MO 6

THE POLARITY ABOUT THE ABNORMAL TYPE OF THE REGENERATION IN BIPALIUM NOBILE,

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Authors have studied the regeneration in the lard planarian. Bipalium nobile of giant land planarian is a species that carries out the fragmentation, and Bipalium nobile regenerate normally from artificial cut piece in every level of the body. But sometimes, a cut piece of them was linked together and made a ring, then the polarity in the piece was lost. The weight of a ring piece decreased little by little, but the case in the regenerating piece became lean rapidly. Perhaps this shows that the regeneration from a piece will exhaust the energy in tissues for the morphological formation. Similarly, in a regenerate study of senior author, Makino's experiment in thirty years ago, in Polyclad, Stylocus ijimai was observed that the animal regenerated considerably, but posterior transverse cut piece made a cone by immediate agglutination of the wound, and the polarity was lost without normal regeneration. Anyhow, it never lives to ring formation, soon it will die, although it has the ability to the normal regeneration by its physiological gradient.

MO 7

ULTRASTRUCTURAL STUDY OF GONADAL DEVELOPMENT IN THE FRESH-WATER LEECH, ERPOBDELLA LINEATA

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The development of larval gonads and the differentiation of reproductive cells were observed light and electron microscopically in Erpobdella lineata. Testis sacs develop almost in line on both sides of the posterior nerve cord. Sac wall cells and male cells differentiate from a specific cell with a large clear nucleus. Primordial male cells in the sac have small dark nuclei, which become large and clear later. The centrioles appear in the Golgi zone at this stage. A part of the sac wall cells remain undifferentiated form and construct the thick portion of the wall where new male cells are produced. A pair of ovisacs develop near the end of the oesophagus. At first, female cells in the sac have spindle nuclei, then gradually, their nuclei become large and globular. At this stage, dense inclusions appear in mitochodria. Among the female cells, specific cells with small dark nuclei were observed. They differentiate into nurse cells and follicle cells. The origins of female cells, the specific cells, and also ovisac wall cells are thought to be the same undifferentiated cell.

MO 8

FINE STRUCTURE OF BOTRYOIDAL TISSUE IN THE LEECHES, HIRUDO MEDICINALIS(2)

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The prosperity and decay of granules of botryoidal tissue(cytoplasm) were examined. It was observed that according to a light microscope,this tissue showed a granular structure and according to an electron microscope,granules in mature leeches(200-1000 mg) consisted of three different types; type 1(L1-granules) was uniform,not clear a limiting membrane and was about 1.0-2.0 μm in diameter,type 2(L2-granules) consisted of many particles,a limiting membrane and was about 1.0-2.0 μm in diameter and type 3 (P-granules) consisted of dense bodies,a limiting membrane,and was about 0.5-1.0 μm in diameter.L2-granules had a positive reaction for acid phosphatase.In larvae(35-50 mg),many of the granules were L2-and P-granules,and with L1-granules few in number. It was observed that according to a fluorescent microscope with B-excitation and a 530 absorbing filter,granules in mature leeches starved during 6 months were distinguished yellow fluorescence from fluorescent loss.After 5 days of eating,all of the granules exhibited yellow fluorescence. Granules of larvae were similar to those of mature leeches.

It is suggested that metabolism has an effect on fluorescent granules which have a relation to L2- and P-granules and there is the relation between nucleus and ER because of after 5 days of eating,nucleus was surroumded by developed ER.

MO 9

BIOLUMINESCENCE OF CYPRIDINA III, INTERPRETATION OF LUMINOUS SUBSTRATE SITE IN LABRUM GLAND.

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We have reported the morphology of luminous organ of Cypridina hilgendorfii in the 52nd and 53rd meeting of this society . The labrum gland has three types of cells; the cell with small but electron dense granules, with large and homogeneously electron light granules, and with large granules including small electron dense granules, respectively. Which type of the cell is responsible for luminous substrate or enzyme, is our present subject. The material Cypridina hilgendorfii was fixed and imbedded in epoxy resins in the same way as for electron microscopy. The samples were prepared from the region of labrum gland by cutting in 2μm thickness. By exciting with U.V.(max.420nm) using fluorescence microscope, luminescence was photographed. The luminous area was corresponded to the cell, which has small dense granules. We concluded that this type of cells, which have small dense granules, contain luminous substrate, luciferin. Other types of cells are supposed to contain luminous enzyme. To obtain a direct evidence, some experiments are now undertaken.