Interesting Hearts in the Animal Kingdom

The heart is a vital organ, the size of which varies from one to another. Although everyone initially pictures almost the same organ in their minds, in reality, the heart of every creature is very different. The hearts of the members of the animal kingdom do not resemble one another in terms of either size or properties.

The heart rate also significantly varies between life forms. For example, the human heart beats about 72 times per second while the heart of a hibernating groundhog beats five times in the same amount of time.

The powerful heart of the hummingbird that supports its flight

The hummingbird, which can flap its wings at very high speed, thus enabling it to hover in the air, has a remarkably small heart. These small creatures can flap their wings 15 to 80 times per second while their heart-rate can reach 1260 beats per minute depending on the species (for example the blue-throated hummingbird). Hummingbirds also have a very strong metabolism in order to sustain the rapid beating of their wings at such high speeds.

Not only can hummingbirds hover in the air with rapid wing beats, but they can also do so by maintaining their balance against a wind tunnel. Furthermore, they need to hover and swiftly fly backwards, up and down which again requires a strong heartbeat.

However, even the rapid beating of their heart at such high rates by its own cannot provide the needed blood flow so the volume of their heart is quite great: The weight of a hummingbird’s heart is 2.5% of its total body weight. In order to better understand this, we can give the following example: If our heart had the same proportions as the heart of these small creatures, instead of its current weight of 250-300 grams, it would weigh two kilograms.

When we take a look at the world of the creatures, we come across heart models with many interesting properties:

Three-chambered Hearts of Frogs

Mammals and birds typically have four-chambered hearts. However, frog hearts have three chambers, two atria and a single ventricle. Daniel Mulachy, who is an expert on reptiles and amphibians, and best known for the studies he carries out on vertebrate zoology in the Smithsonian Institute in Washington, the USA, has made research in this subject.

In one of his studies, Mulachy states, "In general, the heart takes deoxygenated blood from the body, sends it to the lungs to get oxygen, and pumps it through the body to oxygenate the organs (1). As it is well known, in humans, the oxygenated and the deoxygenated blood are contained in separate chambers of the four-chambered heart. However, frogs have canals called trabecula. These canals are what keep the oxygenated and deoxygenated blood separated and prevent them from being mixed.

Mulachy also states that, as an advantage, frogs can get oxygen not only from their lungs, but also from their skin. As deoxygenated blood comes into the right atrium, it goes into the ventricle and out to the lungs and skin of the frog to get oxygen. The oxygenated blood comes back to the heart through the left atrium, then into the ventricle and out to the major organs.

Since frogs go through metamorphosis, they could have not continued their existence with only a single type of respiration. Therefore, it is highly crucial that they possess systems that allow them to do both cutaneous and pulmonary respiration. In different periods of their lives, frogs do branchial, pulmonary or cutaneous respiration. For example, they continue their lives, which begin in larvae form, via branchial respiration throughout the larval period. And in frogs that have reached adulthood, branchial respiration is replaced with pulmonary and cutaneous respiration.

Fish, frogs, birds and humans, shortly all life forms possess internal organs that have the exact properties they need, and that is because they are all created by All-Knowing, Merciful and Almighty God.

The Whale Heart that Supports a Giant Body

We have just talked about the heart of the hummingbird that is just as small as itself, yet able to produce quite powerful beats. And now, let us introduce you the heart of a giant creature. This heart is as big as a piano and weighs about 180-200 kg and what you see in the photograph is not an exaggeration. Of all the animals living today, the heart of the blue whale is indeed the largest. Like all mammals, the blue whales also have four-chambered hearts. This magnificent organ has the capacity to provide the blood need of a giant creature that is the size of two buses. (2)

A National Oceanic and Atmospheric Administration (NOAA) and National Research Council postdoctoral fellow at the National Systematics Lab at the Smithsonian, Nikki Vollmer defines the thickness of the veins in the blue whale's heart with the following example:

*"The walls of the aorta, the main artery, can be as thick as an iPhone 6 Plus is long." (*3)

The human heart approximately weighs 250-300 grams. A blue whale's heart is 640 times bigger than a human heart and the heart of the amazing little , hummingbirds' weigh as much as 2.5% of their body weight. And a giraffe has a big heart weighing 12 kilograms, because its heart needs to pump the blood powerful enough to push the blood through its long neck to the brain.

Such details need to be read and considered carefully, and analyzed with a sense of amazement and awe. Every life form possessing unique attributes for their unique needs is not a coincidence. The heart of every blue whale shares the same properties; every frog goes through the same progresses in different stages of their lives; the heart of hummingbirds is always powerful enough to beat at very high frequencies. God creates every life form perfectly, in accordance with their needs; He is the Master of all creation. He is the Lord of all the worlds.

Surah Al-Jathiyya, 36 – All praise belongs to God, the Lord of the heavens and the Lord of the earth, Lord of all the worlds.

1- http://www.livescience.com/49795-strange-animal-hearts.html
2- http://www.bbc.com/earth/story/20150820-see-the-worlds-biggest-heart-blue-whales-is-first-to-be-preserved
3- http://www.livescience.com/49795-strange-animal-hearts.html

https://www.harunyahya.info/en/articles/interesting-hearts-in-the-animal-kingdom