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Asexual Reproduction in Holothurians

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Abstract

Aspects of asexual reproduction in holothurians are discussed. Holothurians are significant as fishery and aquaculture items and have high commercial value. The last review on holothurian asexual reproduction was published 18 years ago and included only 8 species. An analysis of the available literature shows that asexual reproduction has now been confirmed in 16 holothurian species. Five additional species are also most likely capable of fission. The recent discovery of new fissiparous holothurian species indicates that this reproduction mode is more widespread in Holothuroidea than previously believed. New data about the history of the discovery of asexual reproduction in holothurians, features of fission, and regeneration of anterior and posterior fragments are described here. Asexual reproduction is obviously controlled by the integrated systems of the organism, primarily the nervous system. Special molecular mechanisms appear to determine the location where fission occurs along the anterior-posterior axis of the body. Alteration of the connective tissue strength of the body wall may play an important role during fission of holothurians. The basic mechanism of fission is the interaction of matrix metalloproteinases, their inhibitors, and enzymes forming cross-link complexes between fibrils of collagen. The population dynamics of fissiparous holothurians are discussed.

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Biography

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