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. Rare unusual plurihormonal tumors feature multi-lineage differentiation. The importance of recognizing multiple synchronous PitNETs is emphasized to avoid misclassification. The term "metastatic PitNET" is advocated to replace the previous terminology "pituitary carcinoma" in order to avoid confusion with neuroendocrine carcinoma (a poorly differentiated epithelial neuroendocrine neoplasm). Subtypes of PitNETs that are associated with a high risk of adverse biology are emphasized within their cell lineage and cell type as well as based on clinical variables. Posterior lobe tumors, the family of pituicyte tumors, include the traditional pituicytoma, the oncocytic form (spindle cell oncocytoma), the granular cell form (granular cell tumor), and the ependymal type (sellar ependymoma). Although these historical terms are entrenched in the literature, they are nonspecific and confusing, such that oncocytic pituicytoma, granular cell pituicytoma, and ependymal pituicytoma are now proposed as more accurate. Tumors with hypothalamic neuronal differentiation are classified as gangliocytomas or neurocytomas based on large and small cell sizes, respectively. This classification sets the standard for a high degree of sophistication to allow individualized patient management approaches [1)]

1)
Asa SL, Mete O, Perry A, Osamura RY. Overview of the 2022 WHO Classification of Pituitary Tumors. Endocr Pathol. 2022 Mar;33(1):6-26. doi: 10.1007/s12022-022-09703-7. Epub 2022 Mar 15. PMID: 35291028.