Diabetes-Related GPCR Ligands

"Islet beta-cell GPCRs that represent potential targets for the treatment of islet dysfunction in type 2 diabetes."

Ligand	Receptor	Effect on Insulin Secretion	Sites of Expression	Other Effects	Available from Phoenix?
CCK	CCKAR	Stimulation	GI Tract, exocrine pancreas	Stimulation of exocrine pancreatic secretion, stimulation of gall bladder contraction.	Yes
Ghrelin	GHSR	Inhibition	Widely expressed	Stimulates GH Secretion	Yes
GIP	GIPR	Stimulation	Adipocytes, small intestine, stomach, adrenal cortex, lung, pituitary, heart, testis, bone, brain	Stimulates GLP1 secretion, inhibits gasric emptying, induces adipocyte differentiation	Yes
GLP1	GLP1R	Stimulation	Brain, heart, kidney, GI tract, lung	Satiety, inhibits gastric emptying, inhibits glucagon secretion	Yes
Glucagon	GCGR	Stimulation	Hepatoctes	Stimulates hepatic glucose output	Yes
Kisspeptin	GPR54	Not known	Brain, blood vessels, placenta	Inhibition of tumor growth	Yes
NPY	Y1	Inhibiton	Widely expressed	Vasoconstriction	Yes
PACAP	PAC1	Stimulation	Widely expressed	Stimulation of glucagon and epinephrine secretion	Yes
VIP and PACAP	VPAC2	Stimulation	Widely expressed	Stimulation of glucagon and epinephrine secretion, vasodilation	Yes

"Islet dysfunction — characterized by a combination of defective insulin secretion, inappropriately high glucagon secretion and reduced beta-cell mass — has a central role in the pathophysiology of type 2 diabetes. Several G protein-coupled receptors (GPCRs) expressed in islet beta-cells are known to be involved in the regulation of islet function, and therefore are potential therapeutic targets. This is evident from the recent success of glucagon-like peptide 1 (GLP1) mimetics and dipeptidyl peptidase 4 (DPP4) inhibitors, which promote activation of the GLP1 receptor to stimulate insulin secretion and inhibit glucagon secretion, and also have the potential to increase beta-cell mass. Other islet beta-cell GPCRs that are involved in the regulation of islet function include the glucose-dependent insulinotropic peptide (GIP) receptor, lipid GPCRs, pleiotropic peptide GPCRs and islet biogenic amine GPCRs." *Ahren, Islet G protein-coupled receptors as potential targets for treatment of type 2 diabetes. Nature Reviews: Drug Discovery. Vol 8, May 2009. Page 369-385.*

Phoenix Pharmaceuticals, Inc.
330 Beach Road, Burlingame CA, 94010, USA
Phone: (650) 558-8898 Email: info@phoenixpeptide.com
www.phoenixpeptide.com

Phoenix Europe GmbH
Viktoriastrasse 3-5, D-76133 Karlsruhe, Germany
Phone: +49-721-1611950 Email: germany@phoenixpeptide.com
www.phoenixpeptide.com