Calcium

Calcium is a key cofactor of the coagulation cascade and may play a role in the pathophysiology of intracerebral hemorrhage (ICH).

Calcium is a chemical element with symbol Ca and atomic number 20. Calcium is a soft gray alkaline earth metal, and is the fifth-most-abundant element by mass in the Earth's crust. Calcium is also the fifth-most-abundant dissolved ion in seawater by both molarity and mass, after sodium, chloride, magnesium, and sulfate.

Calcium is essential for living organisms, in particular in cell physiology, where movement of the calcium ion Ca2+ into and out of the cytoplasm functions as a signal for many cellular processes. As a major material used in mineralization of bone, teeth and shells, calcium is the most abundant metal by mass in many animals.

Sun et al., show that oligodendrocyte progenitor cells perform linear integration of glutamatergic synaptic inputs and respond with increasing dendritic calcium elevations. Synaptic activity induces rapid Ca2+ signals mediated by low-voltage activated Calcium channels under strict inhibitory control of voltage-gated A-type K+ channels. Ca2+ signals can be global and originate throughout the cell. However, voltage-gated channels are also found in thin dendrites which act as compartmentalized processing units and generate local calcium transients. Taken together, the activity-dependent control of Ca2+ signals by A-type channels and the global versus local signaling domains make intracellular Ca2+ in NG2 cells a prime signaling molecule to transform neurotransmitter release into activity-dependent myelination [1)].

1)
Sun W, Matthews EA, Nicolas V, Schoch S, Dietrich D. NG2 glial cells integrate synaptic input in global and dendritic calcium signals. Elife. 2016 Sep 19;5. pii: e16262. doi: 10.7554/eLife.16262. [Epub ahead of print] PubMed PMID: 27644104.

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