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## Product Information

### Anti-Calcium Channel ( $\alpha_{1D}$ Subunit) (L-Type of Voltage-Gated $Ca^{2+}$ Channel)

Developed in Rabbit, Affinity Isolated Antibody

Product Number **C 1728**

#### Product Description

Anti-Calcium Channel ( $\alpha_{1D}$  Subunit) is developed in rabbit using a synthetic peptide DNKVTIDDYQEEAE-DKD corresponding to amino acids 859 to 875 of rat  $\alpha_{1D}$  (Accession P27732) as immunogen.<sup>1</sup> The antibody is affinity isolated using peptide-agarose.

Anti-Calcium Channel ( $\alpha_{1D}$  Subunit) recognizes the  $\alpha_{1D}$  subunit in rat brain membranes by immunoblotting. Reactivity has been confirmed for rat and mouse. The antibody may also be used in immunoprecipitation<sup>2,3</sup> and immunocytochemistry.<sup>3</sup>

Voltage-gated calcium channels (VGCCs) are present in most excitable cells. There are five high-voltage activated calcium channel types (L, N, P, Q and R) and one low-voltage activated channel type (T). Each of these channels exists as a heteromultimer of  $\alpha_1$ ,  $\beta$ ,  $\alpha_2/\delta$  and  $\gamma$ -subunits with the voltage-activated calcium channel function carried by the  $\alpha_1$  subunits.<sup>4</sup> VGCCs exert spatial and temporal control over cellular calcium concentrations and serve to modulate neurotransmitter release, hormone secretion, muscle contraction, electrical activity, cell metabolism and proliferation, gene expression and neuronal survival.<sup>5,6</sup> Recent evidence suggests that the  $\alpha_1$  subunit function may be modulated via interactions with other cellular proteins.<sup>5,7</sup> Cellular fine control of VGCCs even allows selection of different subtypes of VGCC depending upon cellular conditions. For example, in neurotransmitter release from autonomic neurons, different VGCC subtypes are coupled to transmitter release at low versus high electrical stimulation frequencies, and potassium depolarization versus chemical stimulation.<sup>8</sup>

With the ubiquitous expression and functional importance of VGCCs, it is not surprising that alterations in channel function have been implicated in many diseases. This includes cardiovascular disease, migraines, ataxia and epilepsy.<sup>9,10</sup> Mutations in three calcium channel genes have been found in epileptic mice.<sup>11</sup> Calcium dependent processes are important in

synaptic modification and thus alterations in calcium channel function may be important for both modifying synaptic plasticity and also in age-related neurodegenerative diseases.<sup>12</sup> Calcium channel antagonists are used as antiarrhythmics<sup>13</sup> and in the treatment of hypertension<sup>14</sup> and may even be neuroprotective in Parkinson's Disease.<sup>15</sup>

Recent advances have allowed researchers to learn much about the structure and function of these VGCCs. However, much remains to be determined about their precise cellular localization, *in vivo* physiological roles, roles in disease states and possible routes to modulate their structure/function to ameliorate effects of disease.

#### Reagents

Supplied as a lyophilized powder from phosphate buffered saline, pH 7.4, containing 1% BSA, 5% sucrose and 0.05% sodium azide.

#### Precautions and Disclaimer

Due to the sodium azide content, a material safety data sheet (MSDS) for this product has been sent to the attention of the safety officer of your institution. Consult the MSDS for information regarding hazardous and safe handling practices.

$\alpha_1$  subunits of voltage-gated  $Ca^{2+}$  channels are highly sensitive to proteases. All procedures that are going to receive a full-length protein should be performed at 2-8 °C with a protease inhibitor mixture (1  $\mu$ g/ml pepstatin A, 1  $\mu$ g/ml leupeptin, 1  $\mu$ g/ml aprotinin, 0.2 mM phenylmethane-sulfonyl fluoride, 0.1mg/ml benzamidine, 8  $\mu$ g/ml each calpain inhibitors I and II).<sup>16</sup>

#### Preparation Instructions

Reconstitute the lyophilized vial with 0.05 ml or 0.2 ml deionized water, depending on package size. Further dilutions should be made using a carrier protein such as BSA (1%).

### Storage/Stability

Lyophilized powder can be stored intact at room temperature for several weeks. For extended storage, it should be stored at  $-20^{\circ}\text{C}$  or below. The reconstituted solution can be stored at  $2-8^{\circ}\text{C}$  for up to 2 weeks. For longer storage, freeze in working aliquots. Repeated freezing and thawing is not recommended. Storage in "frost-free" freezers is not recommended. If slight turbidity occurs upon prolonged storage, clarify the solution by centrifugation before use. Centrifuge all antibody preparations before use ( $10000 \times g$  5 min). Working dilution samples should be discarded if not used within 12 hours.

### Product Profile

The recommended working dilution is 1:200 for immunoblotting using rat brain membranes.

**Note:** In order to obtain best results and assay sensitivities of different techniques and preparations, we recommend determining optimal working dilutions by titration test.

### References

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