The Octopoda can be derived from Coleoidea with 10 arms. Their evolution can be demonstrated by allometric growth and reduction of the middle field of the gladius.

The evolution of the coleoid gills is reconstructed. A loliginid basic type can be stated. The gills of the modern octopods represent a modification of this type. The gills of the fossil Plesiosquidomorpha still show the basic type of the Coleoidea. Therefore they are the stem lineage representatives of the vampyromorphids.