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How the Life-Saving Blue Blood of Horseshoe Crabs Is Extracted

By Nicholas Jackson

Inside of the primitive-looking Horseshoe crab is a powder-blue blood that contains LAL, an element worth about $15,000 per quart

Inside of Horseshoe crabs, the primitive-looking arthropods that can be found scurrying across the muddy and sandy bottoms of the ocean floor in shallow waters, is a powder-blue blood that you probably owe your life to. The blood, which contains an element that is especially good at binding to endotoxins, is a "surefire way to detect impurities in pharmaceutical drugs and medical supplies," according to a short feature in the latest issue of *Wired*. Shooting for the tech magazine, Andrew Tingle went inside of Charles River, a drug

developer that is one of only five companies with the licenses required by the Food and Drug Administration to sell LAL (Limulus amoebocyte lysate), the clotting agent found inside of the Horseshoe crab's blood. His images, which can be found here, document how Charles River harvests the blood of the crabs without killing them. So, how do they do it?

First, a team of fishermen captures hundreds of the crabs when they come near the beaches of South Carolina to spawn. They're not very fast and they don't see the danger coming, so the fishermen, who are licensed by the Department of Natural Resources, can just wade around in the shallow waters picking them up and dumping them into a boat floating nearby.

That boat is then brought to shore and the process speeds up as the precious Horseshoe crabs are always returned to the ocean on the same day that they are captured. The crabs are placed inside of a dark, damp, enclosed vehicle and moved to the lab's facility. There, workers remove barnacles, sand and other debris on the shells in order to check for injuries or other obvious ailments. Any injured crabs don't move on to the next step for fear that they will be killed in the process.

Every healthy crab is folded in half at its hinged carapace and strapped to a metal bleeding table. There, a stainless steel needed is pushed into each one, piercing "the pericardium to drain the oxygenated blood that's on its way to the heart," according to *Wired*. "About 100 milliliters of blood drains into a sterilized bottle."

Once the bleeding is completed, the crabs are released far from where they were caught so that they aren't scooped up and re-bled before they have enough time to regenerate what has already been lost. Work, though, continues in the lab, where the powder-blue blood has to be spun in a centrifuge so that the desired elements can be isolated. The LAL, once siphoned off and bottled, is worth about $15,000 per quart.

Image: PBS.