Biological as well as artificial networks show amazing information processing properties. We use approaches from statistical physics and information theory to uncover their operation principles and derive optimal design for a given task. A popular hypothesis is that neural networks profit from operating close to a continuous phase transition, because at a phase transitions, several computational properties are maximized. We show that maximizing these properties is advantageous for some tasks – but not for others. We then show how tuning networks away or towards a phase transition enables to adapt them to requirements. Thereby we shed light on the operation of biological neural networks, and inform the design of artificial ones. – In a second part of the talk, we turn to the spread of SARS-CoV-2 in Germany. We quantify how governmental policies and the concurrent behavioral changes led to a transition from exponential growth to decline of novel case numbers. We conclude with discussing potential scenarios of the SARS-CoV-2 spread for the months to come.