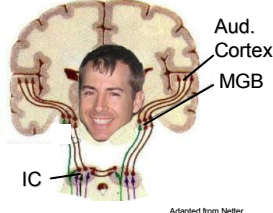




## Edward L. Bartlett

- Ph.D., University of Wisconsin
  - Auditory thalamus *in vitro* synaptic physiology and anatomy
- Postdoctoral Research at Johns Hopkins University
  - Auditory cortex and thalamus neuronal recordings *in vivo*
- Assistant Professor, Departments of Biological Sciences and Biomedical Engineering
  - Functional organization of auditory cortex and thalamus *in vivo* and *in vitro*

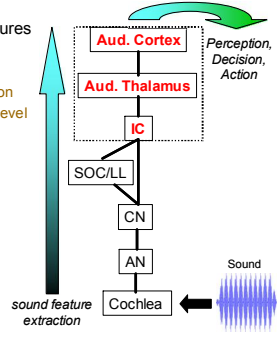



Adapted from Netter

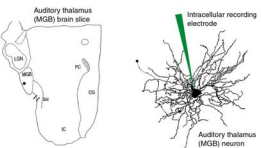
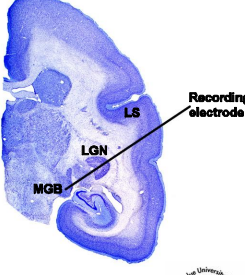


## Current Research Areas

- Neural representation of sound features in auditory thalamus and cortex
  - Sound sequences
  - Neural coding of temporal modulation
  - Neural coding of sound frequency, level
- Neuroanatomy
  - Calcium-binding proteins
  - Correlation with neurophysiology
- Animal Models:
  - Marmoset monkey (at JHU)
  - Rodent (at Purdue)

## Methodologies

- Single-neuron extracellular recording
  - awake animals
- Sound and electrical stimulation
- Neuroanatomy
- Intracellular recording in brain slices
  - synaptics, dynamic clamp
- Modeling of neurons and circuits

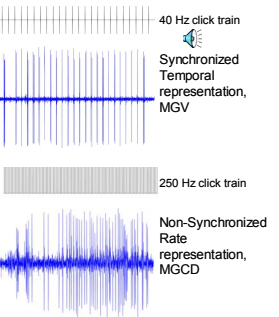

## Recent Results

Neural representation of temporal modulation

- synchronized vs non-synchronized
- temporally vs spectrally specialized pathways

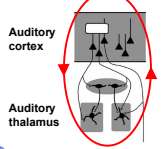
Correlation with MGB subdivision

	Nestin	Parvalbumin	Calbindin
MGV			
MGCD			

## Future Directions

- Auditory responses in thalamus and cortex: normal and aged animals
- Corticothalamic feedback modulation
- Representation of complex sounds (two sources, sounds in noise, behaviorally relevant sounds)
- Cellular mechanisms of *in vivo* responses



Adapted from Castro-Alamancos, 2004

