

9 SCIENCE FACTS THAT SOUND LIKE SCIENCE FICTION

1 EYEBOTS. A scientist carefully places a tiny robot into a syringe...and then injects it into an eyeball. Sound like a futuristic horror movie? Not quite. A research team at Switzerland's Institute of Robotics and Intelligent Design did just that in 2011—although the eyeball they used was a dead pig's. The researchers were testing a more effective way to deliver medication to patients suffering from macular degeneration, a retinal condition that causes blindness. The current treatment involves regular injections into the eye, but the microbot, when perfected, could be injected once and then move around the eye, delivering medicine for months at a time.

2 I THINK IT CAN. In 2010 a swimming accident left 19-year-old Ian Burkhart paralyzed from the elbows down; he couldn't even move his fingers. Four years later, doctors at Ohio State's Wexner Medical Center implanted a chip into Burkhart's brain designed to "read" his thoughts. Then a cable was plugged into his head that was hooked up to a computer, which was hooked up to an electronic stimulation sleeve around his forearm. Burkhart thought very hard, and then...his fingers moved. The device completely bypassed his broken spinal cord, and for the first time since the accident, he could open and close his hand.

3 FACE THE FUTURE. Remember that scene in *Minority Report* when Tom Cruise walks into a store and a computer knows who he is? That's a real thing now. Retail giant Tesco has installed facial recognition scanners at its gas stations around

the UK: When a customer pays, his or her face is scanned to identify age and gender. Then an advertisement plays, specifically targeted to sell to the customer's demographic. Expect to see the scanners everywhere in the near future... unless they see you first.

4 A WALKING TANK. Looking like something that Tony “Iron Man” Stark might wear, the TALOS, or Tactical Assault Light Operator Suit, is the U.S. Army's newest toy. The suit has bulletproof armor, 360-degree cameras capable of night vision, and even sensors that can detect wounds and apply injury-sealing foam. The army hopes to have the suits in the field by 2018. (No flight capabilities are included. Yet.)

5 YOU CAN HEAR ME NOW. *Star Trek* introduced the concept of a universal translator for storytelling purposes, but scientists are hard at work making it a reality. In fact, the first one designed for commercial use might hit the shelves before this book does. Microsoft's Skype Translator can provide real-time translation between languages as people speak. The app was demonstrated at a conference in 2014: An English-speaking woman in California chatted with a German-speaking woman in London. The app still has some bugs to work out (it is Microsoft, after all), but expect universal translators to be a common sight before the end of the decade.

6 BLAST 'EM! Dr. Evil (from the Austin Powers movies) had one simple request: “sharks with frickin' laser beams attached to their heads.” Now his dream is a reality (minus the sharks). In 2014 the U.S. Navy demonstrated its LaWS (Laser Weapons System). The prototype—installed on the USS *Ponce*—has a targeting, tracking, and firing system that is operated via a “video game-like controller.” According to an ominous military press release: “The weapons officer manages the laser's power to accomplish a range of effects against a threat, from disabling to complete destruction.” (Add maniacal laughter here.)

7 ANOTHER YOU. A printer that can replicate the human body? Sure, why not. Advanced 3-D scanners will scan you, and then organic ink and special plastics will “bioprint” made-to-order body parts. So far, skulls, eyes, skin, noses, ears, bones, and limbs have all been reproduced by 3-D printers. In 2014 doctors in Holland replaced a woman’s damaged skull with a 3-D printed plastic version. According to the lead doctor, brain surgeon Dr. Bon Verweij, it was a resounding success: “There are almost no traces that she had any surgery at all.”

8 RESISTANCE IS FUTILE. The demilitarized zone between North and South Korea requires constant surveillance, but South Korea has 655,000 troops to North Korea’s 1.2 million. So South Korea’s military is turning to the Samsung Techwin SGR-A1 for help. This stationary robot is equipped with a camera and a high-speed machine gun. The camera scans the area and sends images to a control room; if there’s trouble, the robot can be ordered to fire 40-mm rounds. The first SGR-A1 prototype is already in place. South Korea plans to put one in every guard post along the border.

9 SITH HAPPENS. Do the names Mikhail Lukin and Vladan Vuletic sound like *Star Wars* characters? They’re actually Earth-based physicists (Lukin from Harvard, and Vuletic from MIT) who announced in 2014 that they found a way to “bounce” photons off each other. That’s right—photons are light particles that have no mass. But when the physicists placed two photons into a special type of vacuum chamber, where they interacted with “laser beams and a cloud of rubidium atoms cooled to near absolute zero,” the light particles suddenly took on very different properties. “What we have done,” said Lukin, “is create a special type of medium in which photons interact with each other so strongly that they begin to act as though they have mass, and they bind together to form molecules.” Or, in other words, “It’s not an in-apt analogy to compare this to light sabers.”