

ESCA - Esophageal carcinoma

Subtype	Proliferation	Prognosis	Therapy (Typical / Investigational)	Common Driver Alterations
EAC (CIN-type adenocarcinoma)	High (CCNE1, MYC activation)	Intermediate– Poor	Surgery ± perioperative chemo (e.g. FLOT), chemoradiation; HER2-targeted agents (trastuzumab) if ERBB2-amplified; PD-1 blockade in PD-L1/MSI-high cases	TP53 (~75%), CDKN2A loss, SMAD4, ERBB2 amplification (~30%), KRAS, PIK3CA
ESCC1	High (CDKN2A loss, CCND1 amplification)	Poor	Surgery ± chemoradiation (often CRT-resistant); investigational NRF2 inhibitors; Hippo-pathway (YAP1) inhibitors in early trials	NFE2L2/KEAP1/CUL3 (NRF2 pathway), SOX2/TP63 amplifications, YAP1 amplification
ESCC2	Moderate (CDK6 amplification)	Poor	Surgery ± chemoradiation; checkpoint inhibitors for immune-infiltrated tumors; XIAP-directed agents under study	NOTCH1, ZNF750 mutations; KDM6A/KDM2D inactivation; PTEN/PIK3R1 loss; CDK6 amp.
ESCC3	Low (no cell-cycle deregulation)	Unknown (small n)	Standard ESCC regimens; PI3K-pathway inhibitors; epigenetic therapies targeting SWI/SNF alterations	SMARCA4, KMT2D mutations; PI3K-pathway activation (PTEN/PIK3R1);