

# Orai1 (G-2): sc-377281

## BACKGROUND

Orai1 (Orai calcium release-activated calcium modulator 1), also known as ORAT1, CRACM1 (calcium release-activated calcium modulator 1) or TMEM142A (transmembrane protein 142A), is a 301 amino acid multi-pass membrane protein that belongs to the Orai family of proteins. Localizing to the plasma membrane, Orai1 plays an important role in store-operated calcium (SOC) entry, a process involving  $\text{Ca}^{2+}$  influx and replenishment of  $\text{Ca}^{2+}$  stores formerly emptied through the action of inositol 1,4,5-trisphosphate production and other  $\text{Ca}^{2+}$  mobilizing agents. Specifically, Orai1 functions as a pore sub-unit of the store-operated calcium release-activated calcium channel (CRAC) and is essential for proper function of the CRAC channel. CRAC channels are responsible for mediating calcium influx in T-cells and play an important role in the immune response. Mutations in the gene encoding Orai1 can result in severe combined immunodeficiency (SCID).

## CHROMOSOMAL LOCATION

Genetic locus: ORAI1 (human) mapping to 12q24.31.

## SOURCE

Orai1 (G-2) is a mouse monoclonal antibody raised against amino acids 256-301 mapping at the C-terminus of Orai1 of human origin.

## PRODUCT

Each vial contains 200  $\mu\text{g}$  IgG<sub>1</sub> kappa light chain in 1.0 ml of PBS with < 0.1% sodium azide and 0.1% gelatin.

Orai1 (G-2) is available conjugated to agarose (sc-377281 AC), 500  $\mu\text{g}$ /0.25 ml agarose in 1 ml, for IP; to HRP (sc-377281 HRP), 200  $\mu\text{g}$ /ml, for WB, IHC(P) and ELISA; to either phycoerythrin (sc-377281 PE), fluorescein (sc-377281 FITC), Alexa Fluor® 488 (sc-377281 AF488), Alexa Fluor® 546 (sc-377281 AF546), Alexa Fluor® 594 (sc-377281 AF594) or Alexa Fluor® 647 (sc-377281 AF647), 200  $\mu\text{g}$ /ml, for WB (RGB), IF, IHC(P) and FCM; and to either Alexa Fluor® 680 (sc-377281 AF680) or Alexa Fluor® 790 (sc-377281 AF790), 200  $\mu\text{g}$ /ml, for Near-Infrared (NIR) WB, IF and FCM.

## APPLICATIONS

Orai1 (G-2) is recommended for detection of Orai1 of human origin by Western Blotting (starting dilution 1:100, dilution range 1:100-1:1000), immunoprecipitation [1-2  $\mu\text{g}$  per 100-500  $\mu\text{g}$  of total protein (1 ml of cell lysate)], immunofluorescence (starting dilution 1:50, dilution range 1:50-1:500), immunohistochemistry (including paraffin-embedded sections) (starting dilution 1:50, dilution range 1:50-1:500) and solid phase ELISA (starting dilution 1:30, dilution range 1:30-1:3000).

Orai1 (G-2) is also recommended for detection of Orai1 in additional species, including equine, bovine and porcine.

Suitable for use as control antibody for Orai1 siRNA (h): sc-76001, Orai1 shRNA Plasmid (h): sc-76001-SH and Orai1 shRNA (h) Lentiviral Particles: sc-76001-V.

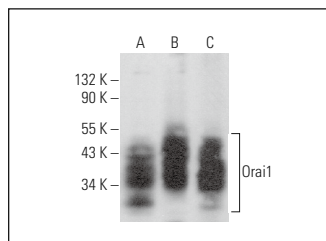
Molecular Weight of Orai1: 38 kDa.

Molecular Weight of glycosylated Orai1: 50 kDa.

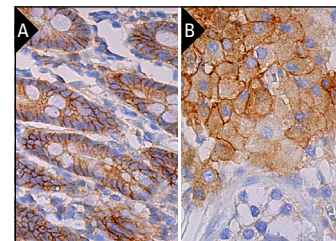
## STORAGE

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

## DATA



Orai1 (G-2): sc-377281. Western blot analysis of Orai1 expression in A-375 (A), SUP-T1 (B) and T-47D (C) whole cell lysates.



Orai1 (G-2): sc-377281. Immunoperoxidase staining of formalin fixed, paraffin-embedded human duodenum tissue showing membrane staining of glandular cells (A). Immunoperoxidase staining of formalin fixed, paraffin-embedded human testis tissue showing membrane and cytoplasmic staining of Leydig cells (B).

## SELECT PRODUCT CITATIONS

- Wang, L., et al. 2015. Retrograde regulation of Stim1-Orai1 interaction and store-operated  $\text{Ca}^{2+}$  entry by calsequestrin. *Sci. Rep.* 5: 11349.
- Cubillos, S. and Norgauer, J. 2016. Low vitamin D-modulated calcium-regulating proteins in psoriasis vulgaris plaques: S100A7 overexpression depends on joint involvement. *Int. J. Mol. Med.* 38: 1083-1092.
- Gazda, K., et al. 2017. Knockdown of amyloid precursor protein increases calcium levels in the endoplasmic reticulum. *Sci. Rep.* 7: 14512.
- Babaer, D., et al. 2018. High salt induces P-glycoprotein mediated treatment resistance in breast cancer cells through store operated calcium influx. *Oncotarget* 9: 25193-25205.
- Chen, Y.F., et al. 2019. The distinct role of Stim1 and Stim2 in the regulation of store-operated  $\text{Ca}^{2+}$  entry and cellular function. *J. Cell. Physiol.* 234: 8727-8739.
- Maciag, F., et al. 2019. Behavioral and electrophysiological changes in female mice overexpressing Orai1 in neurons. *Biochim. Biophys. Acta Mol. Cell Res.* 1866: 1137-1150.
- Karakus, E., et al. 2020. The orphan solute carrier SLC10A7 is a novel negative regulator of intracellular calcium signaling. *Sci. Rep.* 10: 7248.
- Kim, M.S., et al. 2020. Restricting extracellular  $\text{Ca}^{2+}$  on gefitinib-resistant non-small cell lung cancer cells reverses altered epidermal growth factor-mediated  $\text{Ca}^{2+}$  response, which consequently enhances gefitinib sensitivity. *PLoS ONE* 15: e0238155.

## RESEARCH USE

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

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