Pituitary-specific positive transcription factor 1

PIT1 is a pituitary-specific transcription factor responsible for pituitary development and hormone expression in mammals and is a member of the POU family of transcription factors that regulate mammalian development. The POU family is so named because the first 3 members identified were PIT1 and OCT1 (MIM 164175) of mammals, and Unc-86 of C. elegans (Herr et al., 1988). PIT1 contains 2 protein domains, termed POU-specific and POU-homeo, which are both necessary for high affinity DNA binding on genes encoding growth hormone (GH; MIM 139250) and prolactin (PRL; MIM 176760). PIT1 is also important for regulation of the genes encoding prolactin and thyroid-stimulating hormone beta subunit (TSHB; MIM 188540) by thyrotropin-releasing hormone (TRH; MIM 257120) and cyclic AMP.[supplied by OMIM]

The 2022 World Health Organization classification of tumors of the pituitary gland provides detailed histological subtyping of a PitNET based on the tumor cell lineage, cell type, and related characteristics. The routine use of immunohistochemistry for pituitary transcription factors (PIT1, TPIT, SF1, GATA3, and ERα) is endorsed in this classification. The major PIT1, TPIT, and SF1 lineage-defined PitNET types and subtypes feature distinct morphologic, molecular, and clinical differences. The "null cell" tumor, which is a diagnosis of exclusion, is reserved for PitNETs with no evidence of adenohypophyseal lineage differentiation. Unlike the 2017 WHO classification, mammosomatotroph stem cell tumors and acidophil stem cell tumors represent distinct PIT1-lineage PitNETs. The diagnostic category of PIT1-positive plurihormonal tumor that was introduced in 2017 WHO classification is replaced by two clinicopathologically distinct PitNETs: the immature PIT1-lineage tumor (formerly known as silent subtype 3 tumors) and the mature plurihormonal PIT1-lineage tumor.

Plurihormonal PIT-1–Positive pituitary neuroendocrine tumor