pits and craters (figure). The cytoplasmic organelles, such as a- and 5HT-granules, were randomly distributed and the microcanalicular system was not dilated. In contrast, the majority of the ADP- and 5HT-treated platelets had a spherical, often irregular form with extrusion of pseudopods or blebs, these changes being more pronounced in ADP-treated platelets. The subcellular organelles and the microcanalicular system were, however, not markedly changed. The platelets exposed to CPZ were generally spheroid without extrusion of pseudopods or blebs. The subcellular organelles and canaliculi seemed to be virtually normal, except for the highly electron-dense 5HT organelles which had either totally or partially lost their osmiophilic content (figure).

These changes are similar to those occurring when platelets incubated in plasma are exposed to 5 HT, ADP or CPZ[1,4-12]. Also it has been demonstrated that, in platelets treated with 5HT and ADP, the plasma volume trapped between the centrifuged platelets is increased[1]. Preliminary experiments with suspensions of rabbit platelets in protein-free buffer gave similar results. In fact, in sections of platelet pellets (obtained from the same platelet pool under identical conditions of centrifugation) the number of platelets per square unit was 131 and 178 in ADP-platelets and 206 and 225 in 5HT-platelets compared with 375 and 388 in the controls (2 experiments).

Measurements of light transmission have previously shown that rabbit platelets isolated by a dextran gradient and incubated in protein-free buffer retain their reactivity to shape change-inducing agents[2]. The electron microscopic findings now confirm these results. The use of protein-free buffer as an incubation medium is of considerable interest, e.g. in pharmacological experiments in which the 5HT receptors of the platelet membrane are taken as models for the neuronal 5HT-receptors of certain areas of the central nervous system[3]. In fact, the potency of drugs has been shown to be higher in protein-poor medium than in plasma, probably due to protein-binding in the latter[2].

The present results confirm that agents which interfere with different receptors of the plasma membrane (e.g. 5HT and ADP receptors)[1,3,13] may cause morphologically similar shape change responses. On the other hand, there is evidence that the platelet shape change induced by CPZ is morphologically different. This shape change may be due to unspecific platelet damage, as indicated by the loss of osmiophilic material from the 5HT-organelles and by previous ultrastructural[9] and biochemical[14] investigations.

In conclusion, platelets suspended in protein-poor medium seem to be easily accessible models for testing the effects of drugs on membranes in physiological and pathophysiological states.

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Thymectomy modifies androgenizing effects of a testis transplant during critical period for neuroprogramming[1]

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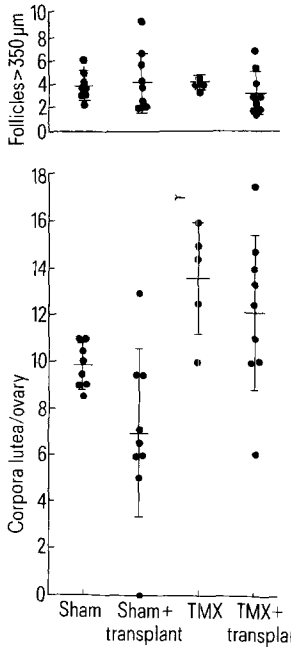
Summary. Thymectomy simultaneous with transplantation of a syngeneic testis from a littermate to Fischer 344 rats ameliorated the androgenizing effects of the testis transplant on ovarian morphology at 90 days of age.

Pierpaoli et al.[2] have suggested that the thymus gland is involved in the process of neuroprogramming during critical periods of pre- and early postnatal periods in rodents. Gorski[3] has shown that transplantation of a syngeneic testis during critical post-natal periods in rodents leads to eventual development of anovulation. The present investigation was undertaken to determine if thymectomy had an effect on the outcome of this classical demonstration of neuroprogramming.

Fischer 344 female rat pups were anesthetized with ether and thymectomized or sham-thymectomized at 5 days of age using a modification of the technique of Hard[4]. At the time of surgery, alternate littermates were implanted s.c. in the neck over the area of the jugular vein with one testis from a littermate. At 90 days of age, all animals were sacrificed by decapitation, and the ovaries removed, weighed and fixed in 10% buffered formalin. Examination of the transplantation site in those animals receiving the transplant revealed that 100% of the rats in both groups accepted the graft. Weights (mean$\pm$SD) of the implanted testes for the sham-operated group were 187.3$\pm$93.5 mg, and for the thymectomized group were 127.1$\pm$36.7 mg. Histologically, all testes contained recognizable seminiferous tubules and interstitial tissue.

From each rat, 2 or 3 H & E stained, coded sections of constant thickness and approximately 10 unmounted sections apart obtained from close to the midline of the ovary were selected for study. These sections were photographed at low power and printed at constant magnification. The photographs were then scored for the number of follicles with 1 diameter greater than 350 μm[5], and the number of corpora lutea were recorded. This information was decoded, summarized, and is presented in the figure. No differences were noted in the numbers of follicles greater than 350 μm in any of the groups, although greater variation was noted in those groups receiving the testis trans-



Number of corpora lutea per ovary and number of follicles greater than 350 µm diameter in 90-day-old Fischer 344 rats sham-thymectomized (sham) or thymectomized (TMX) and transplanted with a syngeneic testis at 5 days of age.

plant. Differences were seen however, when the numbers of corpora lutea were examined. Sham-operated rats receiving the transplant (sham+transplant) had significantly decreased numbers of corpora lutea when compared to sham-operated rats alone (sham), and thymectomized (TMX) rats had significantly increased numbers of corpora lutea when compared to sham-operated rats. However, the numbers of corpora lutea in TMX rats receiving the transplant (TMX+transplant) were not significantly decreased from TMX rats, and were increased when compared to sham rats. The difference between sham+transplant and TMX+transplant groups was also statistically significant.

A role for the thymus in reproductive function has been suggested not only by the experiments of Pierpaoli et al.[2], but also by Nishizuka and Sakakura[6] who reported the development of ovarian dysgenesis in certain strains of mice following thymectomy at 3-6 days of age, and by Lintern-Moore[7] who reported accelerated atresia of follicles and dysgenesis in the ovaries of neonatally thymectomized Wistar rats. Their data, along with ours, tends to support the concept of an involvement of the thymus in neuroprogramming. The detailed mechanism of this involvement is presently unknown. However, other published reports suggest a role for the thymus and/or thymocytes in steroid metabolism. These include the work of Kincl[8] who showed that injection of thymocytes prevented steroid-induced sterility in rats. Additionally, Weinstein et al.[10] have reported that the thymus and probably thymocytes metabolize progesterone, and there is other biochemical evidence of steroid biosynthesis in the thymus[10]. Our data showing a differential effect of testis transplantation on normal and thymectomized rats suggests the possibility that the thymus may influence neuroprogramming during the neonatal critical periods via its potential for production, metabolism, or conversion of steroid hormones. This hypothesis merits further detailed study.

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Effect of p-coumaric acid on immature estrogen treated and cyclic female mice

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Summary. Oral administration of p-coumaric acid to estrogen-primed immature female mice exerts neither estrogenic nor anti-estrogenic activity, but when it is administered to cyclic female mice in single dose at proestrus or in repeated doses, induces alteration in estrus cycle, ovarian and uterine weight and structure.

p-Coumaric acid [2 propionic acid, 3-(4 hydroxy phenyl)], a pure phenolic acid compound-active constituent of the alcoholic extract of the root of plant *Aristolochia indica* Linn has already been tested for antifertility and other biological properties in mice[2,3]. The present communication deals with the further follow-up studies of the compound on estrogen treated immature and mature cyclic female mice.

Materials and methods. Colony-bred Swiss albino mice-immature females, weighing 7-9 g and mature cyclic females weighing 22-24 g, were taken for study. Animals were maintained in controlled temperature (24-25 °C) and light regimen of 14 h light and darkness of 10 h.

Study 1. Immature animals were treated with estradiol dibenzoate (Schering), s.c. for 3 days. Grouping of animals, doses of the compound and hormone are summarized in table 1. 24 h after the last injection the vaginal opening and vaginal cornification were recorded, and then laparotomy was performed under light ether anesthesia. Uteri were dissected out and weighed in a semi-micro balance after pressing out the fluid in a blotting paper.

Study 2. Cyclic mature females were allocated to 2 groups. One group was treated with the drug, orally, in a single dose – the dose responsible for cent percent interceptive activity[2] – at their proestrus stages and another group was treated with repeated lower dose (table 2) for 15 consecutive days. Vaginal smears were recorded daily until the last day of drug administration; 24 h following the last dose, the animals were sacrificed and both ovaries and uteri were weighed. Tissues were fixed in Bouin's fluid and prepared for histological examination. Control animals were maintained in parallel with each of the 2 studies.