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Irvine. Brain transplantation and
behavior.

Whole brains of mature third instar Oregon-R male larvae were dissected and their connections to all associated structures, including the ventral cord, severed. The brains were implanted in mature female larvae near their brain (12 brain-injected females eclosed), or near one of their ovaries (17 eclosed). In addition, 2 surviving females were each injected with 2 whole male brains. All females (including 19 Ringer injected controls) were kept in isolation after eclosion except for 4 one-hour observation periods on the 7th, 15th, 22nd and 30th days after eclosion. At these observation periods 6-8 yellow virgin females (2-6 days old) were placed in a food vial with either a single Oregon-R brain-injected female or a control Ringer-injected female. During an observation period, the flies in each vial were confined to a space of approximately 10 cm³. No clear differences in behavioral responses to the presence of females were observed between the experimental and control groups.

I dissected eight 30-day old females which were injected at the larval stage with a whole male brain in the vicinity of one of their ovaries and recovered 5 implants. Thick and long tracheal branches originated from all 5 implants. Also, in all 5 cases a pair of the host's abdominal nerves formed connections with the anteriorly located end of the implant and 4-6 terminal abdominal nerves arose from the implant's posterior end and formed attachments to internal posterior organs of the host.

During the course of these observations, 3 brain-injected and 2 Ringer-injected females (which were at least 20 days old) showed a peculiar behavioral pattern. When chanced to be very close on the food medium to a recently introduced yellow female, they occasionally tapped and followed the decamping female. Although this behavior never lasted more than a few seconds, there is no doubt that it was directed towards other females, because both followed and following females traversed the same, and usually very wiggly, path.

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Japan. Ether sensitivity at embryonic stage of *D. melanogaster*.

LT₅₀ (50% lethal time) of the Eth strain in 24-hour-old adult flies was 5.4 minutes in females and 5 minutes in males; that of the bw;st;svⁿ strain was 2.6 minutes in females and 2 minutes in males. However, 50% non-hatchability time of the Eth strain in 3-hour-old eggs was 10 minutes; that of the bw;st;svⁿ strain was 22 minutes. Thus, the Eth strain is resistant to ether at the adult stage, but is sensitive to ether at the egg stage. Reciprocal crosses between the Eth and the bw;st;svⁿ strains showed that maternal effect existed at the egg stage, although maternal or cytoplasmic effects were negligible at the adult stage.

In order to investigate whether chorion had an effect on the strain differences in ether sensitivity, dechorionated 3-hour-old eggs of Eth and bw;st;svⁿ strains were tested for their sensitivity to ether. The 50% non-hatchability time of the Eth strain was 6.5 minutes and that of the bw;st;svⁿ strain was 10.5 minutes. The dechorionated eggs of the Eth strain were more sensitive than those of the bw;st;svⁿ strain. In the dechorionated 3-hour-old eggs of F₁ hybrids of Eth ♀ x bw;st;svⁿ ♂ and bw;st;svⁿ ♀ x Eth ♂, the 50% non-hatchability times were 6.5 minutes and 10.5 minutes, respectively. The results showed that the strain differences in sensitivity to ether were mainly due to the inherent character of embryo rather than chorion, and that maternal effect also existed in the embryonic stage.