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Source of the Testicular Hormone.

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In 1903 Ancel and Bouin[1] published the theory that the interstitial cells of the testis (the cells of Leydig) produced the testicular hormone. The theory was based upon 4 main premises, as follows: Animals remain sexually active (a) after vasectomy, (b) when they possess only cryptorchid testes, (c) when their testes have been exposed to Roentgen rays and (d) when the only testicular tissue they possess is a graft. Under each of these conditions *all* germinal epithelium was reported absent while the interstitial cells were normal or hypertrophied. All 4 of these premises have been shown to be incorrect (see Oslund[4, 5, 6, 7]) and some germinal epithelium usually exists under each of the above conditions. Since both germinal epithelium and interstitial cells are present in hormone producing testes it has seemed impossible to designate which of these produces the hormone.

It occurred to the writer that if a potent extract could be obtained from the epididymis this would offer strong presumptive evidence that the germinal portion of the testis produced the hormone. The epididymis has no interstitial cells but has a large amount of material of germinal epithelial origin. An attempt was made to obtain such an extract using McGee's method.[3] The results were doubtful, though not entirely negative.

Another point of attack seemed open. Smith[8] has shown that injection of fresh tissue will (in the case of the hypophysis) produce results simulating that of injecting the hormone. This method seemed hopeful. Fresh sperm from the *vas deferens* or epididymis was injected into 3 caponized cockerels. Positive comb growths were obtained. When the injections were discontinued resorption of the comb followed. Injection of approximately the same amounts of testicular tissue gave no observable results. The spermatic material was obtained from dogs and sheep.

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[1] Ancel and Bouin, *Arch. d. Zool. Exp.*, 1903, i, 437.

[4] Oslund, *Am. J. Physiol.*, 1924, lxvii, 422.

[5] Oslund and Bachem, PROC. SOC. EXP. BIOL. AND MED., 1926, xxiii, 761.

[6] Oslund, *Am. J. Physiol.*, lxxvii, 76.

[7] Oslund, XII International Congress of Physiology, Stockholm, 1926.

[3] McGee, Prac. Inst. of Med. of Chicago, April, 1927.

[8] Smith, *Am. J. Physiol.*, 1927, lxxx, 114.

Considerable toxicity was seen following the injection of these proteins, which interfered with the results. Another difficulty was encountered in obtaining constant amounts of the pure spermatic fluids. The difficulties encountered made the obtaining of decisive data impossible at this time. Improved extraction technique would seem to offer the best method of attack upon this problem.

The results are suggestive and point definitely to the germinal epithelium as the source of the testicular hormone. Humphrey[2] has found tissue changes that indicate that the hormonal effects first appear at the time that the spermatids are formed.

This author, therefore, points to a particular stage in the cell cycle in which the hormone is produced. Confirmatory evidence is also found in some vasectomy experiments. When the *vas deferens* is ligated the spermatic fluid must all be absorbed into the vascular or lymph system. In this way, one can account for part of the increased sex activity sometimes seen after vasectomy.

[2] Humphrey, personal communication, 1927.