Miniaturized Energy-Efficient Integrated Neural Interfaces

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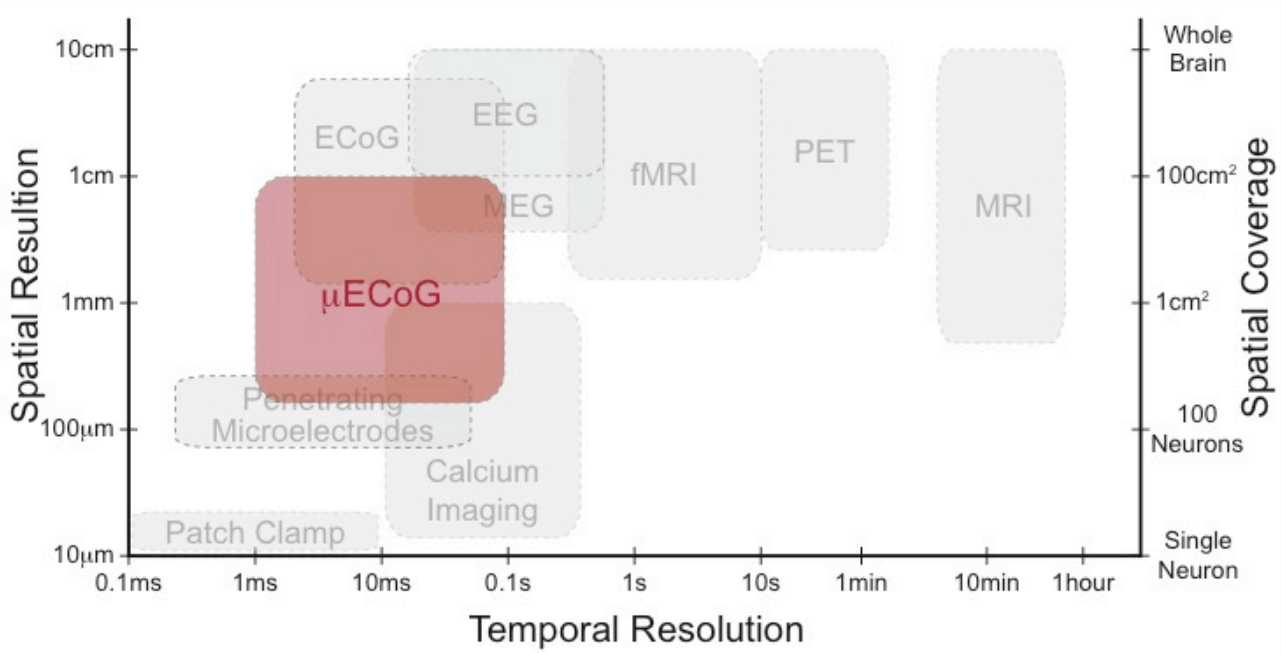
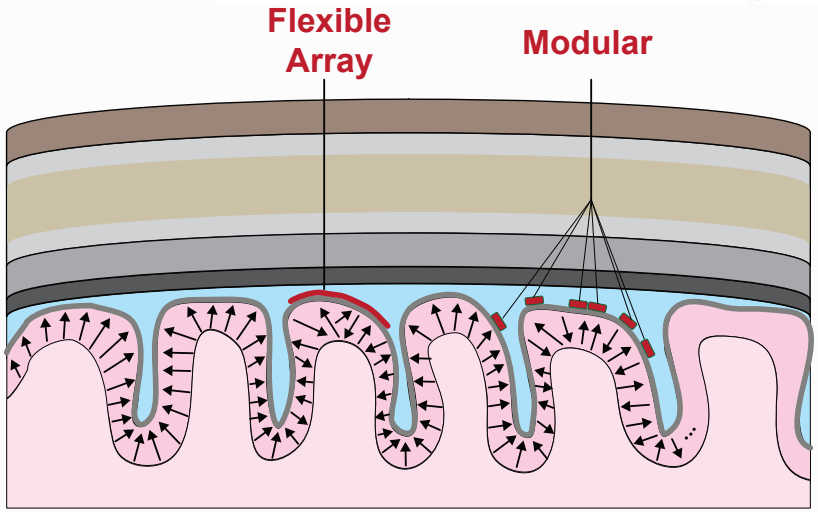
Microelectrocorticography (μECoG)



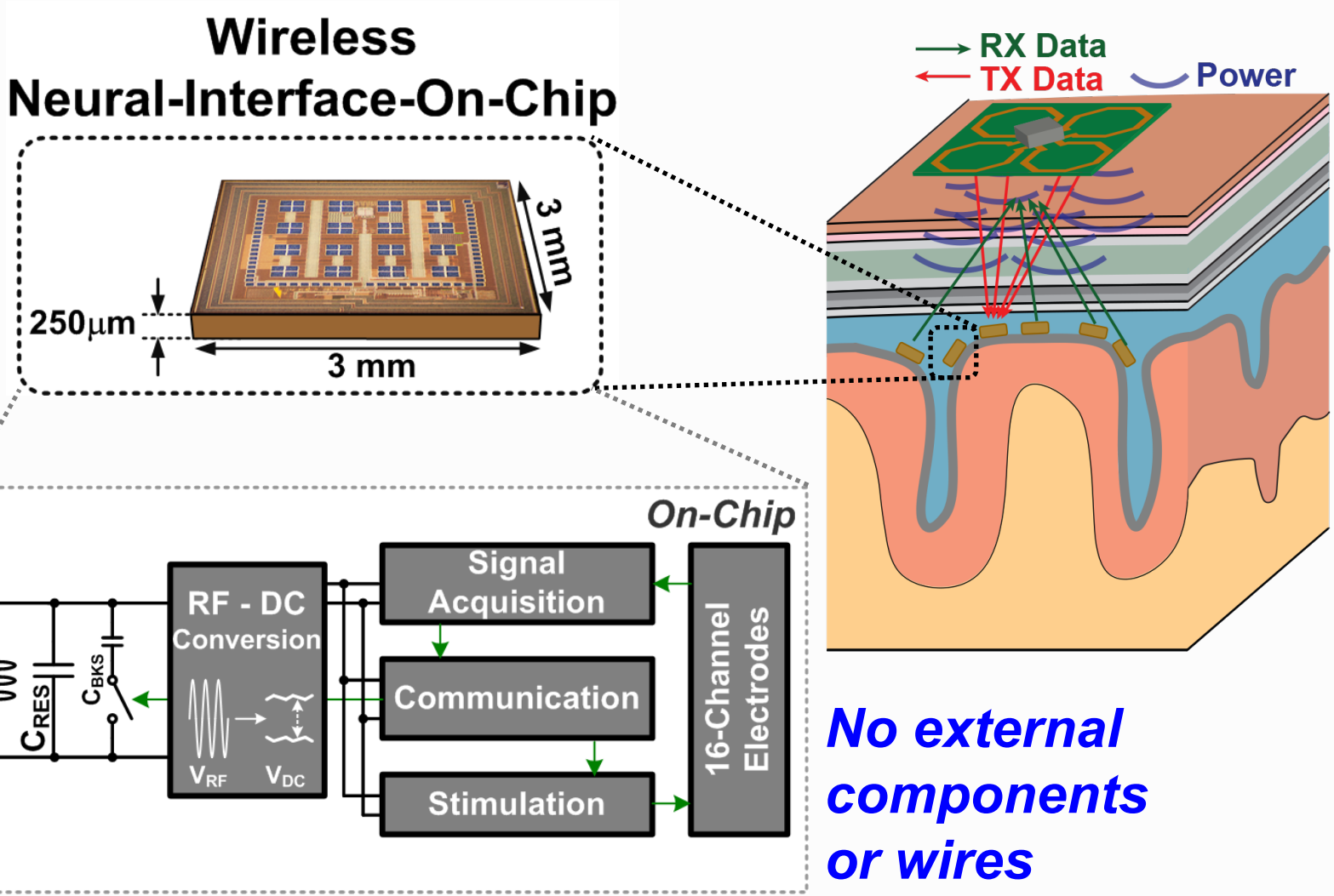


Emerging μECoG technologies

- High spatiotemporal resolution
- Fully implantable
  - Minimally invasive
  - Long-term monitoring

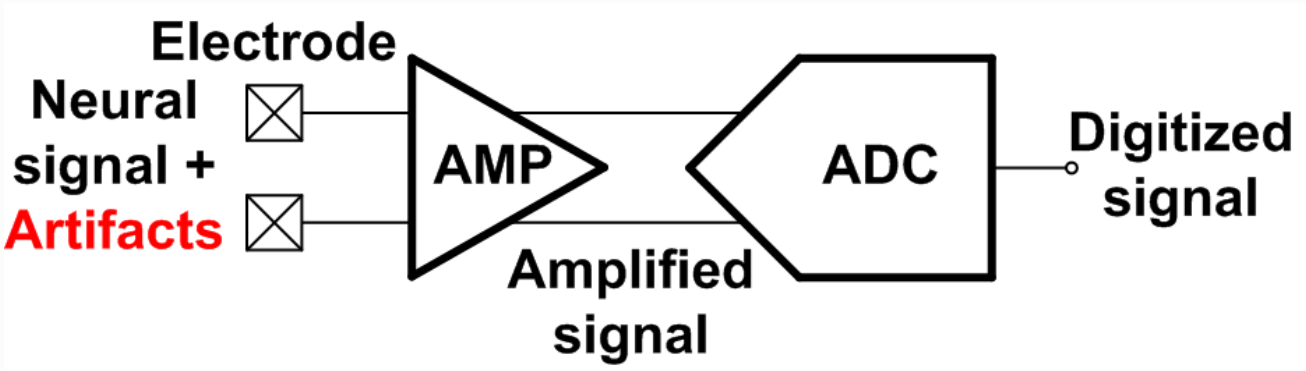
ENIAC:

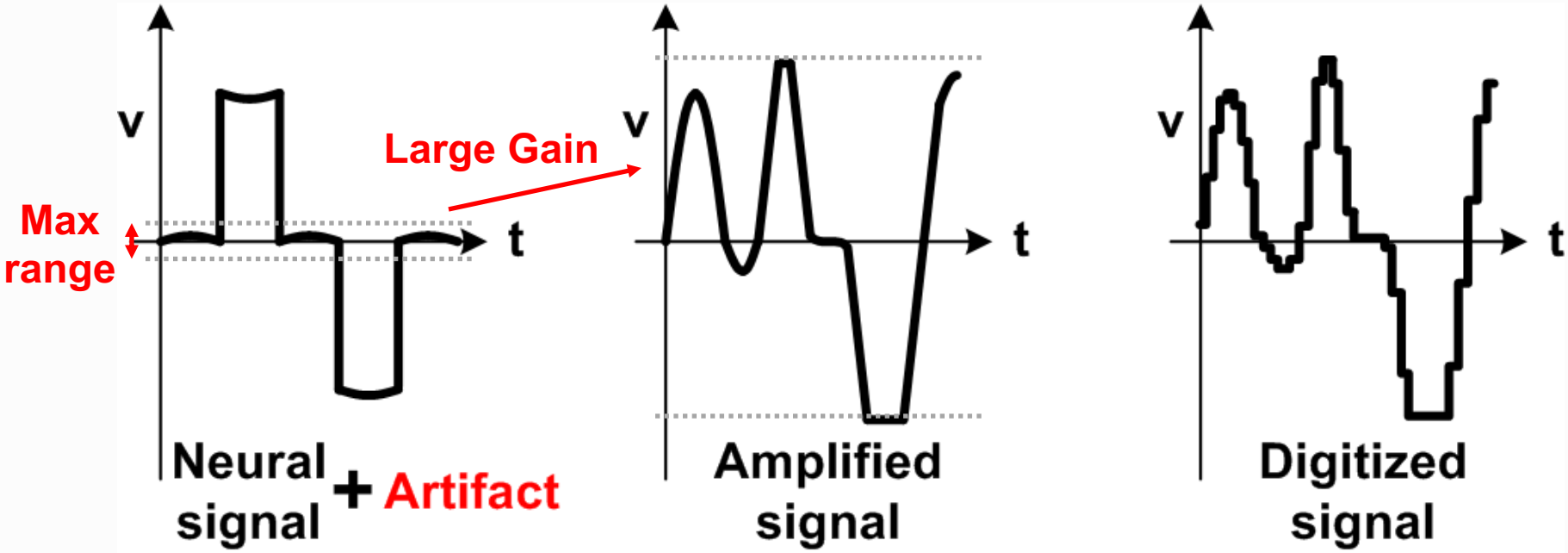
Encapsulated Neural Interfacing and Acquisition Chip



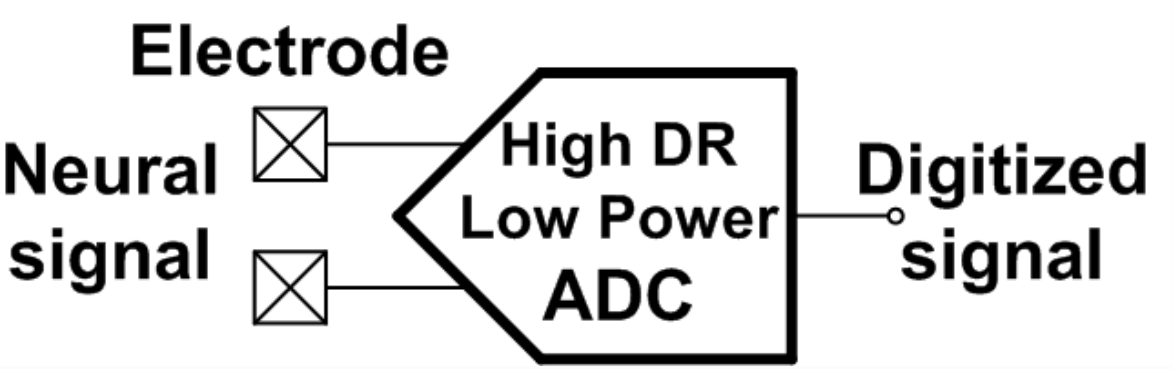
No external components or wires

Neural Recording ADC – State-of-the-Art

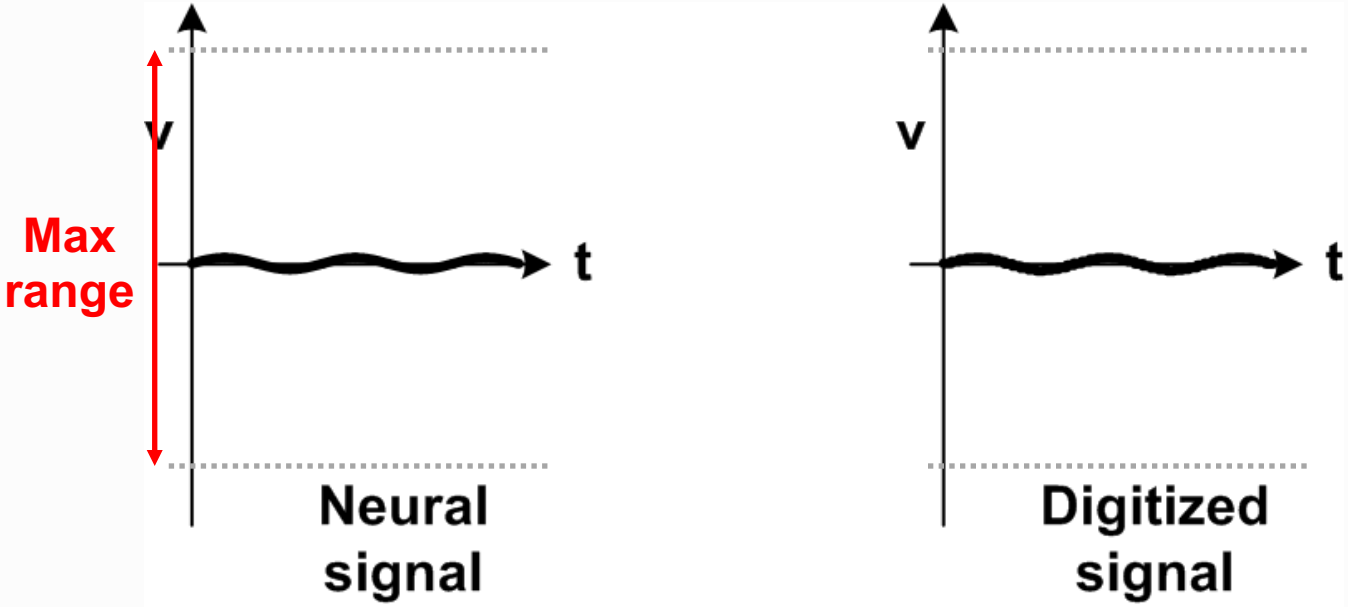




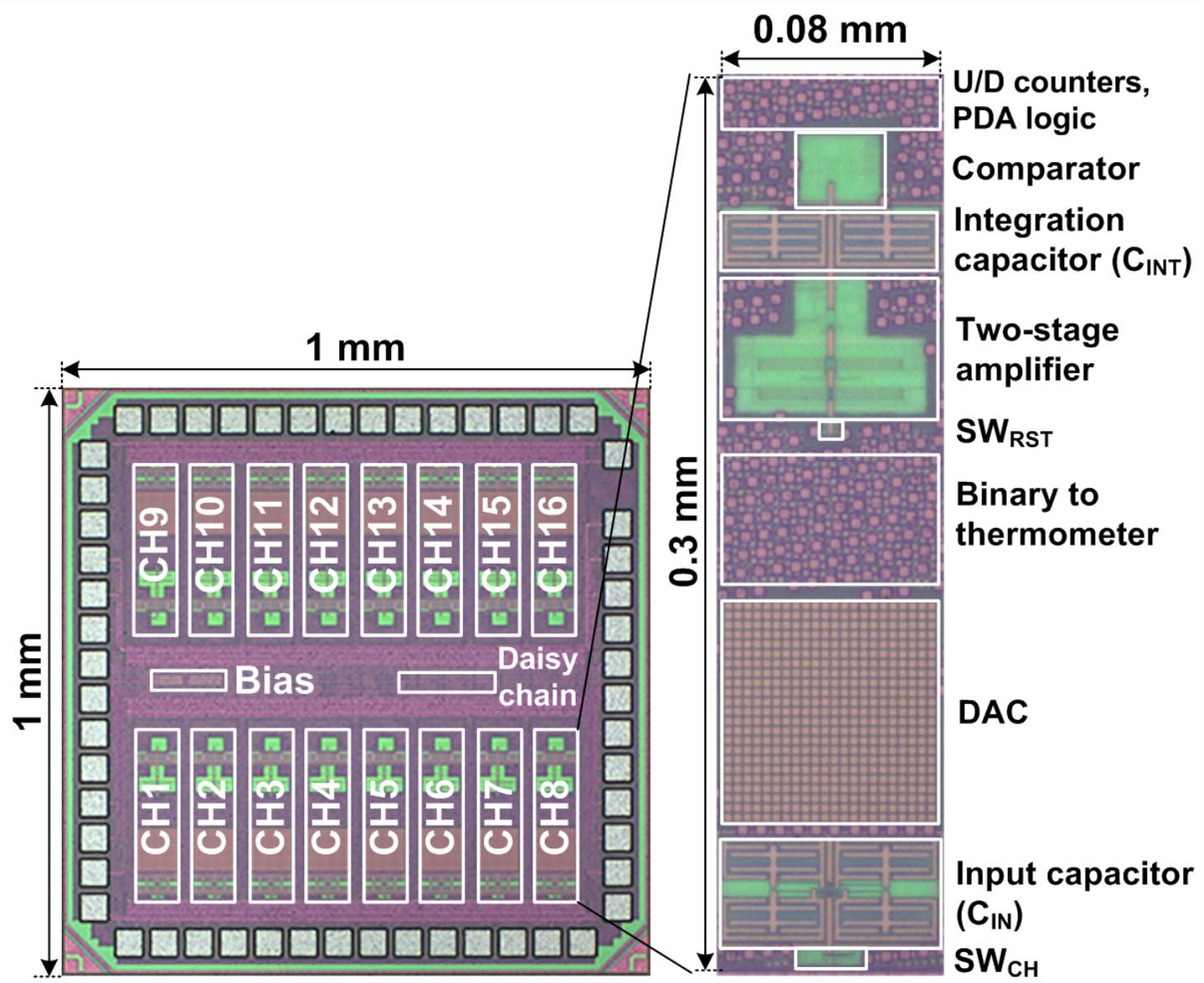
Neural Recording ADC – Improvements



ADC-Direct Front-End

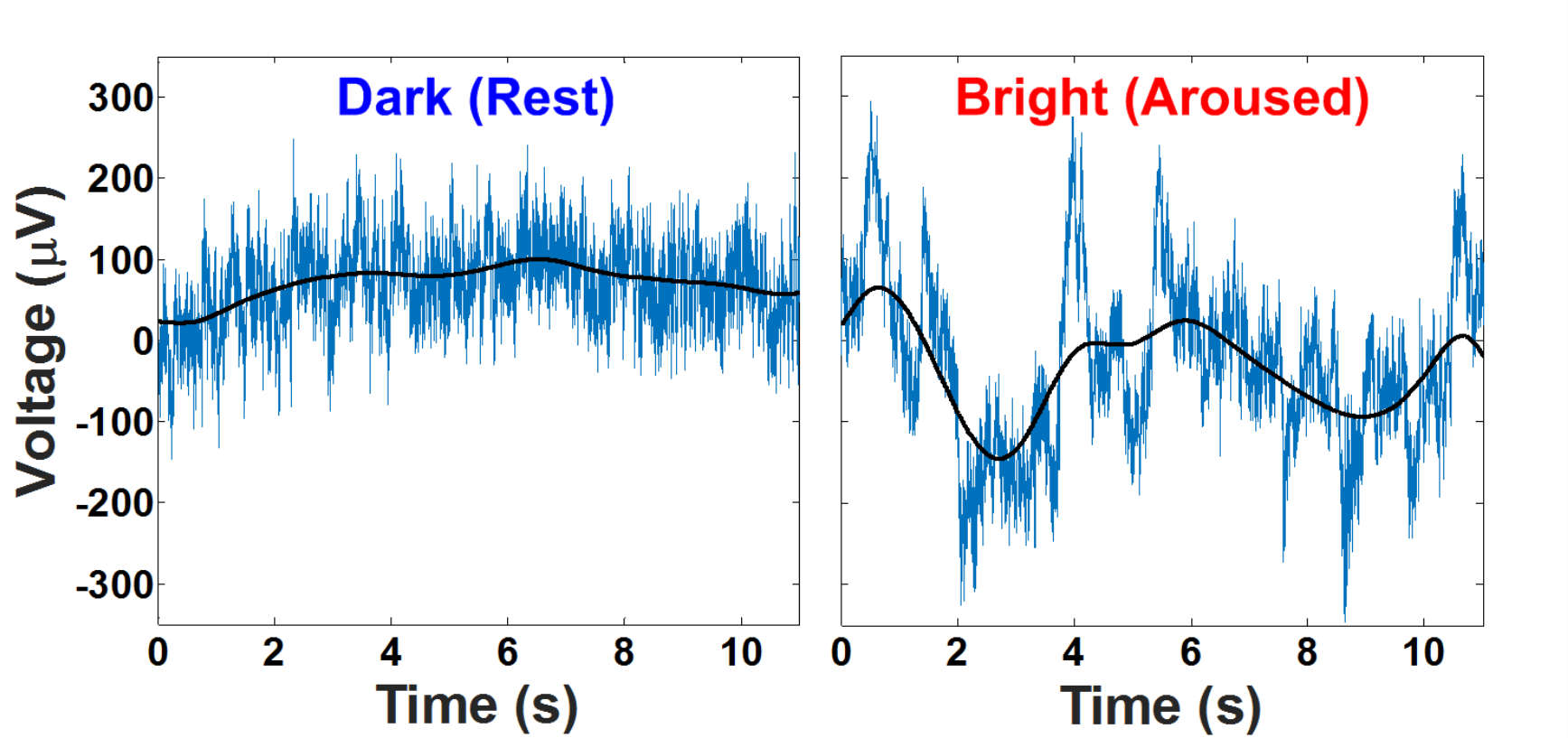


Neural Recording ADC – Micrograph



Neural Recording ADC – *in vivo* tests

LFPs in marmoset non-human primate



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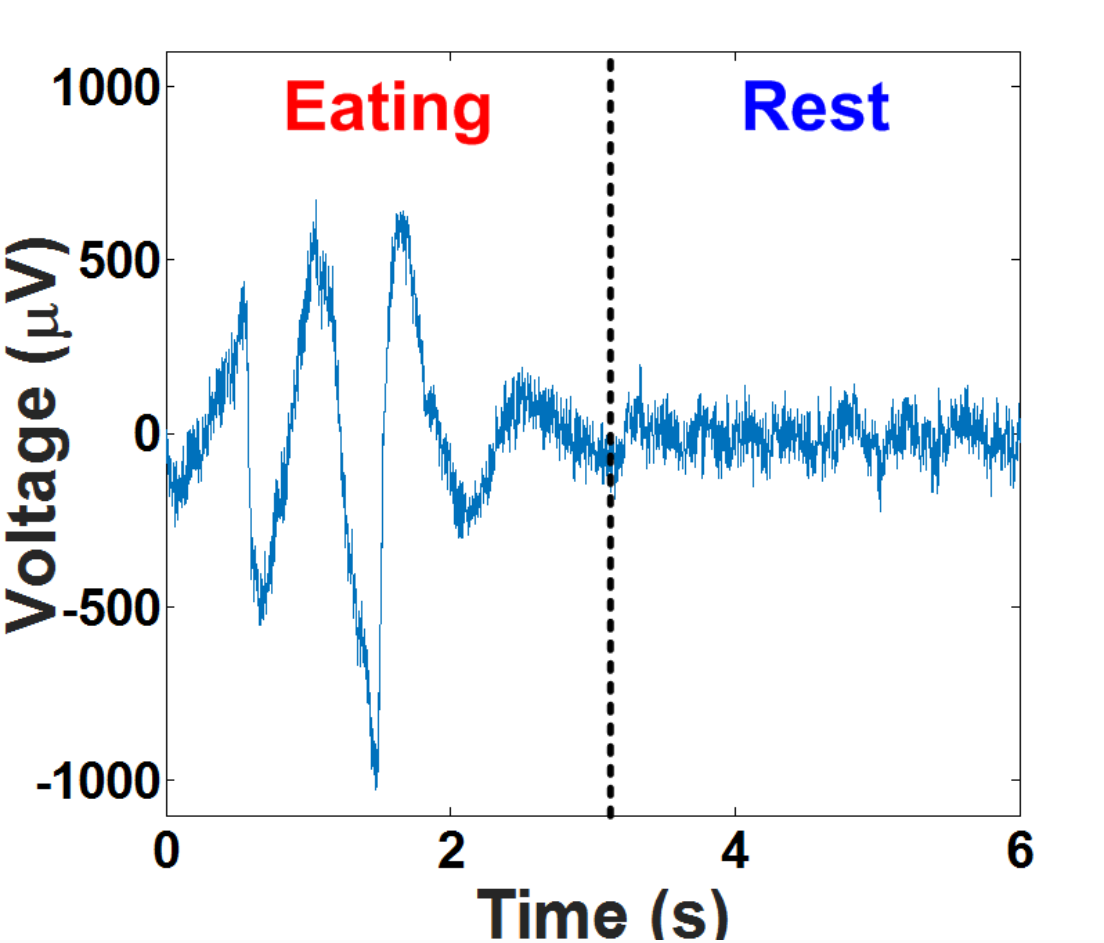

Collaboration

Joint proposal opportunities for μECoG systems working on freely moving subjects for next-generation brain imaging with:

1) < 1mV spatial resolution;
2) > 1000 recording channels;
3) > 100 stimulation channels;
4) > at least 24 hours operation time, and;
5) coverage of entire brain.

Joint proposal opportunities for unobtrusive wireless energy-efficient brain-machine interface systems.