In contrast, the maximum time that mammary tissue can survive and remain in satisfactory condition is, at present, unknown. The small, slow-growing mammary tissues that result from several generations of short-interval passage are not discarded because they die, but because the amount of available tissue is not adequate for subsequent propagation. Indeed, these tissues which have lost their ability to proliferate appear to be in excellent condition as judged by light and electron microscopy[14]. In the present experiments, mammary tissue transplanted at yearly intervals was healthy at the end of 5 years, and it is not unreasonable to project that it will remain so for several more. This result may be interestingly compared to the data reported by HOSHINO[8,9], in which two important differences in method are apparent. First, HOSHINO plotted survivorship rather than growth rate against time. Second, very unequal transplant intervals were used in his lines. In one case for example[9], the interval between transplants ranged from 34 to 222 days, and the time from the final transplant to termination of the experiment was some 600 days. Because transplant intervals of this magnitude do not permit the tissue to express its potential for growth, these experiments are not formally comparable to the several reported instances in which mammary aging has been described in terms of limited growth potential under conditions of short, uniform transplant intervals. His results are, however, quite comparable to the long-interval line described in the present report, and both indicate that the ability of mammary cells to survive may be unlimited if environmental conditions are satisfactory. This conclusion is also supported by results showing that transplants derived from old donors are indistinguishable from those obtained from young donors[3].

Future misunderstandings might be avoided if terminology were more standardized (I have been particularly inconsistent in this regard), and it is suggested that the following terms be used to distinguish between two qualitatively different parameters. They may apply equally well to in vivo and in vitro studies of cell aging.

'Growth span' should refer to experiments in which proliferation is measured in reference to time, transfer generation, or some other temporally-related unit. The maximum potential growth span of a tissue or cell can be measured only under conditions which permit full expression of this proliferative potential.

'Life span' should indicate the ability of tissue of cells to remain living and in biologically satisfactory condition in respect to time or related units. Maximum potential life span may be measured only under conditions which best favor endurance, and which are designed to eliminate, for example, systematic effects of aging organisms upon constituent cells or tissue.

Résumé. Les glandes mammaires de la souris n'ont qu'une possibilité limitée de développement quand elles sont transplantées en série sous des conditions qui permettent une prolifération continue. Les conditions de transplantation qui maintiennent les greffes en phase statique, étendent notablement la période durant laquelle la glande peut être transplantée. Les résultats indiquent qu'en dépit de la durée limitée de croissance des cellules mammaires, la longueur de vie potentielle peut être illimitée sous des conditions environnantes optimum.

C. W. DANIEL

Division of Natural Sciences, University of California, Santa Cruz (California 95060, USA), 11 September 1972.

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On Some Interesting Features of the Hypothalamo-Hypophysial Vascularization in the Lizard *Hemidactylus flaviviridis*

Hypothalamic vascularization has been studied in a variety of reptilian species[1–5]. As in other reptiles, in *H. flaviviridis* also the primary capillary plexus of the median eminence gives rise to the portal vessels which irrigate the pars distalis (Figures 1, 2 and 4). The neural lobe receives an independent infundibular artery which is derived from the internal carotid. Apart from this, the median eminence also contributes vessels to the vasculature of the neural lobe. They are comparable to the 'portal vessels' in their formation (Figures 1 and 2). It is well established that the hypothalamic hormones conducted through the portal vessels control the adenohypophysial functions. In this species, the blood that flows into the neural lobe from the median eminence might also be exposed to some of the releasing hormones. An uninterrupted vascular septum demarcates the boundary between the neural lobe and pars intermedia (Figures 5 and 6). The neurosecretory axons of the paraventricular (PVN) and supraoptic (SON) nuclei ramify extensively and have perivascular endings in the neural lobe (Figure 3). Prominent Herring bodies were seen overlying the blood vessels of the vascular septum (Figure 6). Apparently this blood contains the neurohormones secreted by the SON and PVN and some releasing hormones which are conducted through the draining vessels from the median eminence to the neural lobe.

Meagre vascularization of the pars intermedia has been reported in several vertebrates, including reptiles[6,7]. However, in the lizard *Calotes versicolor*, an extensive vascular connection between the neural lobe and pars intermedia is reported[8]. In *H. flaviviridis*, as the pars intermedia is least vascularized (Figures 5 and 7) and is also totally devoid of neurosecretory axons, the only pathway of conduction of active principles into this component is through the blood vessels of the vascular septum. Thus, the pars intermedia is controlled by a neurovascular mechanism. The hitherto unknown vascu-

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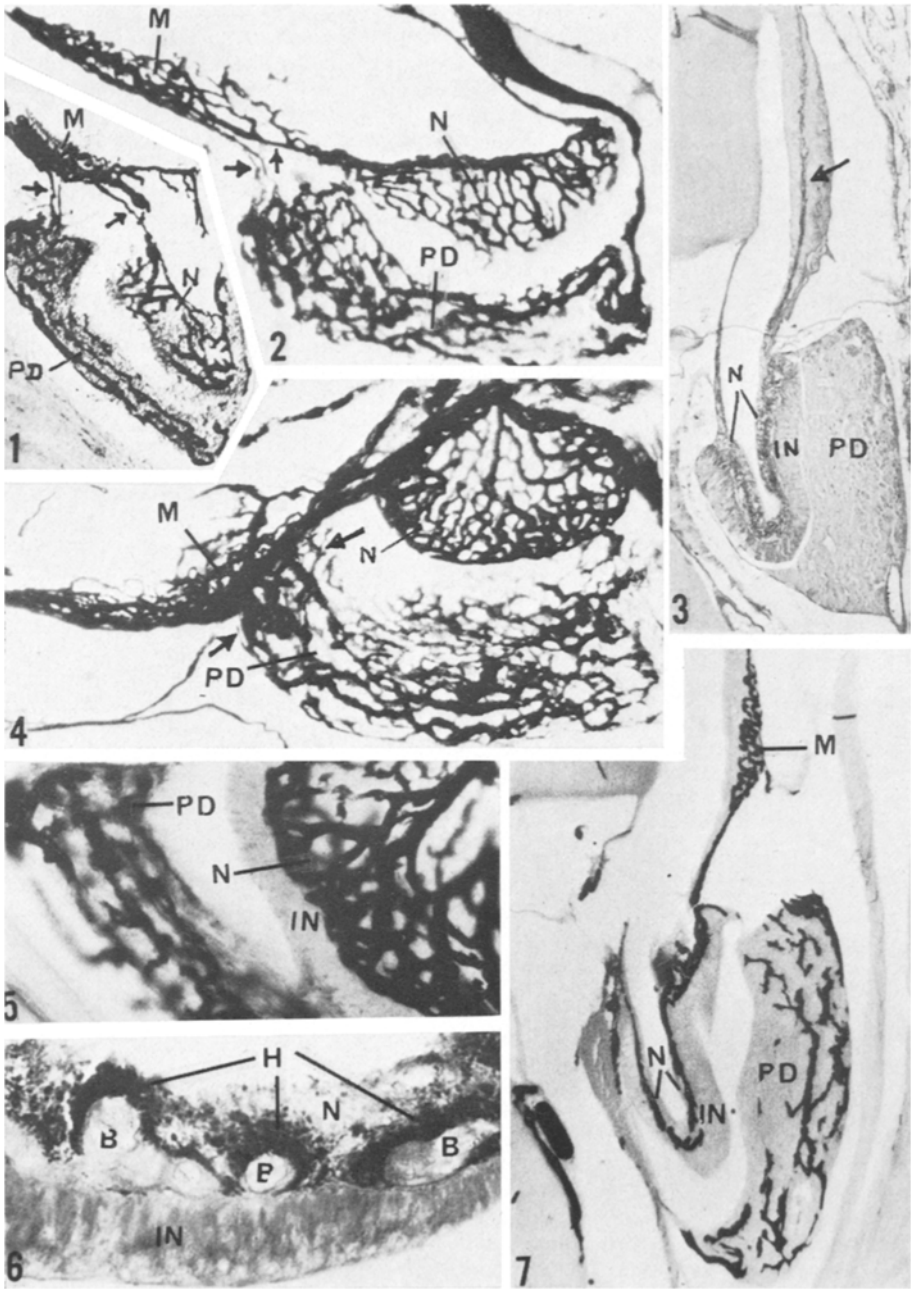

Figs. 1 and 2. Hypothalamo-hypophysial vascularization. Arrow on the left side in each Figure shows portal vessels entering pars distalis. Right side arrow shows vessels entering neural lobe. India ink injected. ×100.

Fig. 3. Median sagittal section showing neurosecretory tract (arrow) from PVN and SON proceeding towards neural lobe. Aldehyde fuchsin. ×100.

Fig. 4. Arrows show portal vessels entering pars distalis from median eminence. ×100.

Fig. 5. A portion of pars distalis, pars intermedia and neural lobe. Note the avascular pars intermedia. ×250.

Fig. 6. Accumulation of Herring bodies around the blood vessels of the vascular septum lying between the neural lobe and pars intermedia. AF, ×500.

Fig. 7. Vascularization of the hypothalamo-hypophysial complex. Note the scanty vascularization of pars intermedia. ×100. B, blood vessel; H, Herring bodies; IN, Pars intermedia; M, median eminence; N, neural lobe; PD, pars distalis.

lar connection between the median eminence and neural lobe suggests the possibility of some releasing hormones getting into the peripheral circulation along with the neurohormones of the SON and PVN, which may have some unknown extrahypophysial functions.

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Zusammenfassung. Tuscheinjektion lässt Verbindungen der Kapillarnetze in Medinalobus mit denen des Neurallobus der Hypophyse bei einer Eidechse erkennen. Der Intermediärteil ist ganz ohne Gefässe, was im Hinblick auf einen möglichen Hormonfluss von Interesse ist.

Shamim Haider and A. G. Sathyanesan[9]

Surgical Research Laboratory,
Institute of Medical Sciences,
Banaras Hindu University, Varanasi-5 (India),
20 February 1973.