, a History of Surgery Museum, and a Dental Collection. It's one of the Scottish capital's biggest draws and for good reason: It's as informative as it is creepy. The collection includes the death mask of Irishman William Burke—who was tried and hanged for murdering people and then selling their corpses for dissection—as well as a pocketbook crafted from his skin. It's also home to the Grieg Collection, about 250 skulls donated by the museum's former conservator, who was an authority on abnormalities of the skull. Surgeons' Hall is headquarters to the Royal College of Surgeons of Edinburgh, where Arthur Conan Doyle was once a student. The acclaimed author later revealed that he based Sherlock Holmes on one of his teachers there, Edinburgh surgeon Joseph Bell.

Edison's Lab, West Orange, New Jersey

The Oatmeal's Inman is no fan of Thomas Edison, but the wizard's lab is worth a look. The industrial research laboratory in West Orange, N.J., which Edison operated until his death in 1931, is not only the home of many of Edison's famous inventions, but also one of the world's first facilities of large-scale teamwork and mass production. It recently received a complete overhaul, reopening to the public with 20,000 square feet of additional exhibit space which includes two floors of his main laboratory that were previously off-limits to visitors. A self-guided tour of the complex includes an exact replica of Edison's Black Maria, the world's first motion picture studio, and access to all three floors of Building 5, the main laboratory building. On the third floor you'll find a gallery of Edison's inventions, complete with the original 1877 cylinder phonograph on which he made his first recording.

National Atomic Testing Museum, Paradise, Nevada

This museum documents the history of the Cold War as well as nuclear and radiological science and technology, with a focus on the Nevada Test Site

for nuclear testing. Opened in 2005, the museum is continuously collecting photographs, scientific, and nuclear reports, and unique relics relating to the era, including artifacts from those who worked at Area 51. While here you can experience a simulated atmospheric bomb blast in the GZ Theater, explore the technology and science that took nuclear testing underground, and—just in case—learn how to survive an atomic blast.

Titan Missile Museum, Sahuarita, Arizona

This is as close as you're likely ever going to get to an intercontinental ballistic missile in its operational environment. It's the last man standing of the 54 Titan II missile sites spread across the U.S.

An incredible relic of Cold War history, the 100-foot-tall 170-ton (when it's fueled) Titan missile could launch from its underground location in less than a minute and annihilate a target more than 6000 miles away in less than a half-hour with a 9-megaton bomb. Along with this massive piece of weaponry, the Titan Missile Museum showcases what was once a highly protected top-secret location and its role during the Cold War. Visitors get to walk through 3-ton blast doors and experience a simulated missile launch. A handful of unique walking tours are also available, including a 90-minute Beyond the Blastdoor Tour providing special access to sites normally closed to the public. Explore where former crews ate and slept, and descend more than 100 feet underground where you'll enter a launch duct directly beneath the missile.

Bikini Atoll, Micronesia

From 1946 through 1958, Bikini Atoll in the Pacific was an active testing site for 23 U.S. atomic bombs, including the Bravo, a 15-megaton H-bomb that obliterated three islands and spewed radioactive debris over nearly 50,000 square miles. These days the only way to really visit the atoll is through a diving expedition with Bikini Atoll Divers, which runs weeklong trips from April through mid-November. Along with exploring the remains of 10 sunken vessels left over from the nuclear tests, you'll receive history on each of the ships and can embark on a tour of Bikini Island.