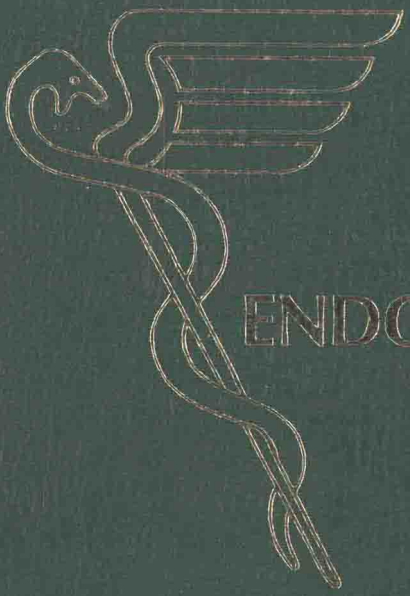

# 1981 YEAR BOOK OF ENDOCRINOLOGY®

SCHWARTZ / RYAN

The YEAR BOOK of

# Endocrinology

1981

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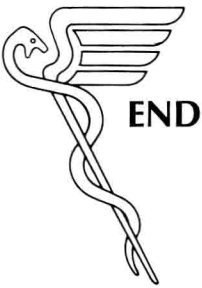

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# 1. The Hypothalamus

▶ Here I am again for the 17th time. The converted porch-library where I sit is lit by a brilliant winter sun reinforced by the glare off the snow in the park across the street. In the near distance is a cub scout troop trudging before and after what looks like an Alaskan dogsled. Alas, there are no huskies and there is no whip, but the boys seem healthy and happy, nonetheless. I am particularly grateful for the sun because my mood is somber. My wife points out that the house is flooded with sunlight in winter because there are no leaves on the shade trees roundabout, an observation that had never occurred to me.

The heaviness I feel stems from a chance encounter with a younger colleague on the shuttle bus which ferries us from the hospital to the railroad station. I had heard that this man's 18-year-old son had recently succumbed to a drug overdose and I was unprepared for our sudden confrontation. I mumbled some words of sympathy, desperate to try to provide some semblance of comfort. Then, almost without thinking, I withdrew from my wallet a picture of my new granddaughter and showed it to him. He was dutifully admiring. Inspired, I launched into an exposition about the state of our world and how it seemed to me to relate to our first grandchild. I pointed out that our culture had changed dramatically as a result of three major influences: the nuclear bomb, the energy shortage, and "the pill." I stressed that all three influences foster the current preoccupation with self and self-interest. ("I wouldn't bring a child into the world to be blown up." "I can't afford a child." "I don't have to have a child if I don't want one.") This egocentricity, I said, cuts us off from both the past and the future and blunts the perception that we are part of a human stream that has value and purpose. I derive tremendous pleasure and a sense of completion with the advent of a grandchild because I feel that it gives me a foothold on still another generation and that, in one more way, my existence is justified. I thought that my friend, through his surviving two children, has still these feelings to look forward to and that he must not lose sight of them. He seemed moved and, perhaps, grateful in his inarticulate way.

The cub scouts are still happily pulling one another back and forth across the snow in their homemade Alaskan sled. They have lost their self-awareness in innocent, mindless activity. Now, to work.—T.B.S. ◀

1–1 **Concentrations of Epidermal Growth Factor, Nerve Growth Factor, and Submandibular Gland Renin in Male and Female Mouse Tissue and Fluids** were studied by Yukio Hirata and David N. Orth (Vanderbilt Univ). The submandibular gland of the mouse contains a variety

(1–1) Endocrinology 105:1382–1387, December 1979.

CONCENTRATIONS OF EGF, NGF, AND SGR IN MOUSE TISSUE EXTRACTS AND BIOLOGIC FLUIDS

| | EGF | | NGF | SGR |
|---|---|---|---|---|
| | RIA | RRA | RIA | RIA |
| Submandibular gland* | | | | |
| Male (5) | 0.331 | 0.529 | 0.461 | 0.451 |
| Female (5) | 0.005 | 0.005 | 0.005 | 0.015 |
| Urine | | | | |
| Male (9)† | 0.235 ± 0.033[c] | 0.356 ± 0.066 | <0.002 | <0.0001 |
| Female (9) | 0.304 ± 0.069 | 0.374 ± 0.084 | <0.002 | <0.0001 |
| Saliva | | | | |
| Male (6) | 0.303 ± 0.112 | 0.498 ± 0.141 | 0.281 ± 0.108 | 0.247 ± 0.086 |
| Female (6) | 0.008‡ | —§ | 0.005‡ | 0.005‡ |
| Milk (10) | 0.025 ± 0.001 | 0.088 ± 0.018 | 0.004‡ | 0.002‡ |

Molar concentrations of each protein were calculated assuming that the molecular weights of mEGF, βNGF, and mSGR are 6,045, 26,000, and 37,000, respectively. Values are expressed as nanomoles per mg wet tissue or nanomoles per ml fluid.

*Pooled glands from five adult male mice and five adult female mice.

†Number of specimens assayed.

[c]Mean ± SE.

‡Pooled specimens were assayed, since the concentrations in these samples were found to be very low.

§Not determined.

of hormone-like substances and enzymes, such as epidermal growth factor (EGF), nerve growth factor (NGF), and submandibular gland renin (SGR). Using specific radioimmunoassays (RIAs) for each of these proteins and a radioreceptor assay (RRA) for EGF, this study examined the concentrations of these three proteins and the molecular size of EGF in the submandibular glands and biologic fluids of normal mice.

Submandibular glands of male mice contained far more radioimmunoassayable EGF, NGF, and SGR than those of female mice (66-, 92-, and 30-fold, respectively) (table). Male saliva also contained far higher concentrations of radioimmunoassayable EGF, NGF, and SGR than that of the female (38-, 56-, and 49-fold, respectively). The molar concentrations of these proteins appeared to be similar to one another in submandibular gland tissue and saliva. Although high concentrations of radioimmunoassayable and radioreceptor assayable EGF were found in urine, there was no significant sex difference, and neither radioimmunoassayable NGF nor SGR were detectable in the urine of either sex. Milk contained smaller amounts of these three proteins than saliva and urine. Gel exclusion chromatography revealed that the major component of EGF in the glands and fluids had equal RIA and RRA activities and was similar in molecular size to mouse EGF standard (molecular weight, 6,045). A high molecular weight (HMW) EGF was observed in the tissue extracts and urine and appeared, at least in tissue, to be EGF noncovalently bound to other proteins.

The data confirm the sexual dimorphism of the submandibular gland of the normal mouse with respect to its content of EGF, NGF, and SGR and indicate that all three proteins are secreted into saliva in concentrations reflecting their concentrations in the submandibular gland. Androgens appear to play a major role in regulating the synthesis and/or storage of these proteins in the mouse submandibular gland. The roughly equimolar concentrations of these proteins in the gland and saliva suggest that they may be derived from a common precursor whose synthesis is regulated by a single gene.

▶ [Brace yourself for a long comment. Our story begins in 1968 (see 1970 YEAR BOOK, p. 15), when investigators in Poona, India, demonstrated in