

**E/I ratio is maintained constant in neocortical cultured networks despite variation of the GABAergic neurons proportion**

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In our study we use cell culture techniques to generate neuronal networks with defined non-GABA/GABA cell ratios to address the question if “atypical” non-GABA/GABA neuron ratios change over time and what influence they have onto the EPSCs and IPSCs balance.

To access the E/I balance, sEPSCs and sIPSCs were recorded in 10-minute long spontaneous voltage clamp recordings in T05 and T80 networks in 155 non-GABA and 169 GABA cells between 6-28DIV. In each cell the E/I balance for amplitude, rise time, decay time and area (e.g. charge transfer) were calculated. The results show that for both transplant types and for both cell types the sIPSPs/(sEPSPs+ sIPSPs) ratio is the same for all four parameters over the entire cultivation period (two-way ANOVA).

These results suggest that the proportion of GABA to non-GABA neurons is not intrinsically regulated on the network level. However, a similar ratio between excitation and inhibition is maintained constant, irrespective of cell numbers, most probably by adjusting number and strength of synapses.