

Yale University School of  
Medicine  
The John B. Pierce  
Laboratory, Inc.

Our laboratory engineered the best currently available genetically-encodable fluorescent voltage probe (ArcLight) for in vivo use.

Continually engineering newer probes with improved response characteristics

Developed the only wide field (2 x 2 mm), rodent, head mountable, embedded imaging system

Performing experiments combining the above technologies.

- Our group is seeking collaborators to assist in the correlation/feature extraction/classifier analysis of large image stream recordings of motor cortical electrical activity and synchronized high speed image streams of body and limb position
- Groups with experience in electrode-based electrophysiology (i.e. single units, LFPs, etc.)

Optical recording of neuronal electrical activity using novel genetically-encodable fluorescent voltage probes and head mountable high speed imaging systems.

Allows cell type specific, spatially defined, high speed (200-1,000 Hz) image trains of cortical activity in freely moving mammals.

Not currently cellular level resolution. 50-100  $\mu\text{m}^2$  level XY resolution.

## Vincent Pieribone

“Extraction of neuronal network processing algorithms from high speed optical recording of membrane potential in genetically defined classes of neurons in motor cortex.”

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