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At this conference on hormones, Dr. Anthony Cerami reviewed the status of cachectin—a macrophage protein that induces the catabolic state. This new hormone-like activity is increased in the circulation under conditions in which the predominant mode of metabolism is catabolic. Whether different types of stress—eg, starvation, cancer, or burns—induce a

similar hormone is not yet determined. Because the activity measured is very similar to that of the tumor necrosis factor, cachectin may be a member of a family of hormones with activities opposite to those of the somatomedins.

Dr. Robert Ryan reviewed the structural requirements for the binding of the gonadotropins to their receptors. Not only are there peptide-binding domains, but there are also specific sites of the receptor complex that bind the complex carbohydrate chain. These are separate membrane

constituents called lectins. This complex interaction leads to the microaggregation of the receptor complexes and is absolutely required for activation of the adenylyl cyclase second messenger system.

Specific domains within the primary sequence of the alpha (and beta) subunits have been described; these subunits are crucial to the tightly constrained, folded structure of the alpha-beta dimer. Significant structural changes do not allow subunit binding and thus produce biologically inactive molecules.

Dr. Patricia Donahoe reviewed new data on the molecular biology of mullerian-inhibiting substance (MIS)—the fetal regressor for the mullerian system in the male fetus. This substance is very closely related to tumor necrosis factor and

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may have important therapeutic value in cancers of the reproductive tract in females as well as in males. The biology of the material is influenced by the ambient steroid hormone levels, with androgens increasing and estrogens decreasing the MIS activity. This is probably why there is no expression of MIS activity in the female fetus. In the ovary, its probable mechanism of action is that of meiosis inhibition.

In a cultured cell line, MIS is able to inhibit the phosphorylation of the epidermal growth factor (EGF) re-

ceptor by inhibiting the tyrosine kinase activity of the liganded receptor. This may be the fundamental mechanism of action—inhibiting the transmembrane signalling of liganded growth factor (and growth-inhibiting) receptors.

Dr. Robert Lefkowitz discussed his continuing work on the mechanism of homologous desensitization of the beta-adrenergic receptor. He described a new enzyme, beta-adrenergic-receptor kinase (BARK). As desensitization to agonists occurs, this enzyme moves from the cytosol to the membrane.

There are striking similarities to the rhodopsin kinase of the visual system that is “homologously desensitized” by light. BARK is able to phosphorylate only the desensitized receptor. An agonist-induced change in membrane protein allows phosphorylation in the carboxyterminal serine and threonine-rich region. This leads to the uncoupling of the receptor from the cyclase enzyme, sequestration of the receptor, breakdown by phosphatase activity, and regeneration of functional activity as the receptor returns to the membrane. The enzyme can affect a number of receptors so that the *specificity* of this process is built into the specificity of the liganded receptor.