

FIRST HUMAN ESOPHAGEAL SUBMUCOSAL GLAND CELL MODEL

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UEG Week Berlin 2025

Poster

Oesophagus

October 4, 2025

Researchers established the first human organoid and 2D culture model of esophageal submucosal gland epithelial cells, enabling experimental investigation of these previously unstudied cells and their potential role in Barrett's esophagus.

KEY POINTS

- ESMG cells were successfully micro-dissected from esophagectomy specimens and maintained as both 3D organoids and 2D multilayered cultures for several months.
- The cultured ESMG cells exhibited molecular characteristics of both squamous epithelium (TP63, KRT5, KRT13) and columnar epithelium (KRT7, MUC1), along with intestinal stem cell marker OLFM4.
- ESMG cultures expressed HOXA genes characteristic of upper GI tract (HOXA1, HOXA4-7), midgut (HOXA9, HOXA10), and colon (HOXA13), similar to patterns seen in columnar esophageal epithelia.
- ESMG cell proliferation increased with higher EGF concentrations and fibroblast-conditioned medium, and cells could proliferate from extremely low seeding densities.
- This model provides the first experimental platform to investigate ESMG function and their unclear relationship to Barrett's esophagus origin, relevant to researchers studying gastro-esophageal reflux and esophageal metaplasia.

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