

Quadrant II – Transcript and related materials

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Module Name: Polymorphism in Hydrozoa -I

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Polymorphism in Hydrozoa

The term polymorphism is derived from two Greek words (Gr: poly – many, morphe – form).

Polymorphism could be described as a condition wherein members of a single species may be represented by more than one kind of zooids which differ in structure, form and function.

In the animal kingdom phylum Cnidaria provides the best example of polymorphism. Among Cnidaria, class Hydrozoa exhibits widest range of polymorphism while the other two classes – Scyphozoa and Anthozoa do not exhibit polymorphism to any great extent. Degree of polymorphism varies greatly in the different orders of Hydrozoa. In order Hydroida polymorphism is seen to a lesser extent while orders Siphonophora and Chondrophora exhibit highest number of polypoid and medusoid modifications.

Patterns of polymorphism: - Polymorphism follows a particular pattern in Hydrozoans. They exhibit 3 patterns of polymorphism: 1) Dimorphic 2) trimorphic and 3) polymorphic pattern.

1) Dimorphic pattern: It is the simplest and most common pattern of polymorphism exhibited by hydrozoan colonies. They show only two types of individuals- hydranth / gastrozoid for the purpose of nutrition and the gonozooid meant for asexual reproduction. e.g. *Obelia*.

2) Trimorphic pattern: In this case there are three types of zooids - gastrozooids for nutrition, gonozooids for asexual reproduction and dactylozooids for defence. e.g. *Plumularia*.

3) Polymorphic pattern: When a colony exhibits more than three different types of zooids, it is said to show the polymorphic pattern of polymorphism. Gastrozooids for nutrition, dactylozooid for defence, tentaculozooids for sensory perception, pneumatophores for floatation, medusa for sexual reproduction. e.g. *Halistemma*.

Basic Forms: - There are two basic types of individuals seen in cnidarians from which all the other types of zooids are formed by modifications. They are the polyp and the medusa.

Polyp: These are sessile individuals which have an elongated tubular body. The lower end termed as aboral surface is either attached to the substratum or to the colony. The oral free end shows the presence of the manubrium at the tip of which is present the mouth which is surrounded by a circlet of short hollow tentacles which are loaded with nematocysts.

Medusa: These are free swimming individuals with an umbrella shaped body. The outer convex wall of the umbrella is termed as exumbrella while the inner concave wall is termed subumbrella. The medusae may show the presence of a velum which is a narrow epidermal shelf present along the margin of umbrella. Medusae which show the presence of velum is termed as craspedote medusae while medusae without velum are called acraspedote medusae. From the centre of the subumbrellar surface hangs down a short hollow tube termed as manubrium at the free end of which is present the mouth. Short hollow tentacles present along margin of the umbrella.

Modifications of Polyp: - a) Polypoid zooids are of three types: a) Gastrozooids for nutrition, b) dactylozoid for defence and predation and c) gonozooids for asexual reproduction.

Gastrozoid: - They are also termed as siphon or hydranth. They function for ingestion and digestion of food and are also responsible for circulation of digested food to the entire colony. They have a tubular or saccular body, attached at aboral end to the colony while the mouth is placed terminally at the free end which may be simple or trumpet shaped. They show the presence of a single long hollow contractile tentacle at or near the base of gastrozooids. The tentacle is provided with nematocysts either directly or borne on fine lateral branches called tentilla.

Dactylozoid: - They are also termed palpons, feelers or tasters. They are responsible for the defence of colony and to help in food capture. They resemble the gastrozooids with respect to shape of body but are devoid of mouth. They show the presence of the basal tentacle as seen in gastrozooids but it is never branched. They are loaded with nematocysts. When the dactylozoid is seen in association with gonozooids, they are termed gonopalpons and are responsible for protection of the gonozooids.

Gonozooid: - They are also termed blastostyle or gonangium. Gonozooids are asexual reproductive bodies which produce medusae by the process of budding. They do not show the presence of mouth. They may be present as a branched stalk termed gonodendron with grape like clusters of gonophores. In some cases, they may be provided with gonopalpon for protection.