

mer's work is necessary to get the data into a comprehensive form.

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1962 #8

CLEAVAGE DELAY IN ULTRAVIOLET-IRRADIATED SAND DOLLAR ZYGOTES

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1. Ultraviolet (UV) irradiation after fertilization of sand dollar eggs delays first cleavage of the zygote. The delay can be partially reduced by treatment with visible light (photoreactivation).
2. Late in the fertilization-to-first-cleavage (F-I) interval there is a so-called "refractory period," during which time UV treatment does not delay first cleavage, but does prolong the first-to-second (I-II) cleavage interval. Treatment with UV plus visible light at this time results in virtually complete photoreactivation, i.e., the cleavage intervals of treated zygotes are indistinguishable from those of unirradiated controls.
3. If zygotes are allowed to incorporate 5-bromodeoxyuridine (BUDR) into their DNA, partially replacing thymidine during the DNA-synthesis prior to first cleavage, the I-II interval shows hypersensitivity to UV irradiation in the "refractory period." Zygotes which have incorporated BUDR cannot be photoreactivated.
4. Zygotes which have been irradiated while incorporating BUDR prior to first cleavage show no apparent hypersensitivity or loss of photoreactivability of the F-I interval, but do show both hypersensitivity and loss of photoreactivability of the I-II interval.
5. A working hypothesis consistent with the data is that UV-induced cleavage delay results from interference with the primer-activity of DNA in subsequent DNA synthesis.

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1962 #9

FINE STRUCTURE OF SALT-REGULATING TISSUES*

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- 1) Holothuria. Preparations of the respiratory tree of the sea cucumber, Cucumaria, were made and shipped by air to Chicago for completion and preliminary examination in the electron microscope. On the basis of preliminary results, new evidence has been obtained relating to the function of certain amoebocytes in the formation of the extra cellular substances of the connective tissue.
- 2) The so-called chloride cell of Fundulus. Experiments were designed to clarify certain controversial aspects of the fine structure of the gill of Fundulus in relation to the state of adaptation of the organism to fresh and salt water respectively. Specimens were slowly adapted to fresh water under controlled conditions of temperature and salinity. Specimens

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