## Leabra Mechanisms Deep (many Learning layers) $\Delta w_{ij} = (x_i^+ y_j^+) - (x_i^- y_j^-) \text{ (error-driven)}$ + $y_i^+ (x_i^- w_{ij})$ (hebbian) **Bidirectional** k-Winners (sparse distributed **Excitation Inhibitory** representations) Competition $\frac{dV_{m}^{t}}{dt} = t \sum_{c} g_{c}^{t} \overline{g}_{c} (E_{c} - V_{m}^{t})$ Integrate & Fire **Point Neurons**