Cover Image

Single cell and population electrogenesis of spreading depolarization (SD). (A) Neurons lose their electrogenic capability during SD due to massive depolarization. The membrane potential inside a dendrite of a single cell (blue) and the population DC potential (red) run in parallel for a while making the transmembrane potential (green) zero. However, the main depolarizing phase last longer in dendrites than in their somata. (B) Scaling single cell to population currents. Up: Pyramidal cells are arranged in parallel hence field potentials reflect synchronous events in similar domains of single cells. The negative field potential of SD presents sharp extracellular gradients matching the different cell domains with open channels at different SD phases. Bottom: The different depolarization in domains of individual cells establishes longitudinal gradients of potential and transmembrane current loops that build the negative population DC signal. See the article by Dreier and others, in this issue on p. 25, for details.

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