Unique features of pleomorphic adenoma: keloid-like fibrosis, floret-like tyrosine-rich crystalloids and oncocytic metaplasia

Three unique microscopic features of pleomorphic adenoma of the parotid gland are described. 1) **Stromal hyalinization (keloid-like fibrosis)** is fairly common in pleomorphic adenoma and may predict an aggressive clinical behavior. Occasionally, hyalinization is so extensive as to be called as mummification. 2) Stromal deposition of **floret-like tyrosine-rich crystalloids** have been described in pleomorphic adenoma of the salivary gland and lacrimal gland. The crystal are refractile under polarized microscopy, and may represent components of the salivary secretions. Close relation of the crystalloids to the neoplastic myoepithelial cells is suggested. The have no clinical significance of the salivary gland tumors. 3) **Oncocytic metaplasia**, a common finding in neoplastic and non-neoplastic salivary gland, may be seen in pleomorphic adenoma. Immunohistochemically, the oncocytes lack myoepithelial nature.

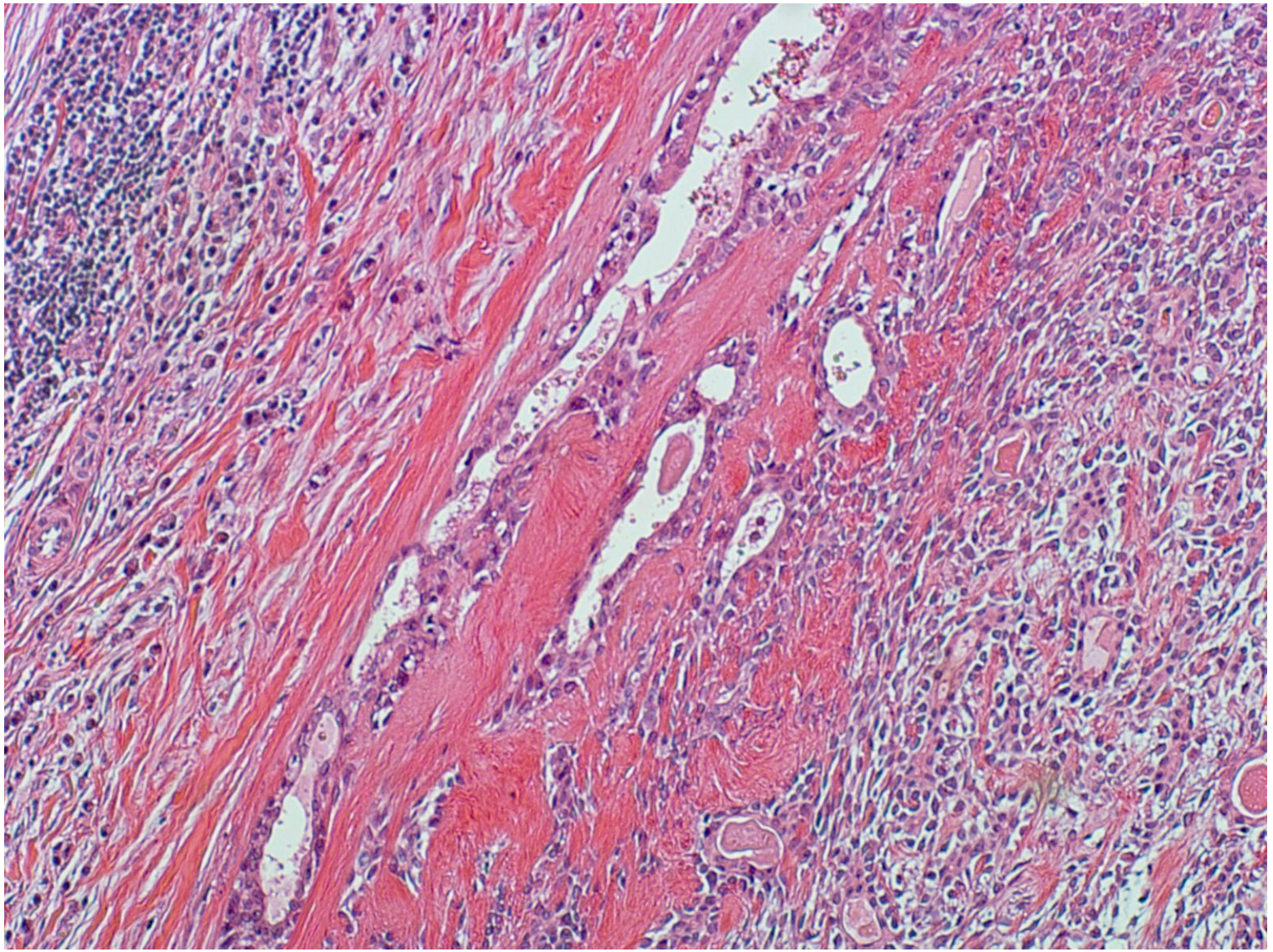
Ref.-1a: Augustine D, et al. Hyalinization as a histomorphological risk predictor in oral pathological lesions. J Oral Biol Craniofac Res 2021; 11(3): 415-422. doi: 10.1016/j.jobcr.2021.05.002

Ref.-1b: Vahdani K, et al. Extensive sclerosis ("mummification") in lacrimal gland pleomorphic adenoma may indicate neighboring malignant transformation. Ophthalmic Plast Reconstr Surg 2022; 38(1): e13-e17. doi: 10.1097/IOP.0000000000002063

Ref.-2: Phulware RH, et al. Rare floret like tyrosine crystals in pleomorphic adenomas of parotid gland. Indian J Otolaryngol Head Neck Surg 2022; 74(Suppl 2): 1797-1799. doi: 10.1007/s12070-020-01807-y

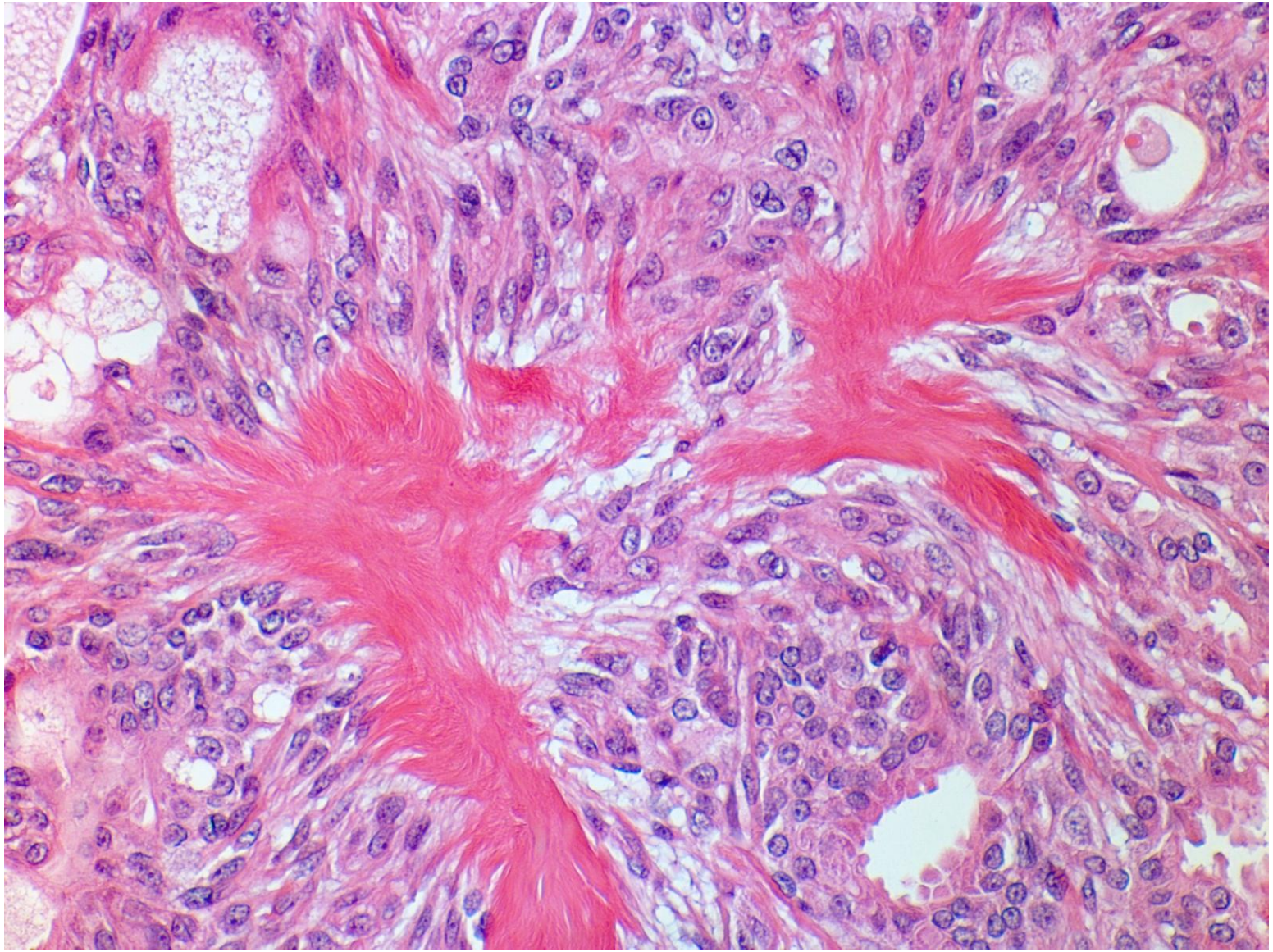
Ref.-3: Di Palma S, et al. Oncocytic change in pleomorphic adenoma: molecular evidence in support of an origin in neoplastic cells. J Clin Pathol 2007; 60(5): 492-499. doi: 10.1136/jcp.2005.031369

Stromal hyalinization (keloid-like fibrosis) in pleomorphic adenoma-1 77M



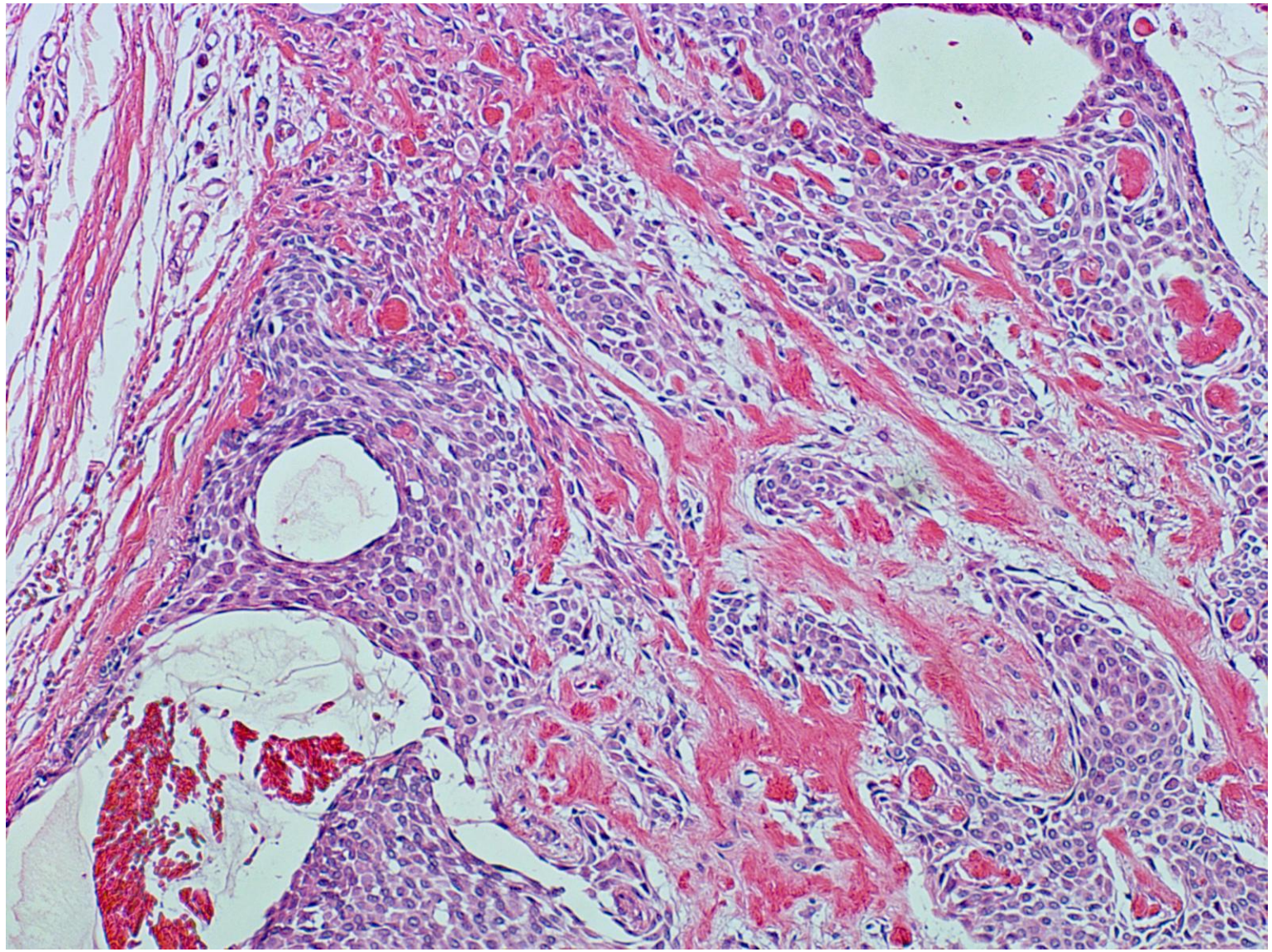
Stromal hyalinization (keloid-like fibrosis) in pleomorphic adenoma of the parotid gland surgically removed from a 77 y-o male patient (H&E-1-1a). Keloid-like hyalinization is evident in the stroma.

Stromal hyalinization (keloid-like fibrosis) in pleomorphic adenoma-1 77M



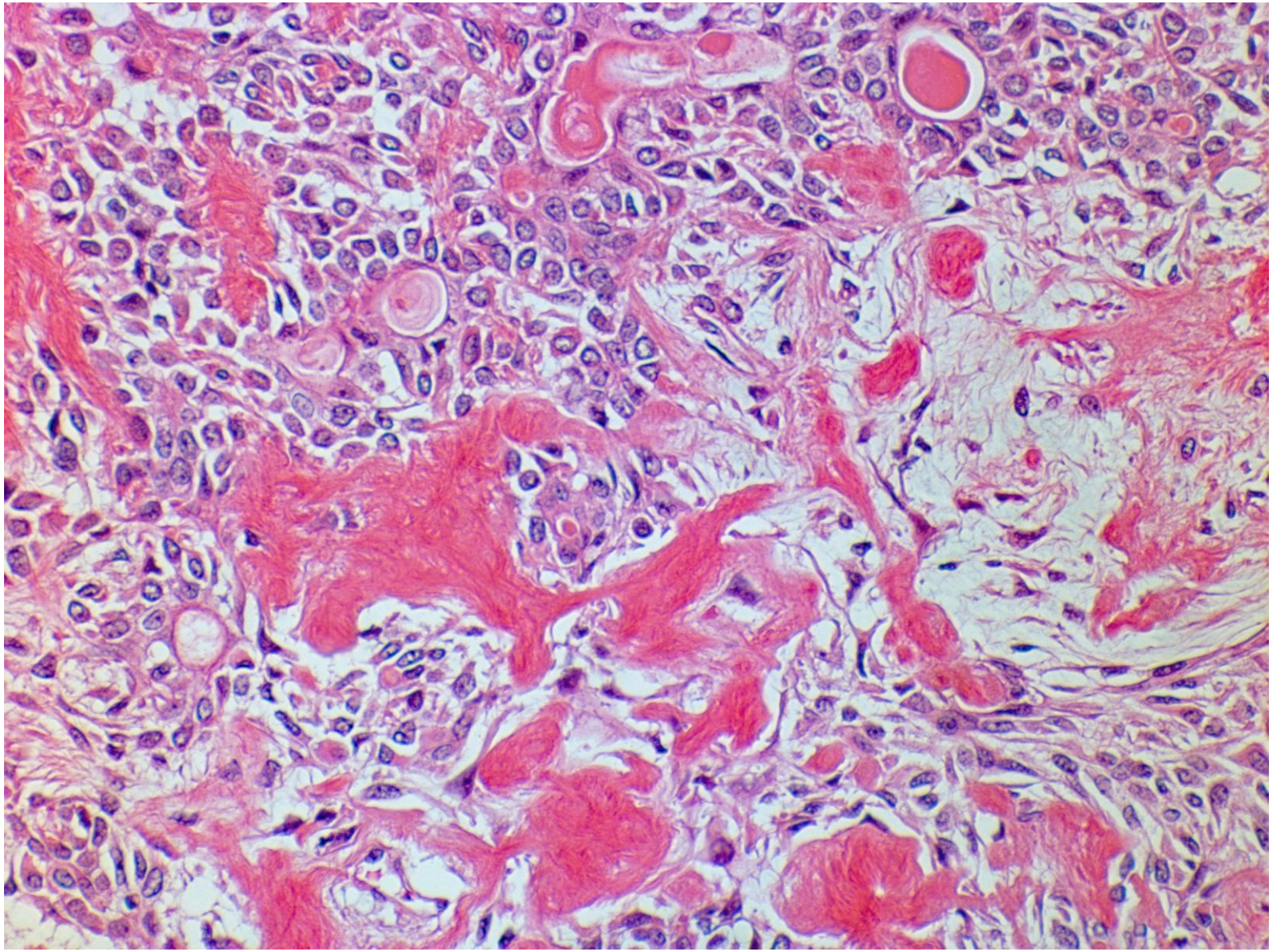
Stromal hyalinization (keloid-like fibrosis) in pleomorphic adenoma of the parotid gland surgically removed from a 77 y-o male patient (H&E-1-1b). Keloid-like hyalinization is evident in the stroma.

Stromal hyalinization (keloid-like fibrosis) in pleomorphic adenoma-2 48M



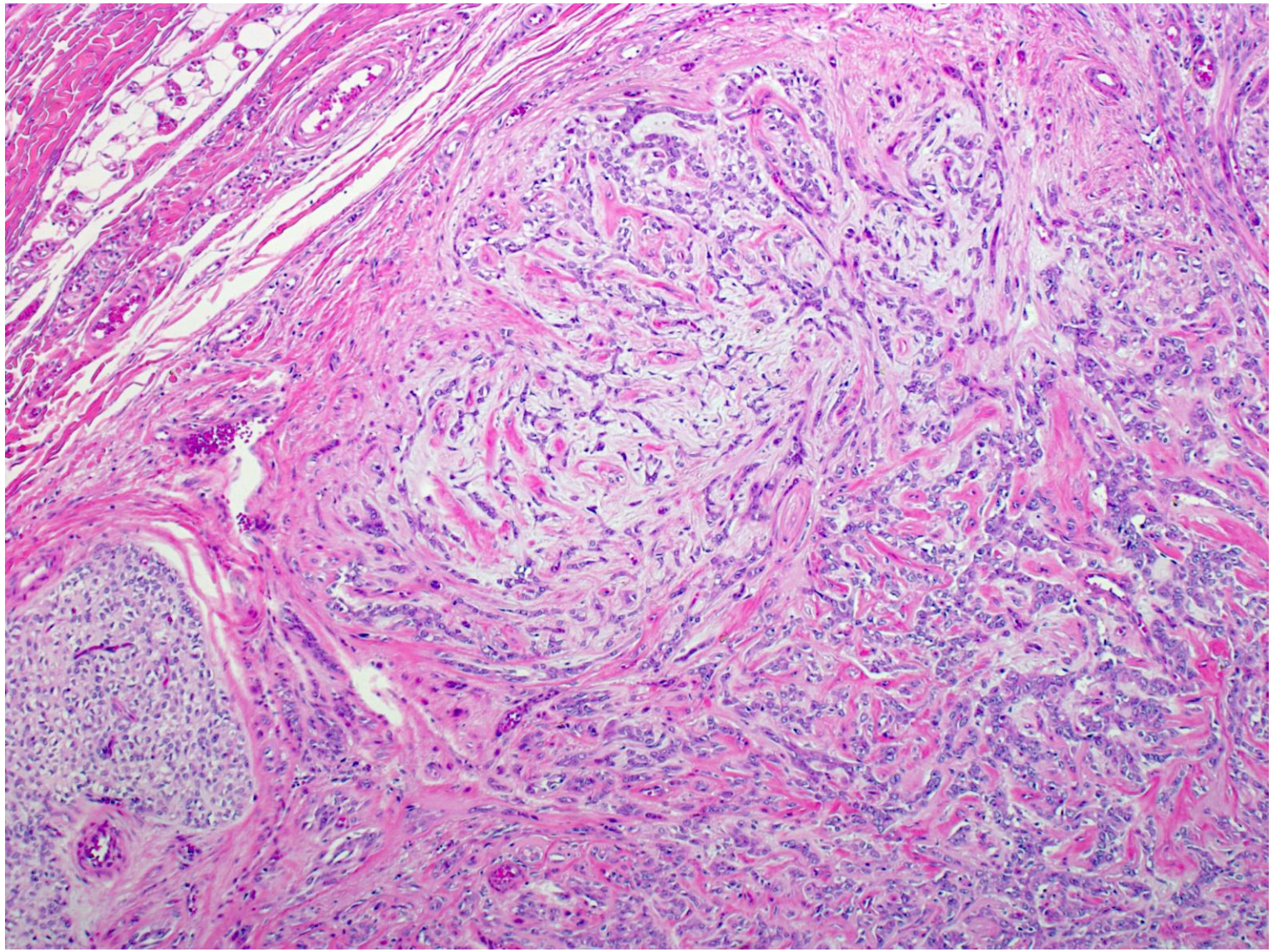
Stromal hyalinization (keloid-like fibrosis) in pleomorphic adenoma of the parotid gland surgically removed from a 48 y-o male patient (H&E-1-2a). Keloid-like hyalinization is evident in the stroma.

Stromal hyalinization (keloid-like fibrosis) in pleomorphic adenoma-2 48M



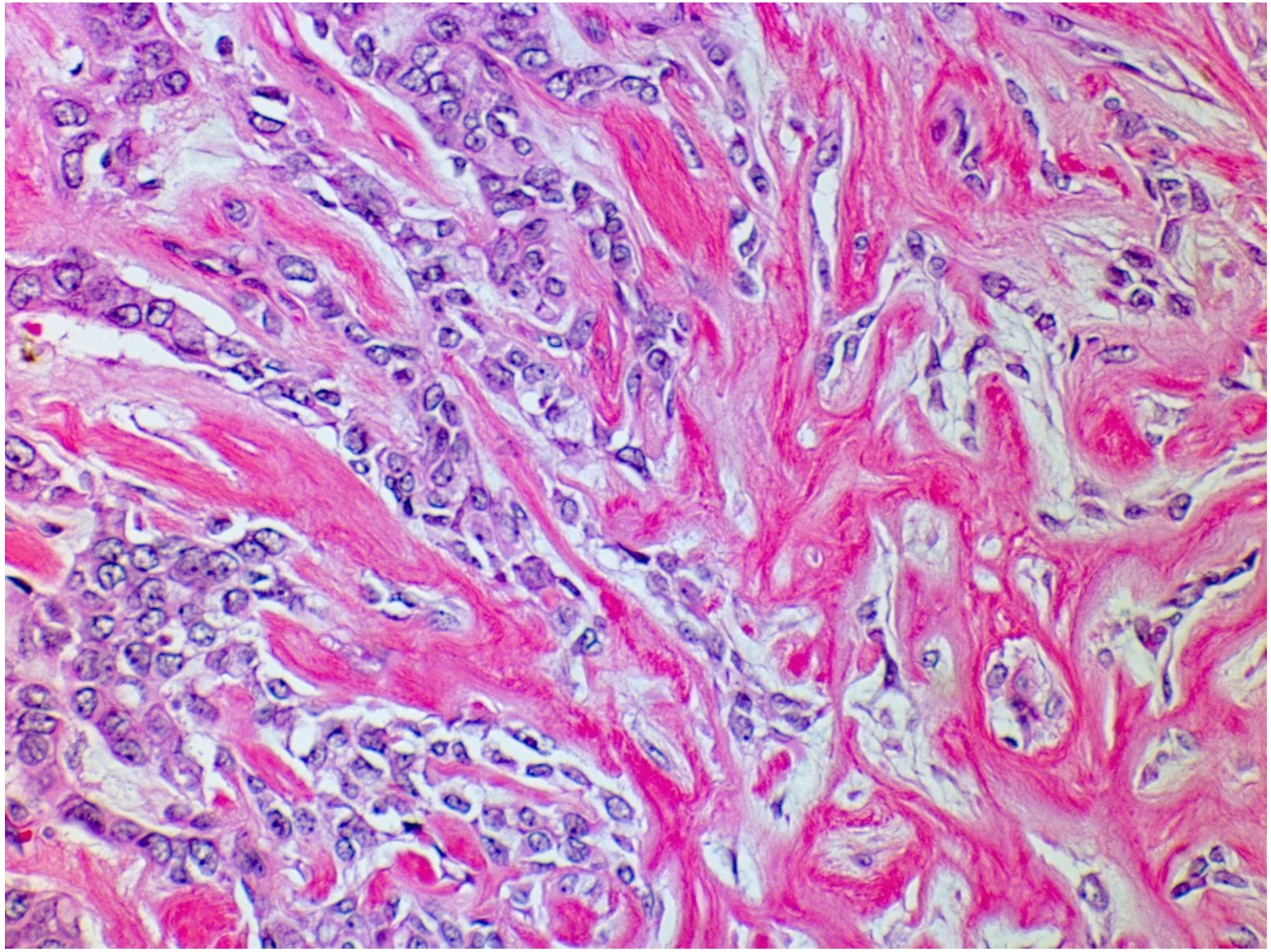
Stromal hyalinization (keloid-like fibrosis) in pleomorphic adenoma of the parotid gland surgically removed from a 48 y-o male patient (H&E-1-2b). Keloid-like hyalinization is evident in the stroma.

Stromal hyalinization (keloid-like fibrosis) in pleomorphic adenoma-3 28F



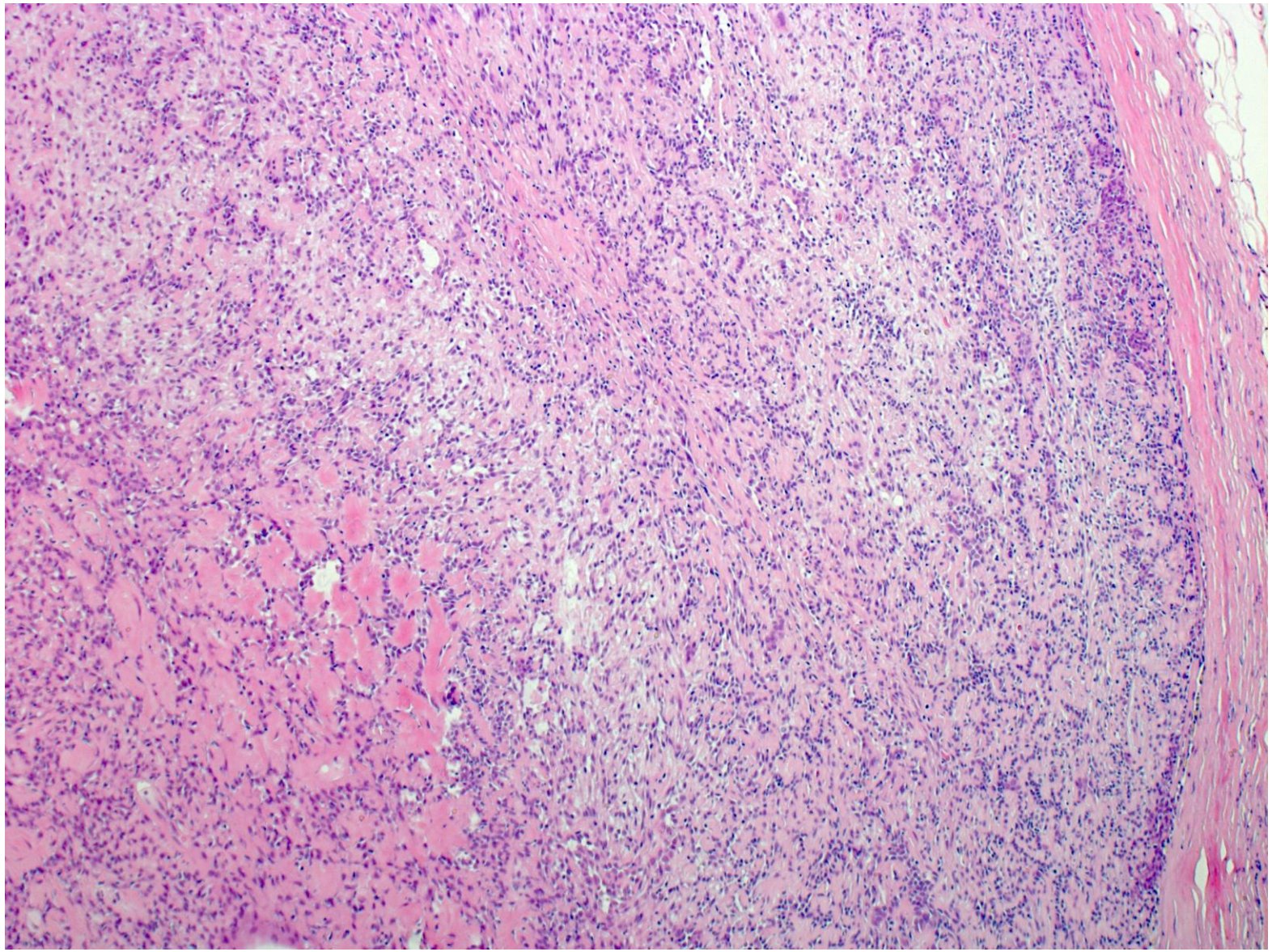
Stromal hyalinization (keloid-like fibrosis) in pleomorphic adenoma of the parotid gland surgically removed from a 28 y-o female patient (H&E-1-3a). Keloid-like hyalinization is evident in the stroma.

Stromal hyalinization (keloid-like fibrosis) in pleomorphic adenoma-3 28F



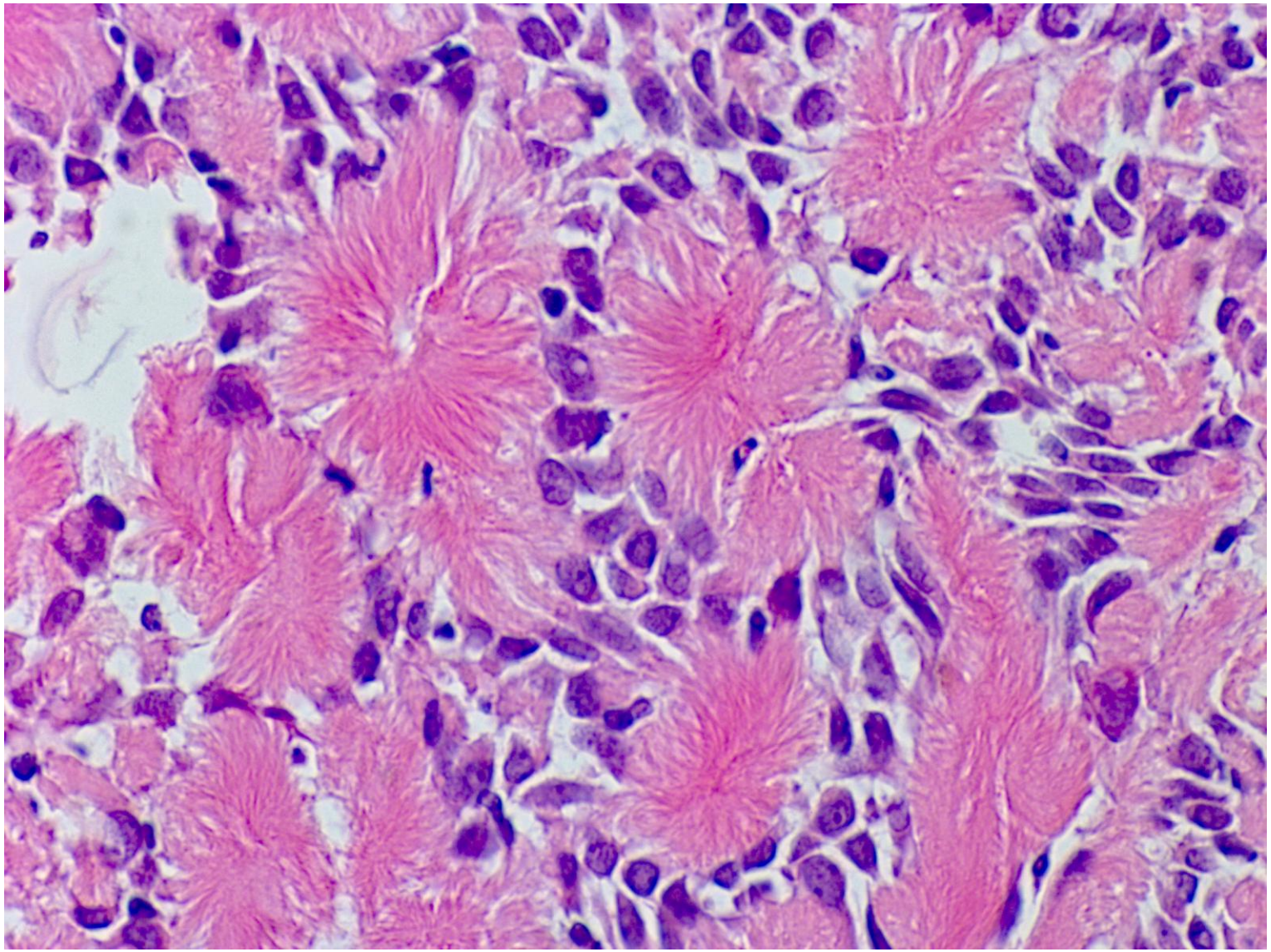
Stromal hyalinization (keloid-like fibrosis) in pleomorphic adenoma of the parotid gland surgically removed from a 28 y-o female patient (H&E-1-3b). Keloid-like hyalinization is evident in the stroma.

floret-like tyrosine-rich crystalloids in pleomorphic adenoma 80F



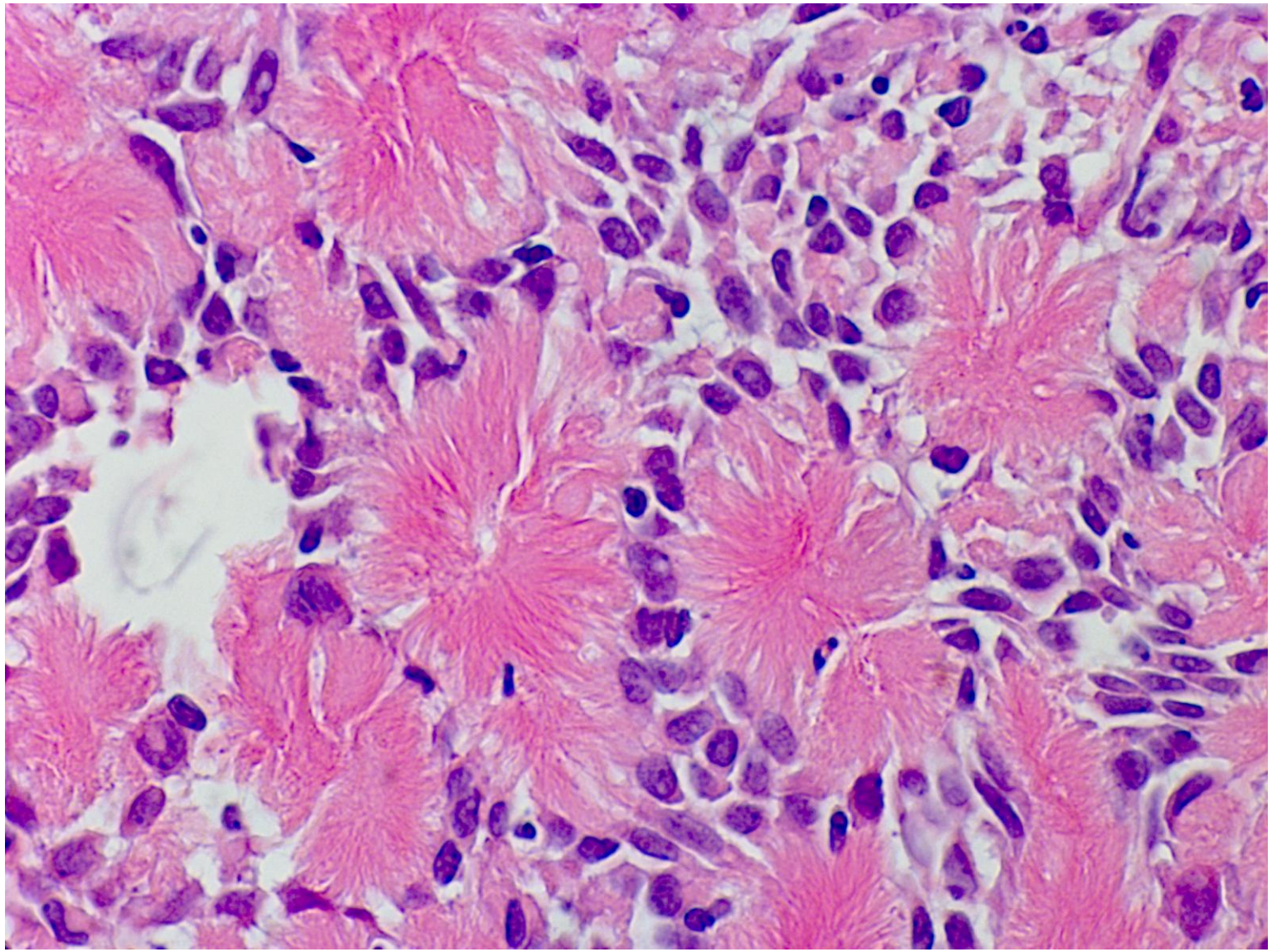
Floret-like tyrosine-rich crystalloids in pleomorphic adenoma seen in an 80 y-o female patient (H&E-2a). In the encapsulated tumor, stromal accumulation of eosinophilic materials is focally observed.

floret-like tyrosine-rich crystalloids in pleomorphic adenoma 80F



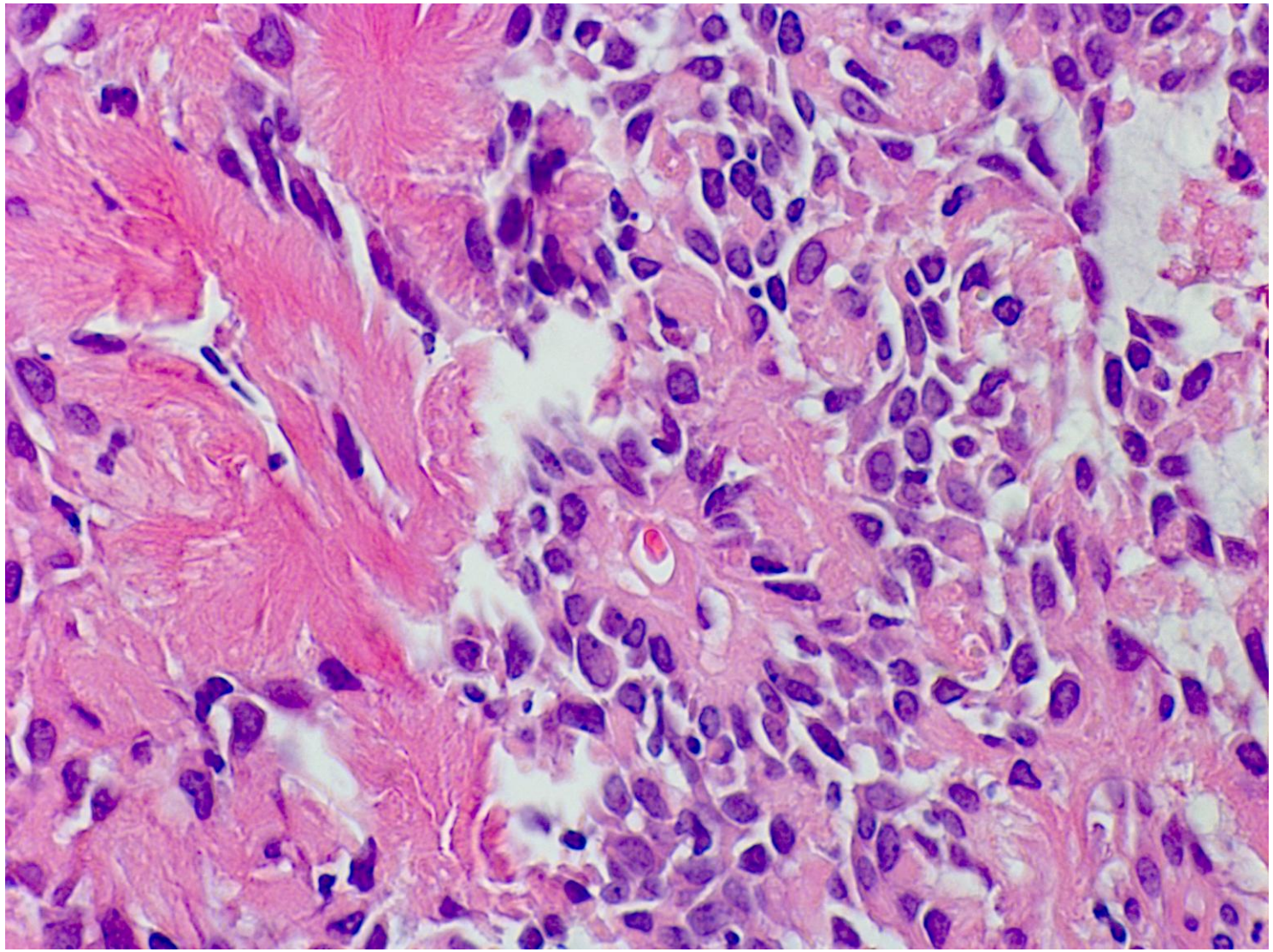
Floret-like tyrosine-rich crystalloids in pleomorphic adenoma seen in an 80 y-o female patient (H&E-2b). The pericellular stroma, accumulation of eosinophilic finger-like materials is observed.

floret-like tyrosine-rich crystalloids in pleomorphic adenoma 80F



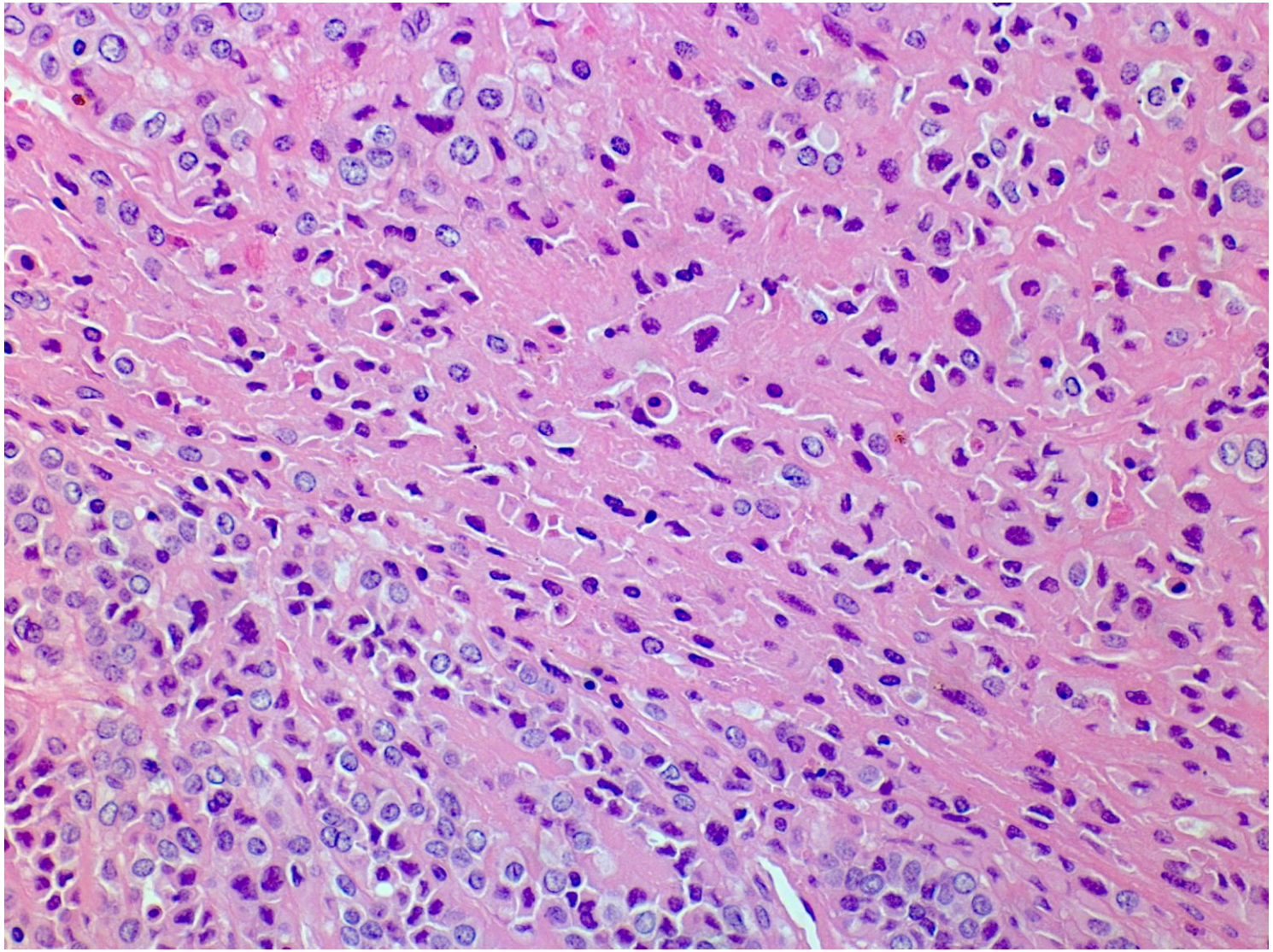
Floret-like tyrosine-rich crystalloids in pleomorphic adenoma seen in an 80 y-o female patient (H&E-2c). The pericellular stroma, accumulation of eosinophilic finger-like materials is observed.

floret-like tyrosine-rich crystalloids in pleomorphic adenoma 80F



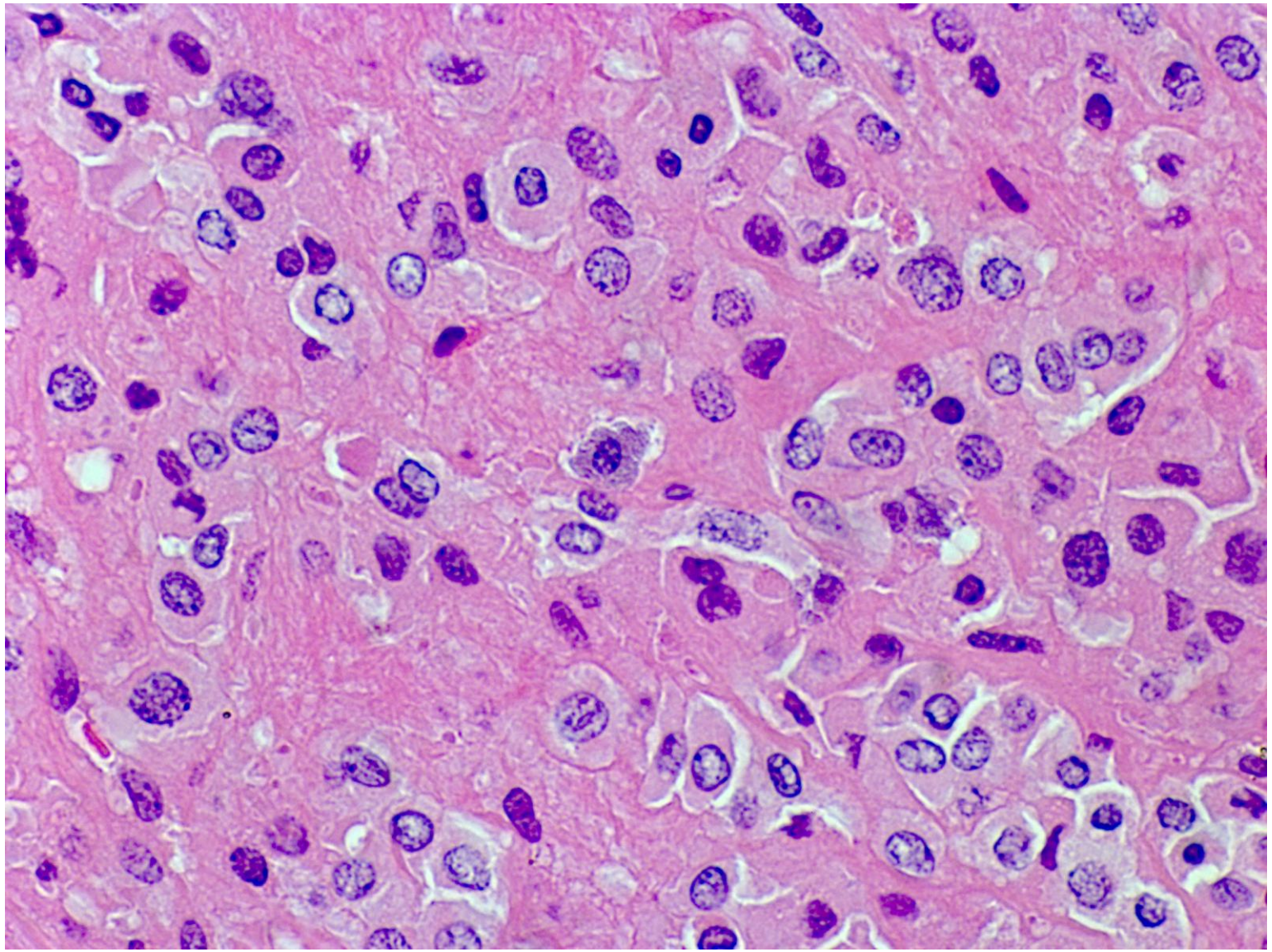
Floret-like tyrosine-rich crystalloids in pleomorphic adenoma seen in an 80 y-o female patient (H&E-2d). The pericellular stroma, accumulation of eosinophilic finger-like materials is observed. Close relation of the crystalloids to the neoplastic myoepithelial cells is suggested.

Oncocytic metaplasia in pleomorphic adenoma 65F



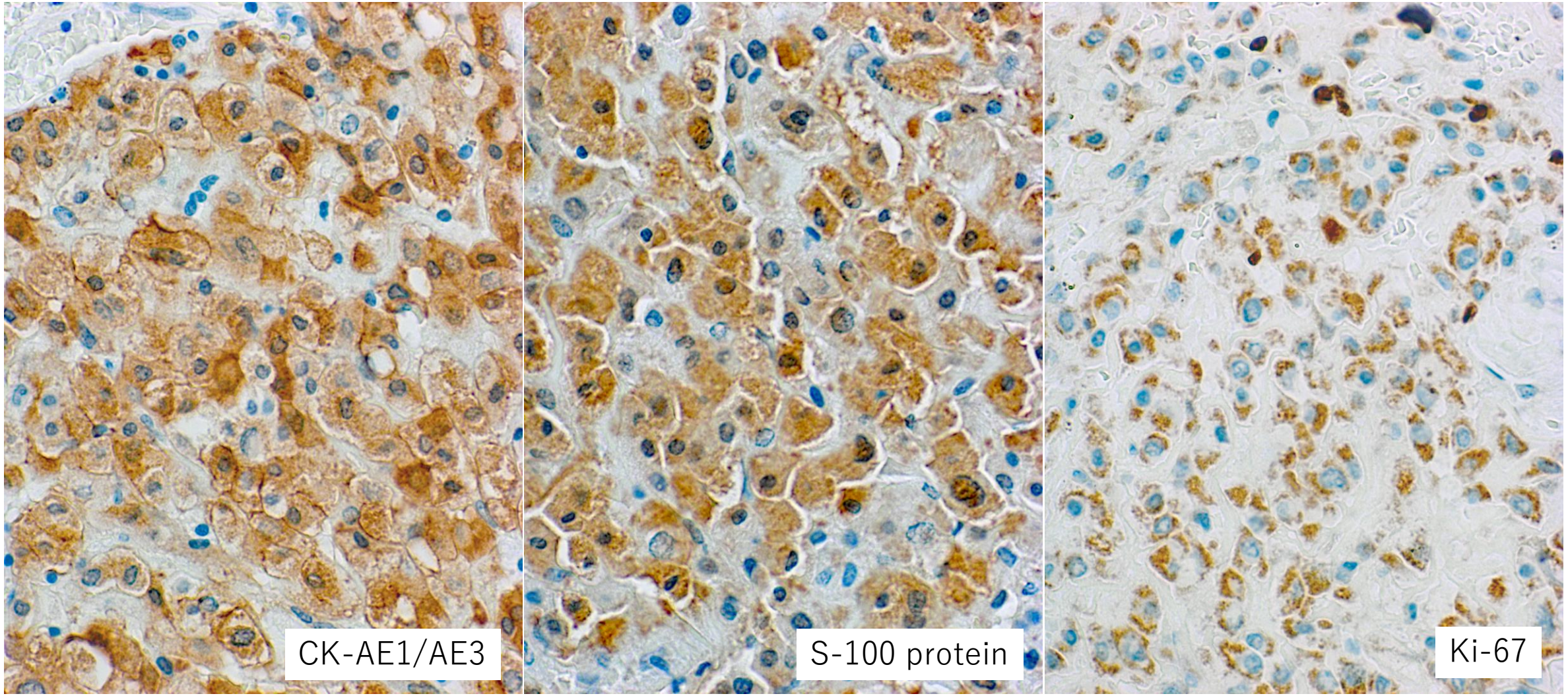
Oncocytic metaplasia in pleomorphic adenoma seen in a 65 y-o female patient (H&E-3a). Oncocytes with plump eosinophilic cytoplasm are focally clustered.

Oncocytic metaplasia in pleomorphic adenoma 65F



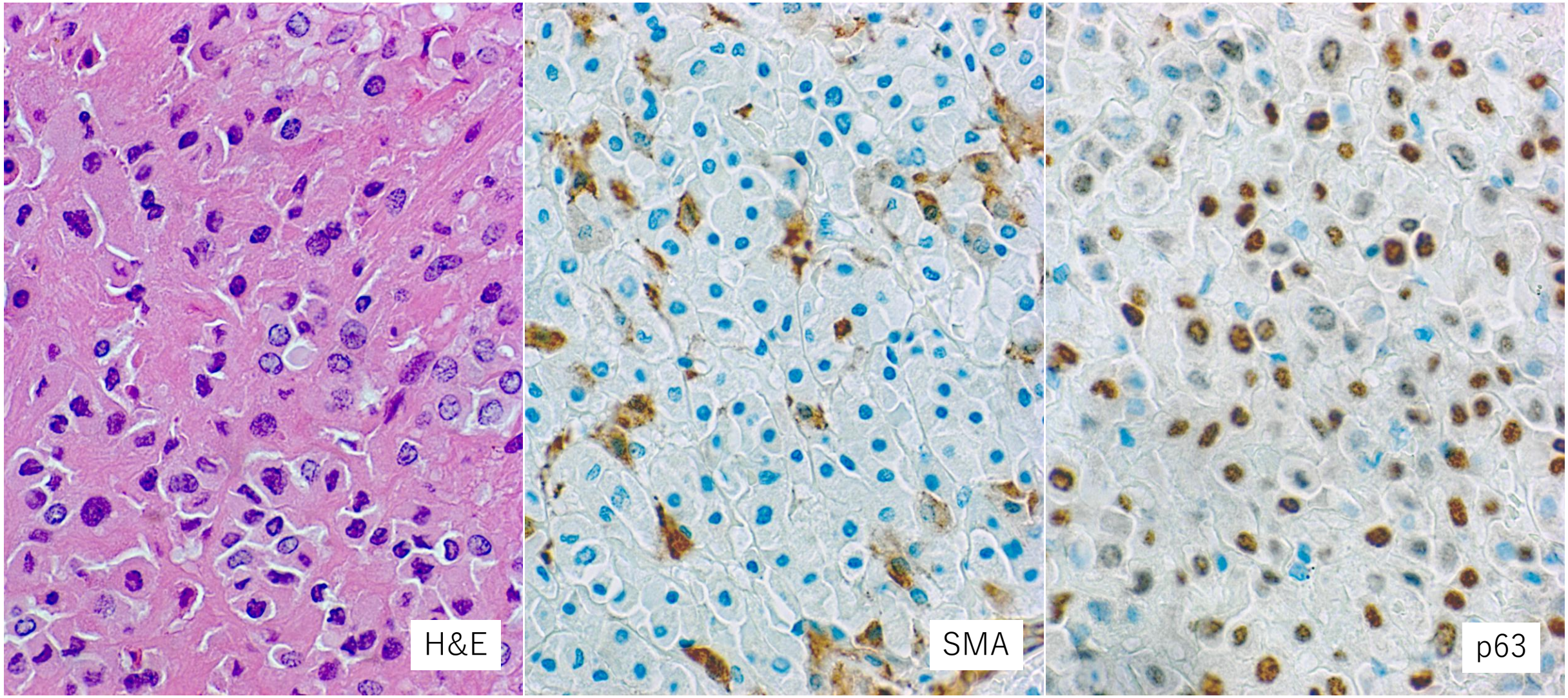
Oncocytic metaplasia in pleomorphic adenoma seen in a 65 y-o female patient (H&E-3b). Oncocytes with plump eosinophilic cytoplasm are focally clustered.

Oncocytic metaplasia in pleomorphic adenoma (65F)



Oncocytic metaplasia in pleomorphic adenoma seen in a 65 y-o female patient (immunostaining). Immunohistochemically, the oncocytes with plump eosinophilic cytoplasm are immunoreactive for pan-cytokeratins (AE1/AE3) (left) and S-100 protein (center). Ki-67 labeling index is low, and nonspecific cytoplasmic granular reactivity corresponds to mitochondria (right).

Oncocytic metaplasia in pleomorphic adenoma (65F)



Oncocytic metaplasia in pleomorphic adenoma seen in a 65 y-o female patient (left: H&E-3c). Immunohistochemically, the oncocytes with plump eosinophilic cytoplasm are fundamentally negative for SMA (center) and p63 (right). The oncocytes may arise from non-myoepithelial cells.