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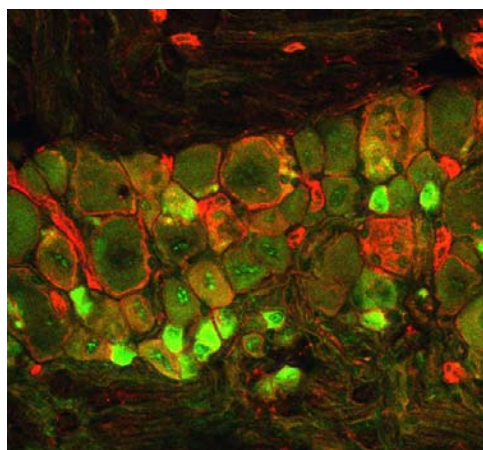
Thermosensitive TRP Channel Anti TRPM8 (CMR1) Polyclonal Antibody

All mammals including human being can detect the temperature by their own skin. Recently, several molecular mechanism has been proposed to explain physiological stimuli. For example capsaicin receptors, TRPV1 (VR-1) and TRPV2 (VRL-1), which are related with noxious stimuli were cloned and found that these molecules were activated by temperatures exceeding 43°C and exceeding 50°C.

Jullus et al. and Patapoutian et al. found novel receptor, TRPM8 (cold and menthol-sensitive receptor 1 : CMR1), and reported to *Nature* and *Cell* in which they described that these molecules were activated in temperature range 8~28°C. These findings might become driving force to investigate the mammalian peripheral nervous system. So that, in near future, the advantage of molecular physiology could account for thermal stimuli such as 1) Why human can distinguish between cold and warm ?
2) Why the nervous activity accompanied by cold sensation does not always induce an unpleasant feeling or pain?

This antibody is very useful for investigating TRPM8 (CMR1) expression pattern and analyzing the function.

Package Size	25µg (100µL/vial)
Format	Rabbit polyclonal antibody 0.25mg/mL
Buffer	Block Ace as a stabilizer, containing 0.1%Proclin as bacteriostat
Storage	Store below -20°C. Once thawed, store at 4°C. Repeated freeze-thaw cycles should be avoided.
Purification method	This antibody was purified from rabbit serum by affinity chromatography.
Working dilution	Immunohistochemistry : 2 ~5µg/mL



Immunohistochemistry

Sample : Rat dorsal root neuron
(Positive: Green)

Preparation of antibodies and instruction
Dr.Makoto Tominaga at Department of Physiology,
Mie University School of Medicine



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【Reference】

- 1: Story GM, Peier AM, Reeve AJ, Eid SR, Mosbacher J, Hricik TR, Earley TJ, Hergarden AC, Andersson DA, Hwang SW, McIntyre P, Jegla T, Bevan S, Patapoutian A. ANKTM1, a TRP-like channel expressed in nociceptive neurons, is activated by cold temperatures. *Cell*. 2003 Mar 21;112(6):819-29..
- 2: Nealen ML, Gold MS, Thut PD, Caterina MJ. TRPM8 mRNA is expressed in a subset of cold-responsive trigeminal neurons from rat. *J Neurophysiol*. 2003 Mar 12
- 3: Zemelman BV, Nesnas N, Lee GA, Miesenbock G. Photochemical gating of heterologous ion channels: remote control over genetically designated populations of neurons. *Proc Natl Acad Sci U S A*. 2003 Feb 4;100(3):1352-7.
- 4: Guler AD, Lee H, Iida T, Shimizu I, Tominaga M, Caterina M. Heat-evoked activation of the ion channel, TRPV4. *J Neurosci*. 2002 Aug 1;22(15):6408-14.
- 5: Xu H, Ramsey IS, Kotecha SA, Moran MM, Chong JA, Lawson D, Ge P, Lilly J, Silos-Santiago I, Xie Y, DiStefano PS, Curtis R, Clapham DE. TRPV3 is a calcium-permeable temperature-sensitive cation channel. *Nature*. 2002 Jul 11;418(6894):181-6.
- 6: Peier AM, Moqrich A, Hergarden AC, Reeve AJ, Andersson DA, Story GM, Earley TJ, Dragoni I, McIntyre P, Bevan S, Patapoutian A. A TRP channel that senses cold stimuli and menthol. *Cell*. 2002 Mar 8;108(5):705-15.
- 7: McKemy DD, Neuhauss WM, Julius D. Related. Identification of a cold receptor reveals a general role for TRP channels in thermosensation. *Nature*. 2002 Mar 7;416(6876):52-8.
- 8: Obata K, Katsura H, Mizushima T, Yamanaka H, Kobayashi K, Dai Y, Fukuoka T, Tokunaga A, Tominaga M, Noguchi K. TRPA1 induced in sensory neurons contributes to cold hyperalgesia after inflammation and nerve injury. *J Clin Invest*. 2005 Sep;115(9):2393-401.*
- 9: Bautista DM, Siemens J, Glazer JM, Tsuruda PR, Basbaum AI, Stucky CL, Jordt SE, Julius D. The menthol receptor TRPM8 is the principal detector of environmental cold. *Nature*. 2007 Jul 12;448(7150):204-8. Epub 2007 May 30.*

* Application Reference

Additional: Anti Thermosensitive TRP Channel antibodies available from TRANSGENIC INC.

TRPV1	KM018	Anti Rat TRPV1 (VR-1) Polyclonal Antibody
TRPV2	KM019	Anti Rat TRPV2 (VRL-1) Polyclonal Antibody
TRPM8	KM060	Anti Rat TRPM8 (CMR1) Polyclonal Antibody
phospho-TRPV1	KM112	Anti Rat phospho TRPV1 (VR-1) Polyclonal Antibody
TRPV4	KM119	Anti Mouse TRPV4 Polyclonal Antibody
TRPA1	KM120	Anti Mouse TRPA1 Polyclonal Antibody

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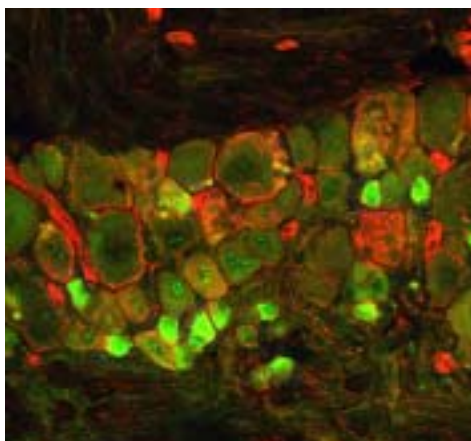
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温度感受性 TRP チャネル
抗 TRPM8 (CMR1) ポリクローナル抗体

ヒトをはじめ哺乳動物は、その皮膚において温度を感じることができます。近年、温度感受性に関する分子生理学的な知見が蓄積しつつあります。例えば、痛みに関する分子としてクローニングされたカプサイシン関連の受容体①TRPV1 (VR-1)、②TRPV2 (VRL-1) はそれぞれ43℃以上、50℃以上の領域に感受性があるとされています。Jullus ら、Patapoutian らにより新規に 8～28℃の領域をカバーする受容体として TRPM8 (Cold and menthol-sensitive receptor 1: CMR1) が発見され、それぞれ*Nature*、*Cell*に報告されました。これにより、今後冷たいものに触れたときの涼冷感や痛み感覚の研究、45℃以上の高温刺激で冷感覚が引き起こされる、いわゆる矛盾冷覚の研究に一石を投じることが予想され、1) 人体はなぜ、あるものが熱い、冷たいという区別ができるのか？ 2) なぜ冷たい刺激に伴う神経の活性化が必ずしも不快感や痛みを伴わないのか？ などの研究が分子レベルで進むことが予想されます。本抗体は抗原の発現部位の同定やその機能解析に利用可能です。

容量	25μg (100μL/vial)
形状	ウサギポリクローナル抗体 0.25mg/mL、凍結品
バッファー	PBS [2%ブロッカーエース(安定化蛋白)、0.1%proclin 含有]
保管方法	－20℃以下 抗体を低濃度にて冷蔵保管されますと、失活する恐れがあります。 融解後は4℃で保存し、お早めにご使用下さい。 また凍結融解を繰り返すことは避けて下さい。
製造方法	ラット TRPM8 の部分ペプチドを免疫して得られたウサギの抗血清より、ペプチドアフィニティーカラムにて精製。
使用濃度	免疫染色: 2～5μg/mL



免疫染色

Sample: ラット後根神経節細胞(陽性: 緑色)

提供: 三重大学 医学部 ゲノム細胞医科学大講座 分子細胞生理学分野
富永 真琴 先生

温度感受性 TRP チャネル
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【参考文献】

- 1: Story GM, Peier AM, Reeve AJ, Eid SR, Mosbacher J, Hricik TR, Earley TJ, Hergarden AC, Andersson DA, Hwang SW, McIntyre P, Jegla T, Bevan S, Patapoutian A. ANKTM1, a TRP-like channel expressed in nociceptive neurons, is activated by cold temperatures. *Cell*. 2003 Mar 21;112(6):819-29..
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* 本抗体使用文献

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