

Horseshoe Crabs

If you spend a lot of time near the water in the summer, you might see a horseshoe crab. Even in Ocean City you might see a horseshoe crab on the edge of the surf. People often are fascinated by this pre-historic looking creature. Some will be brave enough to touch it and pick it up. Lifeguards often get asked, "Can horseshoe crabs sting you?"

The answer is no. Horseshoe crabs cannot sting you. That sharp tail you are think might actually sting you is called a telson. The horseshoe crab uses it's telson to flip itself back on its feet. Horseshoe crabs are fascinating creatures that could very well save the human race. *Limulus Polyphemus*, as they are called in the scientific community, are actually a chelicerate arthropod which means they are much more closely related to spiders, scorpions, and ticks than they are to crabs. But that's not why they are important to humans. It's the blood of this prehistoric creature that scientists are most interested in because horseshoe crabs use hemocyanin to carry oxygen through their blood stream. Hemocyanin is very heavy with copper, this makes the horseshoe crabs blood blue. Their blood contains [amebocytes](#), which play a similar role to the white blood cells of vertebrates in defending the organism against pathogens. Which means that horseshoe crabs are practically immune to all bacteria, viruses, and cancers. This is why they are so valuable to humans and their copper rich blood has been valued as high as \$15,000 per quart. Scientists use their blood to detect bacterial endotoxins in medical applications. Horseshoe crab blood is considered an irreplaceable medical marvel and it is estimated that the biomedical industry is bleeding 500,000 of these horseshoe crabs each year. The blood is used to create an indicating agent that can detect bacteria that can withstand high heat and harsh conditions under which drugs and medical devices are sterilized and tested, like *Escherichia coli* ("E. coli"). We humans owe a debt to this odd looking, ancient creature and its blue blood. A special compound in the crab's blood quickly clots in the presence of endotoxins, microbial byproducts that can be harmful, supplying a perfect natural test for purity. Last year, in the race to find a COVID-19 vaccine, horseshoe crab blood became even more important. Horseshoe crab blood was used to test the safety of potential COVID-19 vaccines, before any coronavirus vaccine was FDA approved for clinical use in human beings. The horseshoe crab test is required to make sure it is safe to inject into the human body.

In the future scientists continue to try to find a cure for cancer with the beautiful blue blood of the horseshoe crab. However, there's also a growing concern among scientists who study these magnificent creatures that the bleeding of these crabs may be endangering a creature that's been around since dinosaur days. So next time you see a horseshoe crab on the beach, be nice to it because it might just save us all one day.

