

Thesis Title **Structure of the Testes of *Rana catesbeiana* and Their Changes During Development and Seasonal Variation**

Name **Aungkura Jerareungrattana**

Degree **Master of Science (Anatomy)**

Thesis Supervisory Committee

Prasert Sobhon, Ph.D.

Prapee Sretarugsa, Ph.D.

Jittipan Chavadej, Ph.D.

Suchart Upatham, Ph.D.

Date of Graduation **20 December B.E. 2538 (1995)**

ABSTRACT

The testis of fully mature bullfrog, *Rana catesbeiana* were studied by light and transmission electron microscopes. The germ cells in the developing testis can be classified into twelve stages based on the nuclear characteristics. Primary and secondary spermatogonia are the earliest germ cells, with the former show large and completely euchromatic nuclei with prominent nucleoli and the latter with small block of heterochromatin distributed along the nuclear envelope. Spermatocytes consist of 5 stages namely, leptotene, zygotene, pachytene, diplotene and metaphase spermatocytes. Succeeding stages show increasing condensation of chromatin : from the coarse fibers, that are evenly distributed throughout the nucleus in leptotene stage to the highly condensed blocks of heterochromatin in pachytene to diplotene stages. Nucleoli are not detected in any stages. Secondary

spermatocytes have blocks of completely condensed heterochromatin attaching to the nuclear envelopes.

There are three stages of spermatids ; the early stage shows large chromatin fiber that are evenly distributed over the nucleus, the middle stage has chromatin condensation along the nuclear envelope leaving paler central area. The late stage exhibits completely condensed chromatin in an ovoid nucleus and its cytoplasm becomes highly vacuolized and starts to degenerate. In fully mature spermatozoa, the nucleus becomes completely elongated and chromatin completely condensed. They are embedded in the cytoplasm of Sertoli cells. At each stage of division and differentiation, a clone of derived from a single spermatogonia is surrounded by follicular cells which may have similar functions and belong to the same group of Sertoli cells. Leydig's cells are found between seminiferous tubules. During development of the testis, sex cords appear during 2 months old. When 4 months old definitive testis can be observed. Primary spermatogonia appears during four month old while spermatocytes and seminiferous tubules are present in the fifth month. Spermiogenesis and the full production of spermatozoa could be detected from the seventh month onwards. During breeding period (April-September), there are abundant spermatozoa, round spermatids in seminiferous tubules, while during non-breeding period(October-March), such cells are much fewer in number.