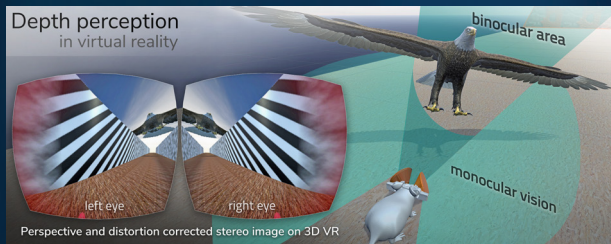


TURNKEY HEAD FIXED BEHAVIOR SYSTEM WITH FULL 3D IMMERSION

The biggest added value of **VIRTUAL REALITY** is the sense of presence, when the experimental animal perceives the widely controllable and reproducible virtual environment around it as reality itself.

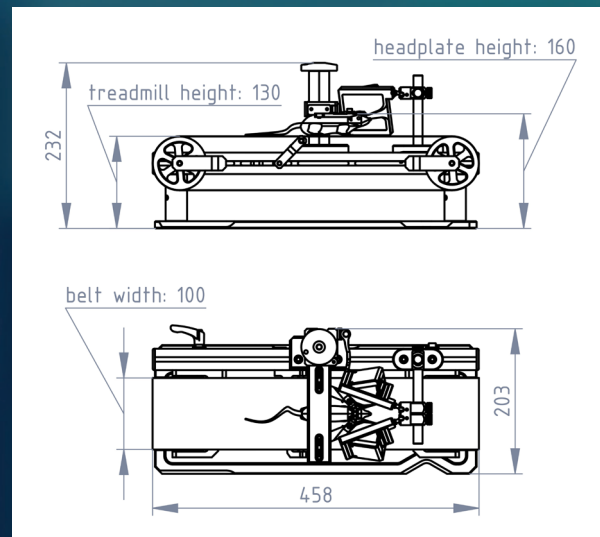
- Binocular vision with depth perception, full immersion
- Covers most of the field-of-view without static visual cues in the FOV which might disturb presence
- Behavior feedback contributing to presence
- Modular and scalable design for two-photon imaging and electrophysiology
- Photorealistic rendering with a state-of-the-art engine to flexibly design your own virtual environments and behavioral protocols
- Natural reaction to the virtual environment without preconditioning
- Detailed user manual and example procedures



READ THE PUBLICATION PREPRINT



AVAILABLE IN
SCIENTIFIC COOPERATION WITH BVC



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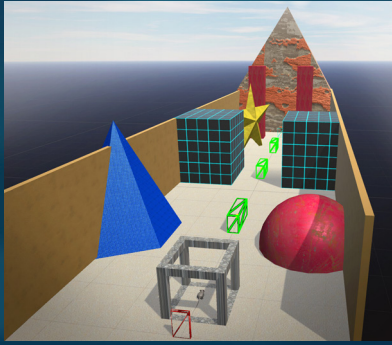
MOUSE VIRTUAL REALITY SYSTEM

BINOCULAR VISION,
FULL IMMERSION



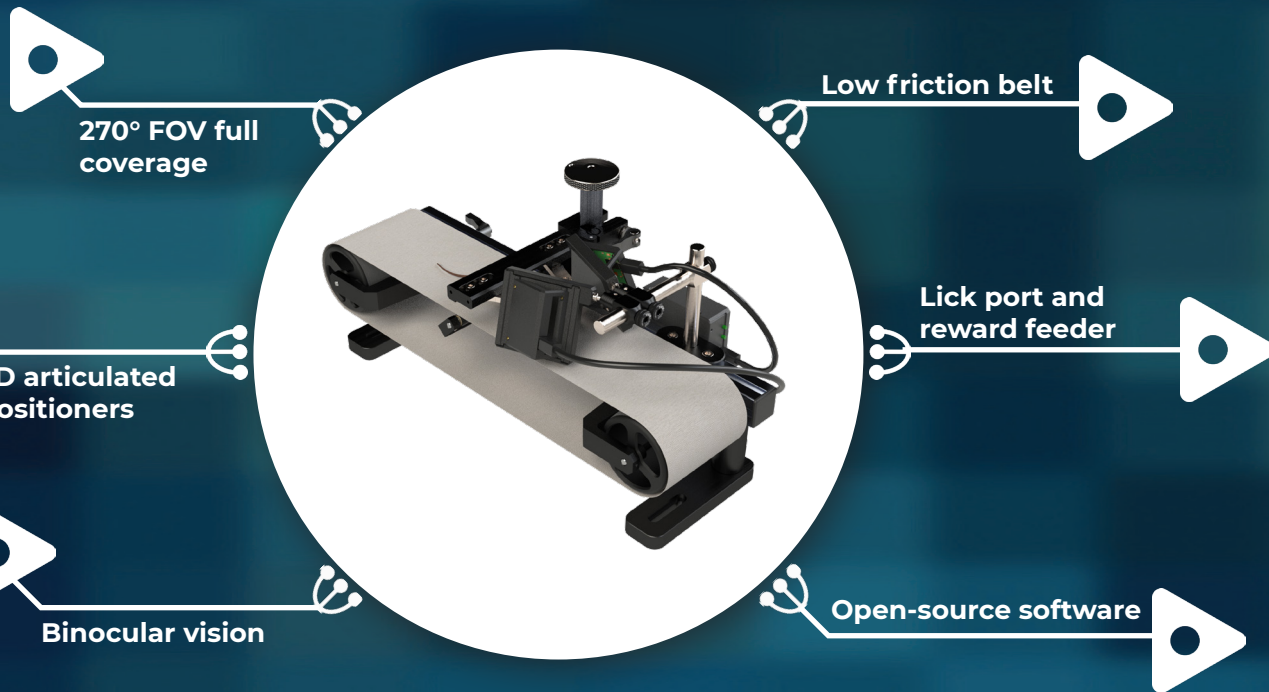
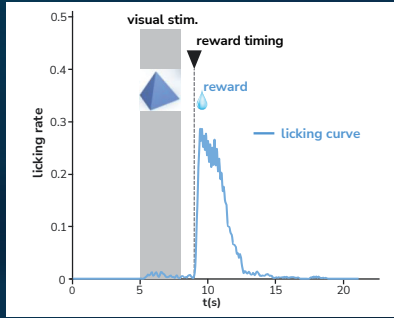
SENSE OF PRESENCE IN NEUROSCIENCE

Experience full immersion in behavior experiments with our patented binocular display system, seamlessly integrated with a treadmill and lick port.



Reproduce real freely moving behavioral tasks whilst head-fixed under the microscope

Control your behavioral experiment based on precise recording, use versatile stimuli



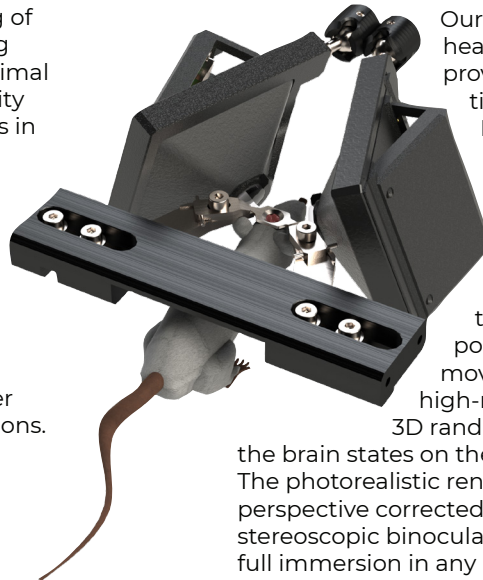
To better understand brain functions during natural behavior, experiments that mimic the real world as closely as possible are essential.

High-resolution studies require head fixation to the microscope, enabling subcellular imaging of thousands of cells with advanced 3D scanning and photostimulation, unlike free-running animal studies with limited FOV and resolution. Quality surgery allows studying these cells for months in experiments.

VIRTUAL-REALITY (VR), in combination with head-fixed recordings provides control and stability for recordings during behavioral experiments allowing the creation of complex interactive virtual environments. The Mouse Virtual Reality system provides the animal with the sensation that the virtual environment is reality, thereby achieving faster learning and lifelike imprinted behavior reactions.

Examples: Spatial orientation (hippocampus research), visual conditioning and learning, decision-making experiments, elevated-zero-maze (pharmacology), lifelike imprinted behavior patterns, looming, etc.

MOUSE VIRTUAL REALITY KIT



Our patented comprehensive VR head-mounted display for mice provides binocular depth perception and stereoscopic 3D vision. By positioning the displays to the eyes of a head-fixed mouse running on a treadmill, virtual scenes can be displayed to the mouse in closed-loop experiments, where the treadmill motion controls the visual scene. This makes it possible to reproduce real, freely moving behavior tasks, whilst the high-resolution, large FOV or even 3D random-access microscope records the brain states on the cellular or subcellular level. The photorealistic rendering engine creates perspective corrected 3D virtual world and stereoscopic binocular vision in a large FOV, allowing full immersion in any imaginable environment.

KEY SPECIFICATIONS

- **MOUSE VR:**
 - 2 displays: vibration free, high dynamic range, true black OLED technology
 - Resolution 1080 x 1200
 - Contrast ratio: 10000 : 1
 - Field-of-view: 130° each eye
- **TREADMILL**
 - Feedback time: < 100 ms
 - Resolution: 1200 counts per inch
 - Belt length: 458 mm

MOUSE NEUROBEHAVIOR EXPERIMENTS

- Abyss test, looming test
- For complex navigation, cognitive, learning or memory-related behavioral tasks
- Innate behavior experiments
- Habituation and training for experiments