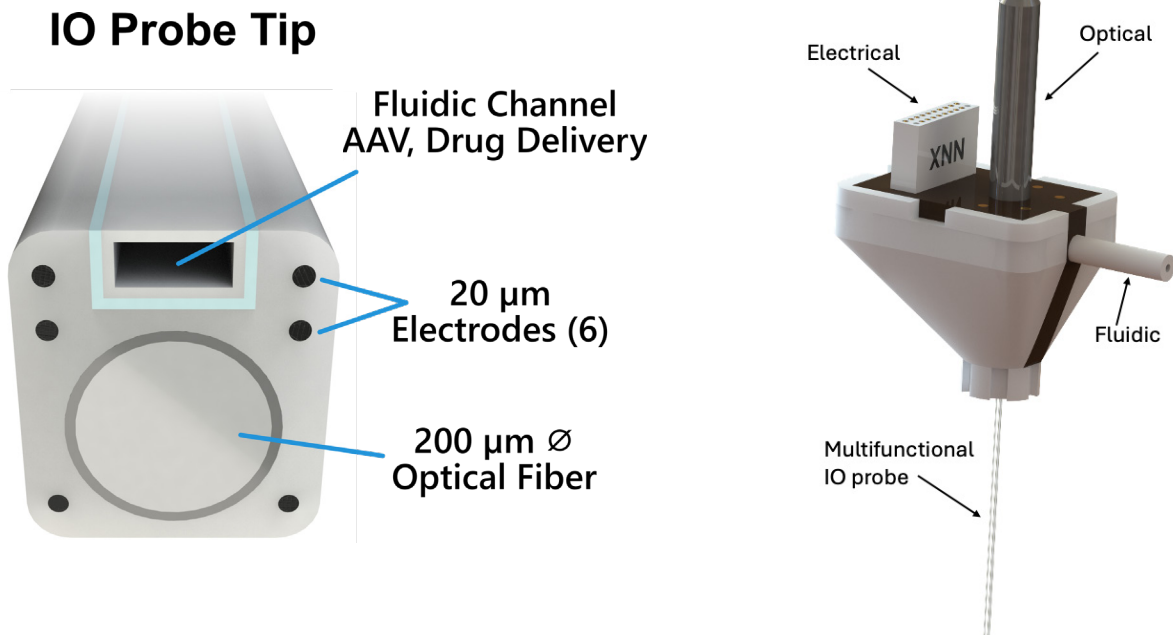


Multifunctional Probe

The IO Probe is an integrated, multifunctional probe designed to enable multimodal neuroscience experiments with a single implant. It features capabilities for optogenetic stimulation, fiber photometry, electrophysiology, stimulation, and local drug and/or gene delivery all within a single probe by integrating a polymer optical waveguide, tungsten or carbon microelectrodes, and a microfluidic channel.



Four modalities, one probe: simultaneously perform optogenetic stimulation, fiber photometry, electrophysiology, and local drug or gene delivery at the same site.

“One-step optogenetics/photometry”: integrated microfluidic channel enables viral vector delivery (AAVs encoding opsins or reporters) directly at the probe tip during implantation.

Compact and lightweight: designed for compatibility with freely behaving rodent studies and adaptable for larger animal models.

Versatile configurations: opto-electro-fluidic, opto-electric only, and opto-fluidic only probe variations available.

Large animal probes available: enabling multi-modal experiments in deep brain regions of NHPs and other large-animal models.

Connector options:

Optical:

- 2.5 mm, 12.7 mm long Stainless Steel Ferrule
- 2.5 mm, 10.5 mm long Ceramic Ferrule
- 1.25 mm, 6.4 mm long Stainless Steel Ferrule
- 1.25 mm, 6.4 mm long Ceramic Ferrule
- Note: Stainless steel ferrules are recommended for fiber photometry experiments.

Fluidic:

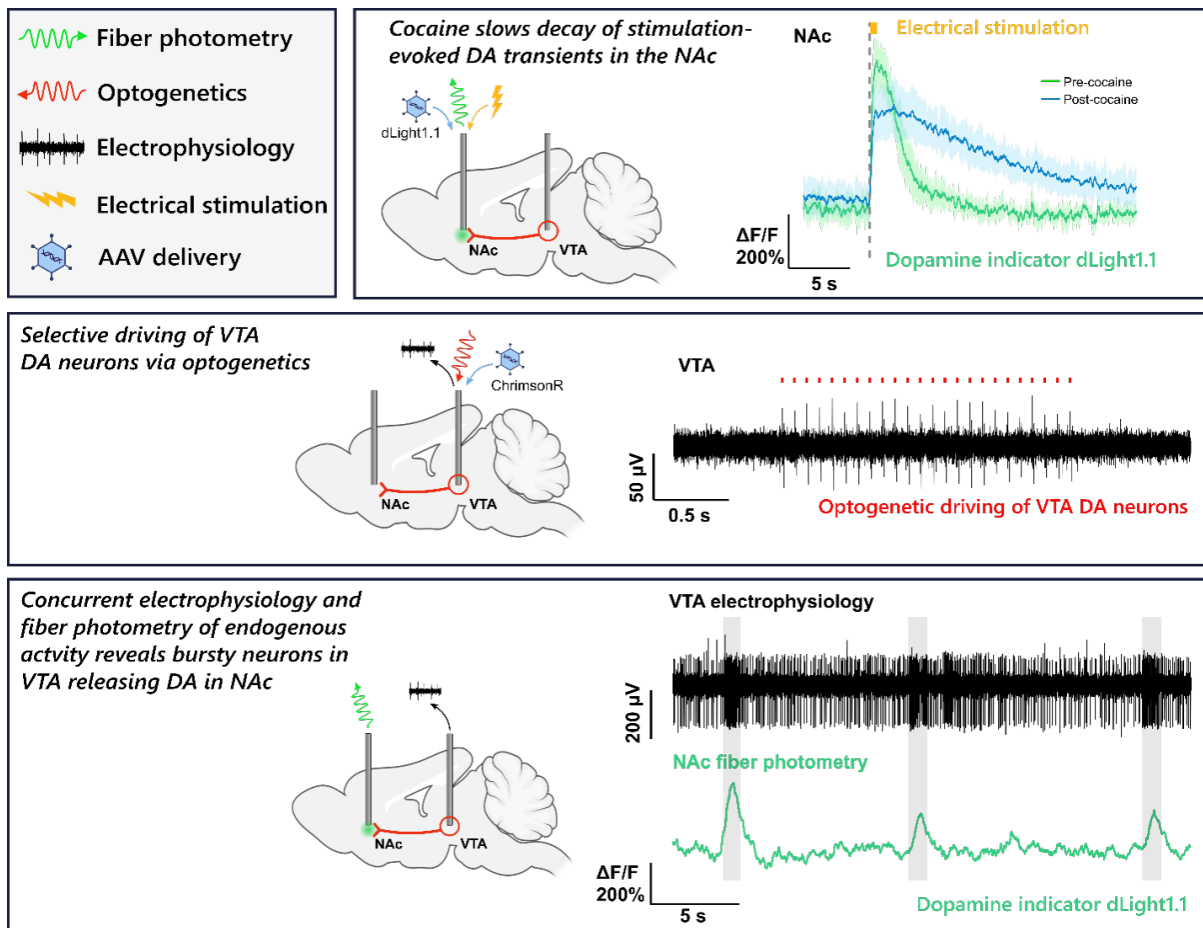
- 1/16" OD x 0.010" ID PEEK tubing – compatible with 32G needle

Electrical:

- Omnetics OM-16, A72823-001

Specifications

Probe Dimensions	310 μm x 280 μm x custom length, 1.4g
Optical Waveguide Diameter	200 μm
Microfluidic channel dimensions	100 μm x 40 μm
Electrode Size/Material	20 μm , Tungsten or Dexmat Galvorn carbon nanotube (CNT) fiber



N. Driscoll et al., Multifunctional Neural Probes Enable Bidirectional Electrical, Optical, and Chemical Recording and Stimulation In Vivo. Adv. Mater. 2024, 2408154.