
Introductory Remarks

Arnold Burgen

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BY SIR ARNOLD BURGEN, F.R.S.

The control of secretion is a subject with a venerable history. The key worker who established the study of secretion as a scientific discipline was Regnier de Graaff, who introduced the techniques of forming fistulas so that the rate of secretion could be followed and pure secretions collected. The idea that there was a neural regulation of secretion was largely due to Müller and Ludwig and that of the accompanying increase in blood flow due to Bernard. It is interesting that the longstanding problem of how secretion and blood flow are increased together in the salivary glands has only very recently been elucidated with the evidence that VIP (vasoactive intestinal peptide) is the messenger for vasodilatation. Finally, hormonally activated secretion was discovered by Bayliss and Starling at the beginning of this century. These are just the foundations for the many riddles of secretion, some of which are to be discussed at this meeting.

Secretion involves an asymmetric polarization of a cell with net inward transport at one face and net outward transport at the other face. It necessarily requires two distinct regulatory processes, one to activate the basal membrane through nerves or blood-borne hormones, and the second to activate the apical membrane through intracellular messengers and thus to produce the actual secretions. It is obvious that these two processes must be kept in step. Secretion on any scale cannot be sustained without an abundant supply of fluid and solutes from an enhanced blood supply and an increased cellular energy production. Secretion is rarely monocomponent, so that the activated processes will involve different transport processes for different ions, and neutral small organic molecules as well as synthetic, packaging, and extrusion processes for macromolecules.

It is the very essence of modern biological thought that living organisms are highly regulated – the modern equivalent of Bernard's dictum about the maintenance of the *milieu intérieur*. There are no better systems for exploring problems of regulation than secretory systems, and for this reason this meeting should hold interest well outside those whose primary avocation is the study of secretion.