

tration on the site of the graft. In cases of successful takes, where but a day was allowed for establishment of the graft before removal of the host's own ovaries, pregnancy continued to term. Either the foetuses were still-born or died shortly after delivery. If 4 or 5 days' time was allowed between implantation and ovariectomy normal young were born.

A histological study of transplanted ovarian tissue recovered a day before or immediately following parturition gave evidence of typical lutein tissue. Control ovaries (*i. e.*, the corresponding ovary to the one implanted) showed only immature follicles, no lutein tissue being present.

Five bilaterally ovariectomized females aborted within 2 days following operation. The second ovary was removed on the 14th day of gestation in these controls.

The above data seem to indicate that the *corpus luteum* is essential for the maintenance of pregnancy in the albino rat and that when sufficient time is allowed for vascularization of grafts, immature ovaries transplanted into a pregnant female undergo an adaptation, develop masses of luteal tissue (clearly demonstrable in histological section), and suffice as functional substitutes for the original ovaries in pregnancy.

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Differential Reaction of Ovariectomized Pregnant Rats to Ovarian Grafts in Various Stages of the Oestrous Cycle.*

W. O. NELSON AND H. O. HATERIUS. (Introduced by W. W. Swingle.)

From the Zoölogical Laboratory, State University of Iowa.

In connection with a study of transplantation of ovaries removed from virgin rats, into ovariectomized pregnant females it was discovered that a differential effect resulted from the employment of ovaries whose donors were in various stages of the oestrous cycle. Fourteen experimental animals furnish the basis for the following report.

All transplants were made on the 12th or 13th day of gestation, with ovariectomy following within 24 hours. Transplants were placed in specially prepared pockets between the abdominal rectus

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muscles. A complete check upon the oestrous cycle of all donors was made by means of the vaginal smear method outlined by Long and Evans (1922).¹ Only virgin females in full vigor were employed.

Pro-oestrous stage: Five implantations were made of ovaries from rats in pro-oestrous. Abortion occurred in each instance on the average of 75 hours following removal of the host's own ovaries. No cases of resorption occurred, although termination of pregnancy took place on the 16th or 17th day.

Oestrous stage: Two grafts were made of ovaries removed during the oestrous phase. One case of resorption resulted (subsequently found to be due to failure of the graft to take), whereas the second case terminated in abortion on the 20th day.

Met-oestrous stage: Two operations involving transplantation of ovarian tissue from donors in met-oestrous resulted in abortion on the 20th day.

Dioestrous stage: A series of 5 successful implants was made, utilizing gonads from donors in dioestrous. In one of these cases abortion occurred on the 20th day; the remaining 4 carried to term. The foetuses were alive at birth but were not viable, in all but one instance dying within 24 hours.

The results obtained would indicate that the stage of the oestrous cycle of the donor at the time of transplantation may exercise some effect upon the duration of pregnancy in the host in that the time interval between ovariectomy and abortion varies with the cyclic condition of the graft. The fact that abortions occur most quickly when the host is carrying an ovary of pro-oestrous suggests the possibility that the follicular hormone present in the mature follicles of this stage may have some influence in terminating pregnancy; the reaction further indicates a probable rôle which this hormone may play in normal parturition. Conversely, the fact that luteal tissue occurs in its greatest prominence during the dioestrous interval may be of significance in connection with the observation that implants of this stage met with the highest degree of success in the maintenance of pregnancy.

¹ Long, J. A., and Evans, H. M., *Memoirs of Univ. of Calif.*, 1922, 6.