How can the observance of an oscillatory difference in a patient population help us develop more effective treatments?
Steady-state evoked potentials (SSEPs) in Schizophrenia

Different power steady state responses in this patient population

Vierling-Claassen et al., J. Neurophys., 2009
Abnormal gamma oscillations in schizophrenia

Reduced evoked gamma oscillations during an auditory oddball task in anterior and anterior right electrodes

Gallinat, Clin. Neurophys., 2004
Reduced phase locking across electrodes in Schizophrenia

Mooney faces

Difference map

Green = increase
Red = decrease

Uhihaas and Singer, Nat. Rev. Neuro, 2010
Differences between adolescent and post-adolescent rhythms and synchrony

Uhihaas and Singer, Nat. Rev. Neuro, 2010
Differences between adolescent and post-adolescent rhythms and synchrony

mIPSPs in monkeys

Abnormal interneurons in a mouse model of schizophrenia

Cho et al., *Neuron*, 2015
Impaired rule shifting in a mouse model of schizophrenia

Cho et al., *Neuron*, 2015
Abnormal gamma oscillations in a mouse model of schizophrenia

Cho et al., Neuron, 2015
Silencing mPFC interneurons disrupts rule shifts

Cho et al., *Neuron*, 2015
Pharmacological augmentation of mPFC interneuron function rescues cognitive inflexibility

Administer clonazepam (CLZ), a positive allosteric modulator (PAM) of the GABA_A receptor (during administration) (after administration)

Cho et al., Neuron, 2015
Interneuron augmentation effects are frequency-dependent and long-lasting.
Your experiences in this course will help you:

1) Hypothesize potential cellular and neural network mechanisms underlying oscillatory differences

1) Identify potential new avenues for treatments (including rhythmic therapies!)