

## EDITORIAL COMMENTARY



# 100 years of hormones: pathway biology as the fifth force in endocrinology

The term ‘hormone’ (from the Greek verb ‘hormoa’, to excite) was first assigned by Ernest Henry Starling in 1905 to ‘*the chemical messengers which, speeding from cell to cell along the blood stream, may coordinate the activities and growth of different parts of the body*’ (Starling 1905). During the subsequent 100 years, hormone science has evolved into the diverse and complex field of biological research and clinical practice that we recognise as endocrinology today.

The inexorable rise of endocrinology in the 20<sup>th</sup> century was based on the integration of knowledge from multiple scientific disciplines, with physiology, (bio)chemistry, genetics, immunology, molecular biology and, more recently, systems biology all leaving their mark. V C Medvei (1993) in his ‘History of Clinical Endocrinology’ cites Edward A Doisy’s 1936 definition of the ‘Four stages of endocrinology’:

- (1) Recognition of the gland or organ as one producing internal secretion.
- (2) Methods of detecting internal secretion.
- (3) Preparation of extracts leading to a purified hormone.
- (4) The isolation of the pure hormone, determination of its structure and its synthesis.

As a biomedical process, hormone science continues to race ahead, shedding new light on the causes and consequences of normal and abnormal cell-to-cell signalling and providing ever more effective molecular tools to improve health and tackle disease. Scrutiny of the centennial hormone science base reveals the emergence of a fifth stage of endocrinology:

- (5) Pathway biology. Mapping of the cellular receptor(s), down-stream signalling pathways and changes in gene expression through which hormones and related substances act on cellular targets.

This fifth force completes endocrinology’s evolution into a uniquely diverse and dynamic speciality, integrating many if not most of the molecules, mechanisms and medicines upon which post-genomic biomedicine is based. It is therefore fitting that the *Journal of Endocrinology* – as a premier international publication in the field – should celebrate this remarkable centenary with a series of cutting-edge articles presenting endocrinology as an interdisciplinary field that cuts across the life sciences and impacts heavily on global health and well being. Throughout 2005 we will publish a selection of specially commissioned, peer-reviewed articles scoping state-of-the-art endocrinology in its many different forms. The focus will be on basic and clinical research progress, real and anticipated. Some articles will be historical, others visionary; all will be authored by world-renowned specialists invited to showcase their own particular branch of the field.

This first Starling centennial issue of JOE is also Julian Davis’ first as the new Editor-in-Chief. In handing over the reins to Julian I thank him for all the support and comradery he has provided as Associate Editor over the past 5 years and wish him and his new Deputy Editor, Adrian Clark, the best of luck in taking things forward for the next 5 years. Exciting times in an exciting field – long may they continue.

*Stephen G Hillier*  
*Outgoing Editor-in-Chief*

## References

- Starling EH 1905 Croonian Lecture: On the chemical correlation of the functions of the body I. *Lancet* **2** 339–341.
- Medvei VC 1993 *The History of Clinical Endocrinology: A Comprehensive Account of Endocrinology from Earliest Times to the Present Day*, p 4. Camforth:Parthenon Press