



Polyclonal Antibody That Recognizes Both Isoforms of the Sulfonylurea Receptor

WARF: P08022US

Inventors: Jonathan Makielski, Nian-Qing Shi, Bin Ye

The Wisconsin Alumni Research Foundation (WARF) is seeking commercial partners interested in developing antibodies that specifically recognize sulfonylurea receptor isoforms and splice variants.

Overview

Sulfonylurea receptors (SURs) regulate the opening and closing of ATP-sensitive potassium channels (K_{ATP}). They play important roles in insulin secretion in the pancreas and myocardial protection in the heart. At least two isoforms of SUR exist, and the mRNA from each isoform can be spliced in different ways to result in further variants of SUR. The SUR1 isoform encodes the high-affinity sulfonylurea receptor, which is found in pancreatic beta-cells, while the SUR2 isoform encodes the low-affinity sulfonylurea receptor, which is mainly present in mitochondria-rich cardiac, smooth and skeletal muscles.

SUR2 may help protect the heart during ischemia, which occurs when tissues such as heart or brain experience a lack of oxygen due to an obstruction of blood flow. Brief periods of ischemia can protect a tissue from subsequent, prolonged ischemia, a phenomenon known as ischemic preconditioning, or IPC. SUR2 may play a role in this preconditioning; the inventors found that mice in which SUR2 is disrupted suffered less damage following ischemia than wild-type mice without IPC.

Antibodies would be a useful tool to further investigate the molecular nature of SURs. However, commercially available antibodies do not distinguish between SUR2 variants. Additionally, available antibodies yield variable results and have not been rigorously tested for specificity.

The Invention

UW-Madison researchers have developed an antibody, known as BNJU, that recognizes SUR1 and SUR2. It can be used in combination with other antibodies developed by the inventors (see WARF reference numbers P07041US, P08021US, P08023US and P08024US) to distinguish SUR isoforms and splice variants.

Applications

- Provides a useful tool for further investigating SURs
- Provides new tools for studying and influencing IPC
- May enable the identification of novel compounds for preventing and treating heart failure

Key Benefits

- Tested for specificity in mouse heart, brain and liver cells, as well as dog and human heart cells
- Affinity purified
- Capable of detecting the SUR2 forms present in ischemic, preconditioned, and failed hearts

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Stage of Development

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This antibody was successfully tested against stable cell lines expressing KATP channels.

Additional Information

For More Information About the Inventors

- [Jonathan Makielski](#)

Related Technologies

- [See WARF reference number P07041US for an antibody, known as BNJ1, that specifically recognizes SUR1.](#)
- [See WARF reference number P08021US for an antibody, known as BNJ2, that specifically recognizes SUR2.](#)
- [See WARF reference number P08023US for an antibody, known as BNJ39, that specifically recognizes SUR2 splice variants with a terminal exon 38A.](#)
- [See WARF reference number P08024US for an antibody, known as BNJ40, that specifically recognizes SUR2 splice variants with a terminal exon 38B.](#)

Tech Fields

- [Research Tools : Antibodies](#)

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