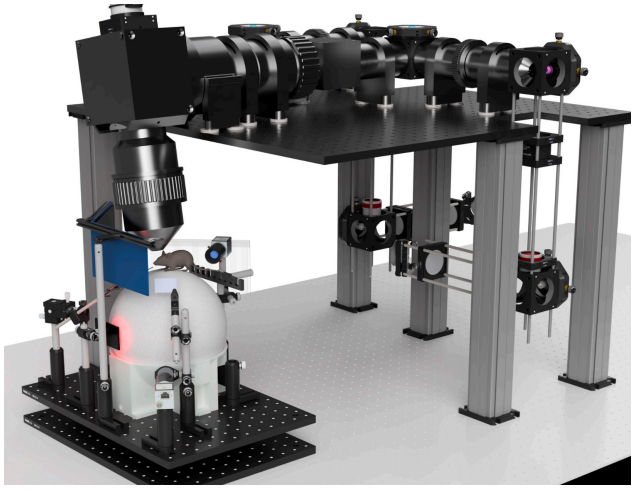
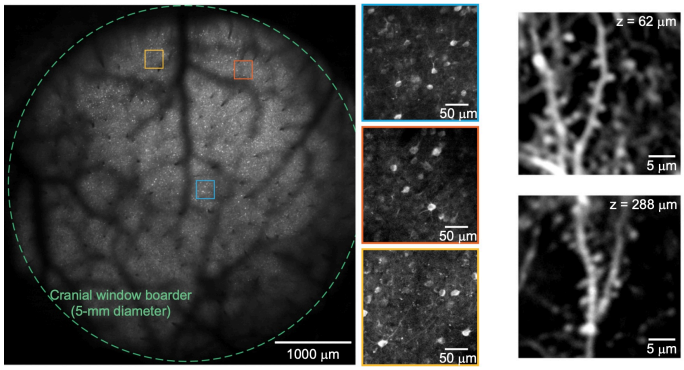
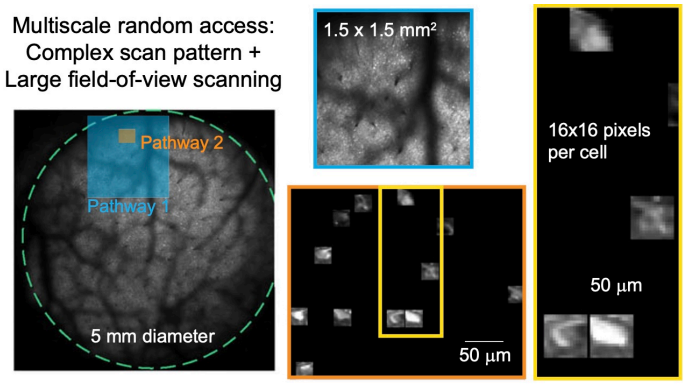
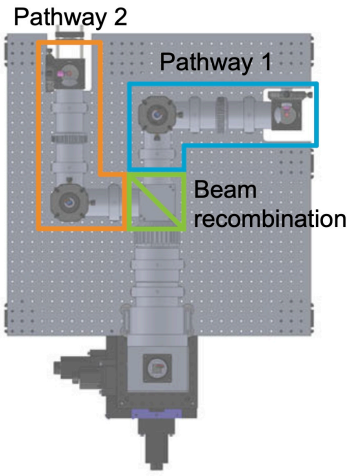
Diesel2p imaging system





- **[FOV]** Ultra-large field-of-view (FOV) optimized for multi-photon mesoscopy. Encompasses multiple brain areas within a single FOV.
- **[DUAL]** Two completely independent resonant-galvo-galvo scan engines. It's like having two mesoscopes. Temporally multiplex to see two places simultaneously, or have a dedicated mesoscale optogenetic pathway. Or do imaging and optogenetics activation in both channels.
- **[OBJ]** Compatible with conventional multiphoton objectives from Nikon, Zeiss, etc. Adapters for all major systems are available. The scan engine is infinity corrected and provides a 32 mm diameter beam at the back aperture, far beyond the requirements of conventional two-photon objectives.
- **[INF]** Infinity corrected and fully compatible with temporal multiplexing, lightbeads, Bessel beams, holography, and more.
- **[ROT]** Rotating air objective with full 360 degree range. Flexible to accommodate a large range of experiments, with the convenience of air immersion. No water interface needed. Plenty of working distance to make imaging easy, and navigate around complex instrumentation.
- **[WRLD]** Already in use in over labs in at least six different countries around the world. Real world proven. A robust workhorse system that stays aligned over time, and can is future ready, with a range of customizations possible. Friendly community sharing tips, tools, and more.





System specifications and features

Specification	Value	Notes
Scan engine	Dual, independent	*For multiplexing, optogenetics*
Field-of-view (native)	5 mm x 5 mm	*25 mm² in area*
Field-of-view (AO)	7 mm diameter	*38 mm² in area with adaptive optics (AO)*
Objective rotation range	360 degrees	*Any angle, including inverted*
Numerical Aperture (NA)	0.54	*Optimized for deep tissue imaging*
Working distance	8.0 mm	*No water needed*
Correction collar	Standard	*Optimize for your work*
Wavelength range	475 nm - 1100 nm	*Optimized for 910 nm and 1050 nm*
Field flatness	$<$ 25 µm	*Flat imaging field*
Resonant scan axis	1500 µm @ 16,000 lines/s	*Wide resonant scanning stripes*
Resolution	Submicron lateral, 6-8 µm axial	*Even resolution across the FOV*
Typical imaging power	$<$ 100 mW per channel	*Usually 50 - 70 mW*
Detection	GaAsP PMT or SIPM	*High sensitivity, robust*
Footprint	75 cm x 120 cm	*Height is adjustable*
Power requirements	Typically $<$ 4 kW	*Depends on configuration*
Full peer-reviewed report	Click here	*Open access publication*

Large FOV example

6 mm x 5 mm FOV: 5 stripes
at 9.8 µm/pixel (2048 x 512 pixels)
12.5 frames/s with dual beams

Multi FOV example

Four 1.5 mm x 0.6 mm areas: 4 stripes
at 1.2 µm/pixel (2048 x 512)
15.6 frames/s with dual beams