

Gut sensory cells that differentially control feeding and gut motility

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- **Date: 2023/3/3 Fri.**
- **Time: 14:00 – 15:00**
- **Venue: 薬学部本館5F W5セミナー室
(Main building, 5F, W5 Seminar Room,
Graduate School of Pharmaceutical Sciences)**

Abstract

Sensory pathways from the gut relay information about ingested nutrients, meal-induced tissue distension, osmolarity changes in the intestinal lumen, and cellular damage from toxins. Enteroendocrine cells are specialized sensory cells of the gut-brain axis that are sparsely distributed along the intestinal epithelium. The functions of enteroendocrine cells have classically been inferred by the gut hormones they release. However, individual enteroendocrine cells typically produce multiple, sometimes apparently opposing, gut hormones in combination, and some gut hormones are also produced elsewhere in the body. Here, we developed approaches involving intersectional genetics to enable selective access to enteroendocrine cells in vivo in mice. Combined use of Cre and Flp alleles effectively targeted major transcriptome-defined enteroendocrine cell lineages that produce serotonin, glucagon-like peptide 1, cholecystikinin, somatostatin, or glucose-dependent insulinotropic polypeptide. Chemogenetic activation of different enteroendocrine cell types variably impacted feeding behavior and gut motility. Defining the physiological roles of different enteroendocrine cell types provides an essential framework for understanding sensory biology of the intestine.