

SLEEP IN VITRO

Neurons co-cultured with glial cells display patterns of action potentials and slow (delta) waves, suggesting that small neural networks can and do sleep, even outside of the body. In culture, neurons fire in bursts, and slow-wave electrical activity is synchronized while in a default sleep-like state. However, if the culture is stimulated with electricity or excitatory neurotransmitters, delta-wave amplitude and the neurons' synchrony, or burstiness, are reduced, suggesting that the culture "wakes up." Conversely, the addition of TNF- α , a sleep-inducing agent, increases burstiness and the amplitudes of delta waves.

