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Simulate-Plan-Execute-Debug-Repeat

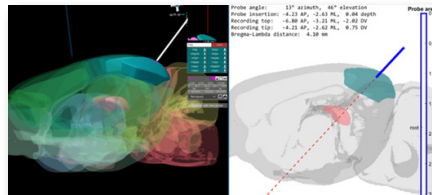
Integration of the MPM Multi-Probe Micromanipulator System with Trajectory Planning and Data Acquisition Apps

Combining real-time stereotactic position data with the MPM Micromanipulator System will lead to more accurate electrode placement, and more scientifically valuable recordings.



Manipulator designed for multiple probes

Simplifies placement of multiple silicon probes in one animal for acute in-vivo recording. Hardware offers flexible setup in the smallest space. Pathfinder software with Virtual Coordinate System (VCS) moves all probes in a common stereotactic coordinate space. Supports simulation, planning, and execution.



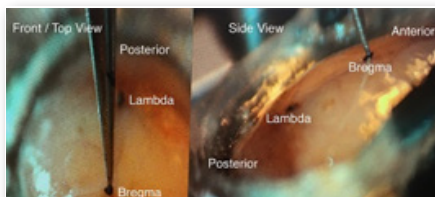
Plan experiments from your desktop

Determine probe insertion path with start and stop coordinates using the MPM System's Pathfinder Software with Virtual Coordinate System (VCS), combined with a trajectory planning tool. We support Trajectory Explorer (Peters Lab, Uni. Oxford) and Pinpoint. (Steinmetz Lab, Uni. Washington)



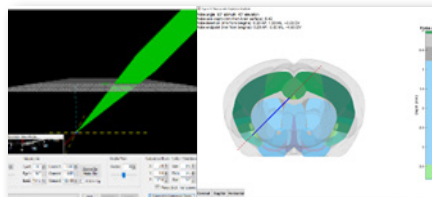
Set up hardware for the planned probe trajectory

Pathfinder determines the polar angle/azimuth (position of the manipulator on the platform ring), pitch angle (arm elevation), and arm height and length. Spend less time calculating angles, more time recording.



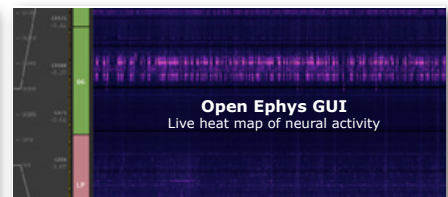
Establish stereotactic coordinates for the experiment

Calibrate the animal by registering bregma and lambda with the MPM alignment probe. Adjust hardware to accommodate any minor differences from the simulation, and display the probe in Pathfinder's 3D virtual coordinate system. Pathfinder will pass probe coordinates to the trajectory planning app, with probe position verified within the brain via the data acquisition app.



Place probes more accurately

As you use the MPM to insert the probe, you will be able to visualize real-time probe location in the Allen Institute's 3D brain atlas, the Common Coordinate Framework (CCF), using the trajectory planning tool. We are working with Trajectory Explorer and Pinpoint.



Visualize brain activity during insertion

Compare real-time brain activity to the probes' positions based on MPM coordinates. Live heat maps show activity in brain region and channel depth. Is it what you expect, or have you missed your target? We are working with the Open Ephys GUI, SpikeGLX and Allego.