

# Medical Marvels

Do you know someone who uses a glucose meter? Have you ever had an x-ray? These devices are examples of biomedical engineering, a field that **tackles medical problems with high-tech engineering**. Bioengineers do everything from building better artificial heart valves to developing new pharmaceutical drugs. **If you like biology, medicine, and a challenge, you could be a biomedical engineer.**

## Prosthetic Promise

Bioengineers rebuild the lives – and limbs – of people who lose arms and legs to disease and injury. It's a complicated job! Artificial limbs have to be **lightweight yet strong**, and they need to **move as much like the real thing as possible**. Prosthetic engineers, like those at the non-profit Quality of Life Plus (QL+), keep up with the latest technology and materials to continually improve what they do. Many people with artificial arms own several prosthetics, each with a different purpose. One arm might be for golfing, another for everyday use, and a third, waterproof arm, for taking showers.



*QL+ designs high tech prosthetics for wounded soldiers like Army Spc. Crystal Davis of the 54th Engineer Battalion who lost her right leg, and severely injured her left when her vehicle drove over an IED in Iraq. Jon Monett founded QL+ after hearing Crystal's story. Credit: American Film Foundation*



Credit: QL+

## High-Tech Tickers

**Biomedical engineers also make devices for inside the human body.** Some artificial hearts, like this one, are permanent and use implanted batteries to



Credit: Abioco

keep blood pumping. Others help out temporarily while patients wait for a transplant. Biomedical engineers have also developed artificial heart valves and devices to open clogged arteries. They've even created artificial blood (and not the kind you use at Halloween).



*While some prosthetic devices involve actuators and other high tech devices, sometimes the best device for the job is a more low-tech approach, as pictured above. Mountaineer Chad Jukes uses a durable prosthetic leg to climb Lobuche in Nepal. Credit: PBS*

## Creating Kayaking Gear for Blind Veterans

Engineers, students, and volunteers with QL+ work together to create solutions to problems facing servicemen and women. For example, visually impaired veterans experience kayaking with the aid of a guidance system. The system was designed to provide verbal directions loud enough for the wearer to hear over white water conditions — but it also had to be waterproof!



Credit: QL+