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Expression of G-protein coupled receptors in the basal region of the gastrointestinal epithelium

Elena Kleymenova, William Benson Jr and **Jean-Louis Klein**
GlaxoSmithKline, USA

G-protein coupled receptors (GPCRs) regulate gastrointestinal food intake making them attractive targets for therapeutic interventions of the metabolic syndrome and type II diabetes as well as nutritional control. Basal insulin release and insulin-mediated glucose uptake and dispensation are in part controlled by fatty acids. FFAR1-3 are among principal receptors to free fatty acids and have been proposed as chemo sensors of short/medium (FFAR1) and long (FFAR2-3) free fatty acids in the gut content. Operating in concert with FFARs, GPR 119 is believed to act as a chemo sensor of locally fat-derived molecules in the gut lumen. The luminal chemo sensing hypothesis was largely based on expression of these GPCRs in the gastrointestinal enteroendocrine cells. By IHC, we have also detected expression of FFARs and GPR119 in the basal compartment of enteroendocrine cells. In addition, we have observed expression of these GPCRs at the basolateral aspect of the cell plasma membrane of human and rodent enterocytes. GPR 39, a member of ghrelin/neurotensin receptor subfamily involved in Zn-mediated insulin secretion and gastric emptying was also detected by IHC in enteroendocrine cells and enterocytes at the basolateral aspect of the cell plasma membrane. In polarized CaCo-2 cells used to *in vitro* model gastrointestinal nutrient uptake GPR 39 was expressed at the basolateral aspect of the cell plasma membrane as well. Expression of FFARs, GPR119 and GPR 39 at the basal region of the gastrointestinal epithelium highlights the complexity of the food intake regulation and the need for revision of the luminal chemosensing model. The human biological samples were sourced ethically and their research use was in accord with the terms of the informed consents. All studies were conducted in accordance with the GSK Policy on the Care, Welfare and Treatment of Laboratory Animals and were reviewed by the Institutional Animal Care and Use Committee either at GSK or by the ethical review process at the institution where the work was performed.

Biography

Elena Kleymenova holds Master's Degree in Physics from M Lomonosov Moscow State University (Russia) and PhD in Biology from NN Blochin Cancer Research Center of the Russian Academy of Medical Sciences (Russia). She has conducted Post-doctoral Research at MD Anderson Cancer Center in Texas and continued her studies as a Research Associate at Hamner Institute for Health Sciences, North Carolina. She has authored more than 25 articles in reputed peer-reviewed Life Science journals and served on several NIH Extramural Researches review panels. Currently, she is a Senior Scientific Investigator at the pharmaceutical company, GlaxoSmithKline where she is involved in molecular profiling of new drug targets.

elena.v.kleymenova@gsk.com

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