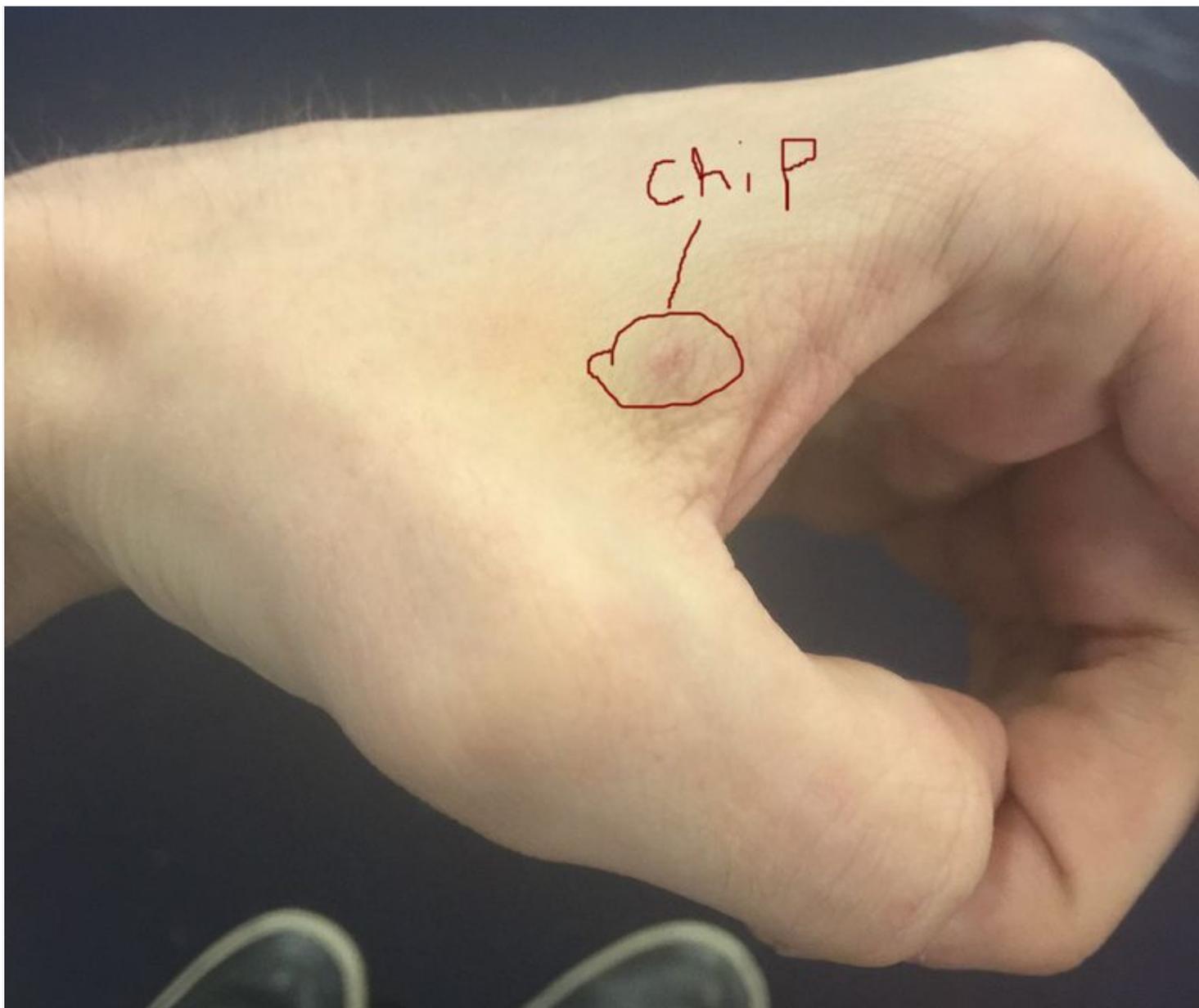


I got a computer chip implanted into my hand. Here's how it went.



I now have a chip embedded in my left hand.

Specifically, it's a **glass-encased RFID/NFC chip**. I barely notice it, honestly. While you can feel the chip if you know where to poke, it's not visible once it's inside your hand. I just have a tiny cut that's healing fast:



Dylan Matthews

A very fancy illustration of where the chip was injected into my hand.

If you scan it using an NFC reader/writer (included in many Android phones, and purchasable for computer) you can store information in it, or read off its existing contents. If you have an Android, you can use it in lieu of a PIN or pattern to unlock your phone. If your office requires key fobs, you can register the identifying information in the chip with your building staff and just wave your hand in the elevator, saving you the trouble of pulling out your fob (I'll have to talk to Vox's building staff about this when I get back to DC). One chip recipient

named Drew Andresen even rigged his car so that he can unlock it and start the engine with the chip in his hand:

This may seem like a crazy body modification to undertake, but at the "biohacking" events I attended with transhumanist presidential candidate and immortality advocate Zoltan Istvan this past Sunday, it felt like the conservative option. Other attendees were getting magnets implanted into their fingertips, or into their inner ears. Things actually had to get sliced open. Compared with that, the tiny injector prick necessary to shove an NFC chip into my hand is trivial.

Meet the biohackers



Dylan Matthews

An outside view of the garage where the GrindFest took place.

After sleeping in an illegally parked '70s RV decorated to look like a coffin (**long story**), Zoltan and the rest of us traveling with him drove the "Immortality Bus" to Tehachapi, California, a small desert town about two hours north of Los Angeles. We were guests at Jeffrey Tibbetts's GrindFest, an event where "grinders" — hobbyists who like experimenting with electronic modifications to the human body — can test out equipment, install it in one another's bodies, and brainstorm and implement new ideas.

Biohacking or grinding is, in a lot of ways, the most practical manifestation of the ideals upon which Zoltan's presidential campaign is premised. A transhumanist, **Zoltan once wrote**, is someone who "advocates for using science and technology to radically change and improve the human species." Biohackers are doing exactly that.

One of the major challenges with the campaign is that Zoltan's entire vision of endless, healthy cyborg life is premised on technologies that don't yet exist: pervasive, reliable robotic hearts that effectively eliminate heart disease; cranial implants that let people communicate with one another telepathically and send TV and movies directly to their optic nerves; bionic arms that are so much stronger and easier to control than biological ones that people will get them electively.

"People are running around talking about how AI is going to make anime real or whatever. But they aren't doing anything themselves."

Those big-ticket items aren't ready yet. The most advanced robotic heart, from the French firm Carnat, is in very early trials, and **the first two recipients died in a matter of months**. As **amazing as current prostheses are**, they certainly don't offer finer motor control than natural human arms. And we're not sending Snapchats directly to each other's brains just yet.

With the most radical transhumanist body mods still in the lab phrase — if that —

the writings and speeches of people like Zoltan can seem speculative at best, and masturbatory at worst. What good is Zoltan's promise of eternal life if the tech for far more modest achievements is still decades from market?

That's why the biohacking convention was crucial. The attendees weren't giving each other 50-year boosts to life expectancy — but they were using technology to modestly increase the human body's capabilities. They're the last mile. They ground Zoltan's hype in something real and concrete. They're the ones translating scientific advances into transhumanist practice. "People are running around talking about how artificial general intelligence is going to make anime real or whatever," Laird Allen, an attendee who came nearly 600 miles south from his home in Eureka, California, said. "But they aren't doing anything themselves."

"It's not surgery"



Dylan Matthews

Justin Worst of Grindhouse Wetware shows off the Northstar 1.0.

The Tehachapi facility consists of two buildings: a house where the biohackers can drink and relax, and a garage where all the action happens. In the main room of the garage, there were a couple of large tables crammed together and covered in soldering equipment, scales, pliers, and various small electronics, varying in size from a grain of rice to a Sacagawea dollar, destined for a spot under some attendee's skin.

Jeffrey Tibbetts, the owner of the Tehachapi Labspace, gave Zoltan and the rest of the Immortality Bus riders a tour. There were some petri dishes on a counter engaged in a "bacteria race": basically, the participants "scraped from various

orifices," Tibbetts explained, and then competed to see which sample grows faster.

On the right side of the garage, there was an operation room, where the procedures are actually conducted. It looked impressively like a doctor's office. There was a yellow medical exam chair, a sink, a safe syringe disposal box, a healthy supply of disinfectants, anesthetics, bandages, and the like — definitely a better spot for DIY surgery than your average garage.

Tibbetts doesn't like to think of it as a medical procedure, though. "It's not surgery," he said. "We're not trying to diagnose or treat things. It's body modification." Piercings and tattoos aren't surgeries, the reasoning goes, and this is just a mildly more serious version of those body mods. And conversations among grinders seem to be as much about aesthetic mods as practical ones. Allen brought up his idea for a "dueling scar" mod, in which recipients would receive facial incisions meant to scar into something resembling scars from saber duels. He's dead set on making this a trend: "I want to make money going around the country and cutting hipsters in the face with a saber."

Besides RFID/NFC chips, like the one I got, the most popular implants are **fingertip magnets**. So far as I can tell, these serve two purposes. One, they let you become a very shitty version of Magneto. If you've ever wanted to start a militant mutant rights group and terrorize your enemies by lifting paperclips with the underside of your index finger, fingertip magnets are your best bet. **Aiming and firing guns from 6 feet away** comes later.

But the main rationale I heard was that the magnets give you something like a sixth sense. Multiple implant recipients told me they can "feel" magnetic fields, albeit very mildly, through their fingers, providing a whole realm of sensory experience they couldn't have enjoyed without magnetic fingers. It does come with downsides, though. One attendee complained that because his laptop uses magnets to sense when it's closed and should go to sleep, he finds himself randomly making it go black.

The third major type of implant discussed at the event was the tragus implant. The "tragus," for non-otorhinolaryngologists, is the hard protrusion of cartilage just above the opening to your inner ear. By putting magnets inside your tragi, you can effectively give yourself permanent earbuds with which to listen to music.

The biohacker Rich Lee, who was at the GrindFest, **pioneered the use of tragus implants as in-ear headphones** a few years ago. The process is somewhat complicated, but Popular Science's Joey Carmichael has a **great explainer**. Basically, you plug into audio source — your smartphone, computer, sound system, whatever — with a standard 1/8-inch cable. Then the sound runs through a battery-powered amplifier up to a coil necklace. The coil creates a magnetic field, which moves according to the sound wave of the music. The magnetic field in turns moves the magnets in your ears. The movement of the magnets vibrates the air next to your ear. And "vibrating air" is just another word for "sound." Et voila, you've converted your ear cartilage into a speaker.

The really exciting stuff is, naturally, still in the works. Justin Worst, a biohacker with Grindhouse Wetware, showed off the "Northstar," a small disk-shaped hand implant that Grindhouse is hoping to turn into a gesture recognition device. At the moment it's a mostly nonfunctional prototype that does little more than light up underneath your skin, but with Northstar 2.0 you could perhaps wave a finger to have your phone pull up a specific app, saving yourself a number of taps in the process.

Even more exciting is the "**Circadia**," an implant Grindhouse co-founder Tim Cannon has received that can transmit his body temperature and blood pressure via Bluetooth to his phone. Future versions will, with luck, be able to collect harder-to-obtain biometrics like blood glucose levels. You could imagine a version that could detect the proteins released into the bloodstream during cardiac arrest, and immediately calls an ambulance when it senses you're having a heart attack. Right now, the Circadia is basically a novelty. In the future — it's

hard to say how soon — it could be saving lives.

What it's like to get an implant

Zoltan got his chip implanted first. It's a remarkably short and easy process. RFID chips fit into syringe-like injectors; once you've sterilized the area, just plunge the injector under the skin between your thumb and index finger, eject the chip, and you're good. There's a bit of blood at the end, but you don't even really need a Band-aid.

"I've never heard of anything going wrong with these," Tibbetts said. "Never heard of one breaking, never heard of one rejecting, never heard of one getting infected." By contrast, fingertip magnets require sizable incisions, which *do* get infected. Those implants *can* reject. But the RFID/NFC chips are about as safe as biohacking gets. Plenty of people put these in their cats and dogs, after all. If it doesn't kill Pickles, why not try it on yourself?

So right before we left, I decided to take the plunge as well. Anything once. The initial prick of the injector hurt slightly, but no more so than a typical syringe insertion. It was considerably less painful than shots that have to enter muscles:

The aftermath was sort of anticlimactic. You can't actually *do* anything with it without a device it can interface with. Many Android phones have NFC capabilities, and you can download apps with which to input information and read it off, but my iPhone's NFC chip is strictly reserved for Apple Pay, and can't be used for fun biohacking purposes (at least without jailbreaking the phone).

But in some ways, the ideological project of the biohackers is served just as well if the mod you get is totally pointless as if it's super-practical. No one is arguing that the current "wetware" — get it? like software but with blood? — can transform people's lives. It's a fun novelty, not a lifesaver. But at some point, biohackers (and Zoltan) are confident, implants *will* be lifesavers. Lee talks often about his worsening eyesight and how it drives his interest in biohacking. If

implants could give him 20/20 vision, or improve his hearing to a point where echolocation is possible, that'd be huge.

However, these changes face a major barrier: Most people don't want to be cyborgs. They don't like the idea of becoming part machine. They don't like the idea of having chips in their bodies tracking their vital signs. That's where biohacking that actually exists becomes crucial. It doesn't add much capability, but it does announce to the world, "We're here, we're part machine, and we're better off for it." It helps create the cultural environment in which implants are seen not as creepy but as cutting-edge and important. It declares that people deserve the right to alter their bodies with electronics, to actively shape their physical future rather than taking it as it comes. Biohacking is as much a cultural project as an engineering one.

That's part of what made Zoltan's visit so natural. He's also engaged in a cultural effort to spread awareness of transhumanism, of body-altering and life-extending tech, and to change attitudes so people are open to radical technological advances when they come. He's adopted a radically different strategy from the biohackers, of course. He's running for president to attract national media and provoke articles on these topics; they're trying to slowly but surely build a durable biohacking subculture that will penetrate the public consciousness as it grows. But the mission is, in many ways, the same. "We have the resources to push forward," Jes Waldrip, a biohacker who also goes by "Bird," says. "Why shouldn't we push forward?"

After Tehachapi, Zoltan and the rest of the bus — me, videographer Jeremiah Hammerling, campaign volunteer Roen Horn, and Telegraph reporter Jamie Bartlett — set course for Las Vegas. More on that soon.