



## GPR40 (E-20): sc-28415

### BACKGROUND

G protein-coupled receptors provide attractive targets for drug therapy due to the sheer size and diversity of ligands within this receptor family. G protein-coupled receptor 40 (GPR40) functions as a cell-surface receptor for long-chain free fatty acids (FFAs). FFAs provide an important energy source, but also function as signaling molecules in various pathways, notably the process of Insulin secretion. In pancreatic tissue, the interaction of long chain FFAs with GPR40 amplifies glucose-stimulated Insulin secretion from beta cells, suggesting a possible role for GPR40 in the treatment of diabetes associated with Insulin-deficiency. Specifically, the Arg211His polymorphism in the GPR40 gene may contribute to the variation of Insulin secretory capacity in Japanese men. Also, GPR40 may be involved in the control of breast cancer cell growth by fatty acids and, therefore, provide a link between fat and cancer.

### REFERENCES

1. Sawzdargo, M., et al. 1997. A cluster of four novel human G protein-coupled receptor genes occurring in close proximity to CD22 gene on chromosome 19q13.1. *Biochem. Biophys. Res. Commun.* 239: 543-547.
2. Briscoe, C.P., et al. 2003. The orphan G protein-coupled receptor GPR40 is activated by medium and long chain fatty acids. *J. Biol. Chem.* 278: 11303-11311.
3. Itoh, Y., Kawamata, Y., Harada, M., Kobayashi, M., Fujii, R., Fukusumi, S., Ogi, K., Hosoya, M., Tanaka, Y., Uejima, H., Tanaka, H., Maruyama, M., Satoh, R., Okubo, S., Kizawa, H., Komatsu, H., Matsumura, F., Noguchi, Y., Shinohara, T., Hinuma, S., Fujisawa, Y. and Fujino, M. 2003. Free fatty acids regulate insulin secretion from pancreatic beta cells through GPR40. *Nature.* 422: 173-176.
4. Lee, D.K., George, S.R. and O'Dowd, B.F. 2003. Continued discovery of ligands for G protein-coupled receptors. *Life Sci.* 74: 293-297.
5. Yonezawa, T., Katoh, K. and Obara, Y. 2004. Existence of GPR40 functioning in a human breast cancer cell line, MCF-7. *Biochem. Biophys. Res. Commun.* 314: 805-809.

### CHROMOSOMAL LOCATION

Genetic locus: FFAR1 (human) mapping to 19q13.12; Ffar1 (mouse) mapping to 7 B1.

### SOURCE

GPR40 (E-20) is an affinity purified goat polyclonal antibody raised against a peptide mapping within an internal extracellular domain of GPR40 of human origin.

### STORAGE

Store at 4° C, **\*\*DO NOT FREEZE\*\***. Stable for one year from the date of shipment. Non-hazardous. No MSDS required.

### PROTOCOLS

See our web site at [www.scbt.com](http://www.scbt.com) or our catalog for detailed protocols and support products.

### PRODUCT

Each vial contains 200 µg IgG in 1.0 ml of PBS with < 0.1% sodium azide and 0.1% gelatin.

Blocking peptide available for competition studies, sc-28415 P, (100 µg peptide in 0.5 ml PBS containing < 0.1% sodium azide and 0.2% BSA).

### APPLICATIONS

GPR40 (E-20) is recommended for detection of GPR40 of human and, to a lesser extent, mouse and rat origin by Western Blotting (starting dilution 1:200, dilution range 1:100-1:1000), immunofluorescence (starting dilution 1:50, dilution range 1:50-1:500) and solid phase ELISA (starting dilution 1:30, dilution range 1:30-1:3000).

Suitable for use as control antibody for GPR40 siRNA (h): sc-105408, GPR40 shRNA Plasmid (h): sc-105408-SH and GPR40 shRNA (h) Lentiviral Particles: sc-105408-V.

Molecular Weight of GPR40: 31 kDa.

Positive Controls: MCF7 whole cell lysate: sc-2206, mouse pancreas extract or pancreatic tissue.

### RECOMMENDED SECONDARY REAGENTS

To ensure optimal results, the following support (secondary) reagents are recommended: 1) Western Blotting: use donkey anti-goat IgG-HRP: sc-2020 (dilution range: 1:2000-1:100,000) or Cruz Marker™ compatible donkey anti-goat IgG-HRP: sc-2033 (dilution range: 1:2000-1:5000), Cruz Marker™ Molecular Weight Standards: sc-2035, TBS Blotto A Blocking Reagent: sc-2333 and Western Blotting Luminol Reagent: sc-2048. 2) Immunofluorescence: use donkey anti-goat IgG-FITC: sc-2024 (dilution range: 1:100-1:400) or donkey anti-goat IgG-TR: sc-2783 (dilution range: 1:100-1:400) with UltraCruz™ Mounting Medium: sc-24941.

### RESEARCH USE

For research use only, not for use in diagnostic procedures.