**Evolution and the Invertebrates**

**Introduction**

Invertebrates are a very diverse group of Animals and are very interesting to study. We will learn about evolution through natural selection, while simultaneously learning about features of invertebrates.

By the end of the project, you will be able to

* provide evidence for how organisms became more complex over time through adaptation and evolution.
* link specific structures of the phyla members to functions.
* explain how cell organization changed as creatures became more complex.

**Tasks**

* Completed~~Research facts about your invertebrate group.~~
* Completed~~Use the Biology textbook as your main source of information.~~
* Completed~~Use other references with permission from teacher and track references in MLA format (submit one copy per group)~~
* Completed~~Complete the note template (submit one copy per group)~~
* Completed~~Share note template with the invertebrate group "above" in the evolutionary timeline (as a group)~~
* Completed~~Meet with the invertebrate group "below" in the evolutionary timeline and share notes (as a group)~~
* Completed~~Complete the required slides to show advances in complexity from the group "below" to your group (as a group)~~
* In ProgressPrepare to Present information to the class with the slide show as support (as a group- each person must have a speaking role and these should be equal)

MLA

| MLA references |
| --- |
| Works Cited  “Cnidarians | AMNH.” *American Museum of Natural History*, AMNH, <https://www.amnh.org/explore/ology/biodiversity/tree-of-life2/cnidarians>. Accessed 26 October 2023.  “ Phylum Cnidaria | manoa.hawaii.edu/ExploringOurFluidEarth” *University of Hawaii at Manoa* <https://manoa.hawaii.edu/exploringourfluidearth/biological/invertebrates/phylum-cnidaria> Accessed 26 October, 2023  “Anatomy of cnidarians.” *Britannica*, Britannica, <https://www.britannica.com/summary/cnidarian>. Accessed 28 October 2023.  “Invertebrates” *National Wildlife Federation* <https://www.nwf.org/Educational-Resources/Wildlife-Guide/Invertebrates>. Accessed 1 November, 2023  “Flatworms - Shape of Life.” *About Flatworms | Shape of Life*, Shape of Life, <https://www.shapeoflife.org/resource/about-flatworms-bak>. Accessed 30 October 2023. |

**Note Template**

| **Body Plan**  No backbone, (invertebrates). They also have radial symmetry. More organized body plan. | **Reproduction and Development**  The Cnidarians reproduce both sexually and asexually. Male releases sperm into the water, which enters the female and internally fertilizes the eggs. This results in a completely formed larva being released. |
| --- | --- |
| **Anatomy (Specialized Parts)**  Stinging cells to attack prey, and use for defense. | **Food/Feeding**  Ectoderm captures food particles and gets the food, and the endoderm has cells to break down the enzymes in the foods and process the foods. |
| **Obtaining Oxygen**  Cnidarians get oxygen from the water that is surrounding them the same way that sponges do. | **Defense**  The Cnidarians have tentacles which they can sting other animals and use for defense. |
| **Senses & Actions**  It has a nematocyst which senses food and as soon as it senses it the nematocyst either through touch or chemoreception it injects venom into its prey. | **Variations (types)**  The different variations of Cnidarians are symmetrical brain coral, portuguese man of war, swimming anemone, California tube cora, smooth flower coral, gorgonian coral, egg yolk jellyfish and tube anemone. |

**Slide Information**

1. Slide one is a picture of each group that shows anatomy/parts
2. Slide two is information

| **Changes** | **Limitations** |
| --- | --- |
| **Cnidarians can move**  **A nervous system to respond to stimuli that**  **Defense system is stingers to shock their opponent**  **No broadcast spawning, sexual reproduction**  **Specialized tissues**  **Does not limit oxygen for cnidarians**  **Have two body forms one sitting and another one moving**  **Phylum cnidarians**  **Phylum platyhelminthes nematoda annelida** | **Tissues aren’t organized into organs**  **Animals without a vascular system have limited abilities to deliver oxygen and nutrients to their cells because of the way the molecules are.**  **Does not limit oxygen for cnidarians**  **Less complex body plan**  **Don’t have a mesoderm**  **When the flatworms become larger diffusion is no longer than option**  **Cells in the endoderm and ectoderm are less organized** |

**More notes**

***Flatworms***

**Body plans**

~have the simplest body plan of bilateral symmetry

anatomy

~well defined nervous ,reproductive muscular and excretory system

**Obtaining oxygen**

~ breathes through the hosts digestive system

**Senses and actions**

~flat body allow them to move them to move through water and small crevices

**Variations**

~turbellaria

~trematoda

~More than 25000 different species of flatworms

**Defense**

~ a slimy coat

**Food/feeding**

~ they eat a excrete waste through the same opening

**Reproduction and development**

~eggs can be layed through caples

**Rubric**

| **0-missing 1-completed 2-completed with detail** | **0** | **1** | **2** |
| --- | --- | --- | --- |
| MLA references |  |  |  |
| Notes: Body Plan |  |  |  |
| Notes: Reproduction and Development |  |  |  |
| Notes: Anatomy (specialized parts) |  |  |  |
| Notes: Food/Feeding |  |  |  |
| Notes: Obtaining Oxygen |  |  |  |
| Notes: Defense |  |  |  |
| Notes: Senses & Actions |  |  |  |
| Notes: Variations (types) |  |  |  |
| Notes: Limitations when compared to next group or obvious |  |  |  |
| Slide: Pictures/Diagrams that show anatomy (parts) |  |  |  |
| Slide: Changes from prior group |  |  |  |
| Slide: Limitations when compared to next group or obvious |  |  |  |
| Presentation: Presenter does not rush; shows enthusiasm; avoids pauses and interjections such as "like, um, kind of, yeah, you know, etc." |  |  |  |
| Presentation: Presenter keeps head up, does not read content, and speaks to the whole audience. |  |  |  |
| Presentation: Presenter stands up straight, faces the audience, and avoids fidgeting. |  |  |  |
| Presentation: Presenter can be easily heard by all and understood well. |  |  |  |
| Presentation: Presenter elaborates beyond the content of the slides by explaining and providing examples. Notes are used for reference, but are not the only content presented. |  |  |  |
| Collaboration: Worked enthusiastically with group. Shared responsibility for tasks equally. |  |  |  |
| Collaboration: Stayed on task 100% of the time |  |  |  |
| Collaboration: Listened well to others and compromised as needed. |  |  |  |

40 points total