Insights: Publications

Purinergic Signaling in Peripheral Nervous System Glial Cells

GLIA

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To facilitate analyses of purinergic signaling in peripheral nerve glia, we review recent literature and catalog purinergic receptor mRNA expression in cultured mouse Schwann cells (SCs). Purinergic signaling can decrease developmental SC proliferation, and promote SC differentiation. The purinergic receptors P2RY2 and P2RX7 are implicated in nerve development and in the ratio of Remak SCs to myelinating SCs in differentiated peripheral nerve. P2RY2, P2RX7, and other receptors are also implicated in peripheral neuropathies and SC tumors. In SC tumors lacking the tumor suppressor NF1, the SC pathway that suppresses SC growth through P2RY2-driven β-arrestin-mediated AKT signaling is aberrant. SC-released purinergic agonists acting through SC and/or neuronal purinergic receptors activate pain responses. In all these settings, purinergic receptor activation can result in calcium-independent and calcium-dependent release of SC ATP and UDP, growth factors, and cytokines that may contribute to disease and nerve repair. Thus, current research suggests that purinergic agonists and/or antagonists might have the potential to modulate peripheral glia function in development and in disease.

Related People



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