**Onychophora:**

#### Introduction to Phylum Onychophora:

Onychophorans were previously grouped under arthropods, but recently they are considered to be a separate phylum that is closely related to the arthropods. They are considered by some zoologists to be the ancestor of the uniramians.

As the ony­chophorans look very much like slugs with legs, they were thought to be molluscs when first discovered in 1826 by L. Guilding. They have many similarities with both annelids and arthropods, and have been described as a missing link between the two groups.

The onychophorans belong to an ancient group. They have remained unchanged since the Cambrian period. They are represented today by a meager 70-75 species. They were probably wide spread at one time but now have a restricted distribution.

They occur sporadically and discontinuously in tropical to subtropical regions and in wet temperate regions of the southern hemisphere, thereby furnishing an excellent example of disconti­nuous distribution.

These terrestrial crea­tures are mainly nocturnal predators, feeding upon flies, wood-lice, termites and other small animals, capturing them by spurting mucus from the adhesive glands of oral papillae. They live beneath logs, stones and leaves or along stream banks.

**Etymology:**

Greek: onychos, claws; phoros, bearer.

#### Diagnostic Features of Phylum Onychophora:

1. Terrestrial, carnivorous and free living animals.

2. Body elongated more or less cylindrical and is bilaterally symmetrical.

3. Head is not clearly differentiated.

4. The anterior end bears a pair of annulated antennae and a ventral mouth, which is flanked by a pair of mandible, each with two claw-like blades, and by a pair of short, conical, oral papillae.

5. Body surface covered by a chitinous cuti­cle that is thin, flexible and permeable and is not divided into articulating plates. The chitinous cuticle is periodi­cally mounted.

6. The body has 14-43 pairs of short, un-jointed fleshy legs that are hollow evagination of the body bearing a termi­nal pad, pairs of claws and intrinsic muscles.

7. Body cavity haemocoelic and well developed, forming the hydrostatic skeleton.

8. A tubular heart, open at each end and provided with a pair of lateral ostia in each segment. Blood is colourless.

9. Gas exchange organs are tracheas that are simple, tubular, forming tufts arising from numerous small spiracles.

10. Excretory organs are paired segmental, sac-like nephridia, with a ciliated funnel and nephrostome. The nephridiopore is located on the inner base of each leg.

11. The nervous system is composed of a large bilobed brain and a pair of very widely separated ventral nerve cords joined by commissures, but without dis­tinct ganglia.

12. Sense organs comprise of a pair of annu­lar antennae, each with a small, simple eye at its base.

13. Gonochoristic, with paired gonads, ferti­lization internal via spermatophores and cleavage is superficial.

14. Some onychophorans are oviparous, but many brood their eggs internally and give birth to young ones.

**Scheme of Classification of Phylum Onychophora:**

The Onychophorans have been divided into two families (Peripatidae and Peripatopsidae) by Meglitsch and Schram (1991).

**Examples:**

Peripatus, Peripatopsis (Fig. 1.123), Peripatoides, Typhloperipatus.

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Evolutionary Significance

Biologists are particularly interested in onychophorans because they can help us understand the evolution of one of the most successful groups of animals ever to live on Earth: the [arthropods](https://evolution.berkeley.edu/evolibrary/glossary/glossary_popup.php?word=arthropod), a [clade](https://evolution.berkeley.edu/evolibrary/glossary/glossary_popup.php?word=clade) of segmented animals with jointed legs, that includes insects, spiders, and crustaceans. Onychophorans are not arthropods — their squishy tube legs make that clear — but they do seem to be closely related to arthropods. For one thing, even though they are soft-bodied, onychophorans have to molt in order to grow, just as arthropods do. And even though they don't *look* segmented from the outside, some of the interior organs of an onychophoran are arranged serially, much like those of a segmented animal. Onychophorans even breathe like insects do — through a system of holes and tubes throughout their body called tracheae. Genetic data also support this idea. Genetic sequences from arthropods, onychophorans, and other animals suggest that onychophorans occupy the branch of the tree of life that is right next door to that of the arthropods. The two groups are [sister taxa](https://evolution.berkeley.edu/evolibrary/glossary/glossary_popup.php?word=sister+groups) — i.e., each others' closest relatives. Knowing which organisms occupy the branches adjacent to the arthropods' is important because it helps scientists reconstruct what the ancestors of these groups were like, and correspondingly, how modern arthropods evolved.

Onychophorans belong to a clade that has been on Earth for half-a-billion years and is closely related to arthropods. Yet these fuzzy creatures are not "precursors" to armored dragonflies and lobsters. Rather, ancient onychophorans lived alongside the lineage that gave rise to arthropods and shared many traits with that ancestor. Modern onychophorans provide a window on the past, but occupy their own branch on the tree of life.