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Horseshoe Crab
By Jane Morton Galetto

Admittedly a horseshoe crab can't speak, but if it could, and you came across one at a sand bar it might say, "Here's looking at ya." For with 10 eyes and a 360 million year old fossilized presence they clearly have seen a lot, and their tale is a lengthy and dramatic story. Having evolved in the shallow seas during the Paleozoic Era, a horseshoe crab isn't a crab at all. In fact it is more closely related to a spider.

Most locals know of the crab's interrelationship with the migrating shorebirds that devour their eggs on their northward journey to Arctic nesting grounds. But few folks are aware that the horseshoe crab has saved many of us from severe illness. Blood extracted from the crabs is used in medical laboratories to ensure that medicines are free of dangerous bacteria.

In the early 1950s Fredrick Bang discovered that horseshoe crab blood cells contained a clotting agent that bonds with hazardous endotoxins produced by gram-negative bacteria. This discovery is quite possibly the crab's most important contribution to human medicine.

Tightly woven strands of cellulose material called chitin are found in a horseshoe crab's shell. This tough flexible bonding material holds the shell together. Chitin from the horseshoe crab's shell is preferred over other arthropods for research because of its pure nature. In the 1950s it was discovered that chitin had wound-healing characteristics. Some bandages and sutures use chitin because of its unique properties. Since chitin sutures don't need to be removed they are especially useful in cases where pain is an issue, such as in burns and skin grafts. At the same time chitin radically hastens the healing process.

Dr. Keffer Hartline won the Nobel Prize in 1967 for optic research utilizing crabs to study the optic nerve's electrical impulses. The compound eyes of the horseshoe crab are often claimed to have been responsible for more optical discoveries than any other living creature. The structure of the eye's optic nerve is simply constructed and easily accessible, making it very conducive to eye research. Optic research on horseshoe crabs continues today to advance medical discoveries.

Scientists discovered that one set of the crab's eyes is employed to sense light and then turn off lateral inhibition; thus giving the crab improved night vision.

Dr. Robert Barlow of the State University of New York uncovered the role of vision in the crab's mating selection. He and his colleagues modeled the brain signals to track the optic nerve transmissions. This research may lead to an understanding of how to correct human vision abnormalities.

So the next time you hear, "Here's looking at ya," raise your glass and toast all the great donations the horseshoe crab has made to helping human vision and saving people's lives.