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**The Diffuse Endocrine System:
from Embryogenesis to
Carcinogenesis**

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The Diffuse Endocrine System: from Embryogenesis to Carcinogenesis

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With 29 figures and 7 tables



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Abstract

In the present review we will summarise the current knowledge about the cells comprising the Diffuse Endocrine System (DES) in mammalian organs. We will describe the morphological, histochemical and functional traits of these cells in three major systems gastrointestinal, respiratory and prostatic. We will also focus on some aspects of their ontogeny and differentiation, as well as to their relevance in carcinogenesis, especially in neuroendocrine tumors. The first chapter describes the characteristics of DES cells and some of their specific biological and biochemical traits. The second chapter deals with DES in the gastrointestinal organs, with special reference to the new data on the differentiation mechanisms that leads to the appearance of endocrine cells from an undifferentiated stem cell. The third chapter is devoted to DES of the respiratory system and some aspects of its biological role, both, during development and adulthood. Neuroendocrine hyperplasia and neuroendocrine lung tumors are also addressed. Finally, the last chapter deals with the prostatic DES, discussing its probable functional role and its relevance in hormone-resistant prostatic carcinomas.

Key words: APUD cells – carcinogenesis – carcinoids – diffuse endocrine system – diffuse neuroendocrine system – gastroenteropancreatic diffuse endocrine system – neuroendocrine tumors – paraneurons – peptide secreting cells – prostate neuroendocrine cells – pulmonary diffuse endocrine system