

Live immune cells in a coral and sea anemone identified for first time

August 19, 2021

In news- Recently, scientists in a new study identified specialized immune cells in the cauliflower coral and starlet sea anemone that can help fight infection.

About the study

- The study, titled “**Functional Characterization of Hexacorallia Phagocytic Cells,**” was published in the journal *Frontiers In Immunology*.
- The **findings are important to better understand how reef-building corals and other reef animals protect themselves from foreign invaders** like bacteria and viruses found in and around coral reefs.
- **They have found that immune cells make up about three percent of the total cell population** and that they have at least two populations of immune cells that perform functions unique from digestion.
- These findings are important because **they show that corals have the cellular capabilities to fight infection and that they have unique cell types that were previously not known.**
- To uncover these specialized immune cells, the researchers exposed foreign particles such as bacteria, fungal antigens, and beads into a cauliflower coral (*Pocillopora damicornis*) and starlet sea anemone (*Nematostella vectensis*) in the laboratory.
- They then **used a process, called fluorescence-activated cell sorting,** to isolate different cell populations.
- **They found that specialized cells, known as phagocytic cells,** engulfed the foreign particles, while small,

fluid-filled structures inside the cells, called phagosomes, worked to destroy the invaders as well as their own damaged cells.

What are Sea anemones?

- They are **ocean-dwelling members of the phylum Cnidaria.**
- They **are invertebrates belonging to the class of Anthozoa.**
- The name Cnidaria refers to the cnidae, or nematocysts, that is, the cellular entity of the venom apparatus, which all Cnidarians possess.
- The phylum Cnidaria includes anemones, corals, jellyfish (including box jellyfish), and hydras.
- Sea anemones, **named after a terrestrial flower,** have a basic radial symmetry with tentacles that surround a central mouth opening.

What are immune cells?

- A cell that is part of the immune system and helps the body fight infections and other diseases
- Immune cells develop from stem cells in the bone marrow and become different types of white blood cells.
- These include neutrophils, eosinophils, basophils, mast cells, monocytes, macrophages, dendritic cells, natural killer cells, and lymphocytes (B cells and T cells).
- The cells of the immune system can be categorized as lymphocytes (T-cells, B-cells and NK cells), neutrophils, and monocytes/macrophages.