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GENERATION OF CYSTOCYTES IN LEPIDOPTERAN OVARIES DIFFERS FROM THE DROSOPHILA MODEL OF GERMARIAL DEVELOPMENT. E. F. Beckemeyer and P. D. Shirk. Insect Attractants, Behavior, & Basic Biology Research Lab, USDA ARS, Gainesville, FL.

Using immunofluorescent staining for a germ cell-specific protein, the production of cystocytes was followed in whole-mounted ovaries from the 5 larval instars of the Indianmeal moth, Plodia interpunctella. Before the end of the 4th instar, the number of germ cells in the ovaries is approximately equal to the number of eggs produced by a female. Division of these germ cells into clusters of eight-cell, cytoplasmically-connected cystocytes occurs before the end of the last instar. Therefore, all eight-cell clusters that become nurse cell-oocyte complexes are produced before the molt to the pupal stage. Only after all clusters are generated does packaging of nurse cell-oocyte complexes into follicles occur. These findings indicate that the production of cystocytes in lepidopterans differs fundamentally from the Drosophila model of germarial development, that is, lepidopterans do not have telogermaric ovaries.

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GROWTH FACTOR-LIKE SUBSTANCES INDUCE DEVELOPMENT OF THE MALE GENITAL TRACT OF THE TOBACCO BUDWORM MOTH. M.J. Loeb Insect Neurobiology and Hormone Lab., U.S.D.A., Beltsville, MD

The genital tract of a diapausing male pupa consists of a spherical testis and imaginal disc connected by 2 hollow "spermducts". During adult development, under the influence of 20-hydroxyecdysone (20HE), "spermducts" become muscular seminal vesicles, while the rest of the tract, including accessory glands, vas deferentia, and aedeagus develops from the imaginal disc. Isolated ducts and discs cultured in vitro with 20HE disintegrated within 5 days. Co-culture with testis sheath or fat body and 20HE induced growth and muscular development in "spermducts" and evagination, growth of tubular structures and muscle strands in the discs. Saline extracts of testis sheath or fat body cultured for 24 hr in 20HE had similar effects. Gel filtration indicated that extracts contain a number of active factors of various molecular weights and properties.

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PROPHENOLOXIDASE ACTIVATION BY LIPIDS. M. Sugumaran* and K.Nellaiappan. (Intro. by Ruth Bennett) Univ. of Massachusetts, Boston.

It is well known that phenoloxidase system participates in arthropod immunity by providing reactive quinonoid compounds for killing and/or encapulating the foreign organisms. Under normal physiological conditions prophenoloxidase occurs as an inactive proenzyme form in the hemolymph and is specifically activated by proteolytic enzymes during an immune response. In this communication, we present evidence for the rapid activation of prophenoloxidase from the hemolymph of *Periplaneta americana, Manduca sexta, Sarcophaga bullata* and *Homarus americanas* by low concentration of phospholipids. Therefore, we claim that during an immune response, lipids released by cellular damage could activate the prophenoloxidase and provide the active enzyme for defense purposes.

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SITE OF SYNTHESIS OF INDUCED IMMUNE PROTEINS IN THE AMERICAN COCKROACH. S. Ewashinka* and R.D. Karp. Univ. of Cincinnati, OH.

Previous studies determined that the American cockroach generates specific humoral immunity. Injection of soluble proteins induces enhanced production of a 102kD reduced hemolymph protein. *De novo* synthesis studies were undertaken to determine if circulating hemocytes, fat body, or both are responsible for the production of immune proteins. Roaches were injected twice with cytochrome c. Seven days after the last injection, hemocytes and fat body cells were collected, cultured, and labelled with ^{35}S methionine/cysteine (sp. act. 500 uCi/ml). Supernatant and cytyosolic fractions were subjected to SDS-PAGE gel. analysis and fluorography. Although both cell types actively secreted proteins, preliminary experiments indicated that only the hemocytes secreted the 102kD immune protein. Further experiments will determine if circulating hemocytes are directly simulated by antigen to produce the protein that mediates specific humoral immunity in the American cockroach.

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