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ATP-sensitive potassium channels (K_{ATP} channels) are ion channels that selectively allow potassium ions to permeate thea cell. They are widely distributed among tissues, including those of the pancreas, brain, heart, and smooth muscles, and play important roles in many physiological processes, such as hormone secretion and vasodilatation. K_{ATP}Their channels activities are tightly regulated by endogenous nucleotide metabolites. Specifically; in particular, they are inhibited by adenosine triphosphate (ATP) and activated by Mg-adenosine diphosphate (ADP-). By sensing the intracellular ADP/ATP ratio, KATP-these channels tuneregulate the potassium ion efflux across the plasma membrane and adjust the membrane potential. Therefore, KATP channels they convert the cellular metabolic status into electrical signals, which provide a unique output that has with broad physiological effects. KATP-channels are widely distributed in many tissues, including the pancreas, brain, heart, and smooth muscle, and they playimportant roles in many physiological processes, such as hormone secretion and vasodilatation. Genetic mutation Because mutation of genes that encode K_{ATP} channel subunits $\frac{\text{can lead}}{\text{are known}}$ to $\frac{\text{cause}}{\text{several metabolic}}$ and neuronal diseases. Therefore, KATP-KATP-channels are important drug targets. Clinically relevant sulfonylureas drugs inhibit pancreatic K_{ATP} channels and serve as insulin secretagogues for the treatment of treating type II diabetes, while whereas KATP activators, such as potassium channel openers (KCOs) activate K_{ATP} channels, are used for treating hypoglycemia, and show promise for may be involved in myoprotection. Previous studies have established that the A functional KATP-KATP channel is a hetero-octamer composed of comprising four inward-rectifying potassium channel 6 (Kir6) subunits and four sulfonylurea receptor (SUR) regulatory subunits. The Kir6 subunits are encoded by either KCNJ8-KCNJ8 (Kir6.1) or or KCNJ11 (Kir6.2). Kir6 subunits and harbor sites for inhibitory ATP binding. The activities of Kir6 subunit activities can be enhanced by PIP₂, which is a signaling lipid present in the inner leaflets of the plasma membrane. The SUR -subunits are composed of the

Comment [A1]: Making sure an abbreviation and its spelled out form match is essential to avoid any confusion to readers. Here, the abbreviation of "ATP-sensitive potassium channels" has been revised to "K_{ATP} channels" for accuracy.

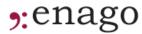
Comment [A2]: Some text has been rearranged here for better flow of information about K_{ATP} channels.

Comment [A3]: Excessive repetition of nouns or noun phrases can hamper readability. Therefore, pronouns should be used instead of repeating nouns at multiple instance.

Comment [A4]: The phrase "genetic mutation of genes" has been revised to "mutation of genes" to avoid repetition.

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 $N-terminal\ transmembrane\ domain\ 0-loop\ 0\ (TMD0-L0)\ and\ ATP-binding\ {\color{red} {\color{blue} cassettes}} {\color{blue} cassettes} \\ (ABC)\ transporter-like\ modules.$



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