
Chapter 2

Anatomical development and physiology of the ENS

Introduction

This session was co-chaired by Raj Goyal and John Furness and its aim was to provide a background of our knowledge to date on the anatomical development and physiological mechanisms within the enteric nervous system (ENS).

The origins and embryonic development of the ENS are outlined by Heather Young and she describes methods of mapping out the differentiation of neurones and glial cells in the ENS and the ultimate development of different classes of enteric neurones. This is important to our understanding of where abnormalities might originate. The complex neural circuitry of the ENS is then addressed

by Marcello Costa, with particular reference to neurones which control motor functions. Elucidation of the relative importance of different neural circuits and the excitatory/inhibitory transmitters involved should help clarify the mechanisms of motor activity in the gut. The location of different receptor types and the substantial diversity of neurones present in the ENS is further expanded by Jan Tack, with a view to specific pharmacological targeting. The chapter is concluded by Kenton Sanders who assesses the postjunctional electrophysiological events in gastrointestinal smooth muscle which are evoked in response to a variety of transmitters or hormones.