Phylum Cnidaria

They have 2 tissue layers,
An outer layer of cells - the **epidermis**, which is protective
The inner **gastrodermis,** which lines the gut cavity of the organism - the **gastrovascular cavity** (gvc) - 1 opening
In between these tissue layers is a non-cellular (nonliving), jelly-like material called **mesoglea**

Cnidarian Body Plans

The Polyp form

The Medusa form

Movement

Both the epidermis and the gastrodermis possess nerve cells arranged in a loose network - **nerve net**, which innervate primitively developed muscle fibers that extend from the epidermal and gastrodermal cells
Stimulus in one part will spread across the whole body via the network

Nutrition

They use they tentacles to capture prey and direct it toward the mouth so that it can be digested in the gastrovascular cavity via secretions from gland cells (extracellular digestion); some food is phagocyticized by special cells and digestion occurs intracellularly

Stinging Structures

Prey capture is enhanced by the presence of specialized stinging cells called **cnidocytes** that located in the outer epidermis.
Each cnidocyte has a modified cilium - **cnidocil,** and is armed with a stinging structure called a **nematocyst.**

Reproduction

Asexual reproduction is common with new individuals being produced by **budding**
A bud arises as an out-pocket of the body wall
In solitary species the bud eventually separates from the parent
Buds remain attached in colonial species, becoming a new member of the colony

Sexual reproduction
Sexes are separate - dioecious
Fertilization is external, with the zygote becoming an elongated, ciliated, radially symmetrical larva - **planula larva**

1. Class Hydrozoa

Solitary Hydras

Colonial Hydrozoans

Obelia

Like many of the colony polyps, *Obelia* has at least 2 structurally and functionally different kinds of individuals that comprise the colony: feeding polyps or **gastrozooids** and reproductive polyps or **gonozooids**

Other Hydrozoans

2. Class Scyphozoa

A common example of a scyphozoan is *Aurelia*
Fertilized eggs develop into a ciliated planula larva
It eventually settles to the substrate and develops into a stationary polyp called the **scyphistoma**
This scyphistoma produces a series of polyps by budding
The polyps are stacked like plates and the structure is called a **strobila**
The polyps undergo differentiation and eventually are released from the strobila as free swimming little jelly fish - **ephyra**
The ephyra matures into an adult jellyfish

3. Class Anthozoa

At one or both ends of the mouth is a ciliated groove called the **siphonoglyph**
The distinguishing feature of the group is the presence of a **pharynx** (a tube that hangs from the mouth into the gastrovascular cavity)
The gastrovascular cavity is large and petitioned by septa or **mesenteries** (sheet-like partitions extending from the body wall to the gastrovascular cavity)
The edges of the septa usually have thread-like structures called **acontia threads,** that are equipped with nematocysts and gland cells