

Using the MouseWalker to Quantify Locomotor Dysfunction in a Mouse Model of Spinal Cord Injury

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URL

jove.com/video/65207

Materials

Name	Company	Catalog Number	Comments
45° Mirror			
2 aluminum extrusion (2 x 2 cm), 16 cm height, 1 on each side	Misumi		
2 aluminum extrusion (2 x 2 cm), 23 cm, @ 45°, 1 on each side	Misumi		
1 aluminum extrusion (2 x 2 cm), 83 cm long	Misumi		
87 x 23 cm mirror	General glass supplier		
black cardboard filler	General stationery supplier		We used 2, one with 69 x 6 cm and another with 69 x 3cm to limit the reflection on the mirror
Background backlight			
109 x 23 cm plexiglass (0.9525 cm thick)	General hardware supplier		
2 lateral aluminum extrusion (4 x 4 cm), 20 cm long, 1 on each side	Misumi		
multicolor LED strip	General hardware supplier		
white opaque paper to cover the plexyglass	General stationery supplier		
FTIR Support base and posts			
2 aluminum extrusion (4 x 4 cm), 100 cm height	Misumi		
60 x 30 cm metric breadboard	Edmund Optics	#54-641	
M6 12 mm screws	Edmund Optics		
M6 hex nuts and washers	Edmund Optics		
FTIR Walkway			
109 x 8.5 cm plexyglass (1.2 cm thick)	General hardware supplier		109 x 8.5 cm plexyglass (1.2 cm thick)
109 cm long Base-U-channel aluminum with 1.6 cm height x 1.9	General hardware supplier		

cm depth thick folds (to hold the plexyglass)			
2 lateral aluminum extrusion (4 x 4 cm) 20 cm length, 1 on each side	Misumi		
black cardboard filler	General stationery supplier		we used 2 fillers on each side to cover the limits of the plexyglass, avoiding bright edges
M6 12 mm screws	Edmund Optics		
High speed camera (on a tripod)			
Blackfly S USB3	FLIR	#BFS-U3-32S4M-C	This is a recommendation. The requirement is to record at least 100 frames per second
Infinite Horizon Impactor			
Infinite Horizon Impactor	Precision Systems and Instrumentation, LLC.	#0400	
Lens			
Nikon AF Zoom-Nikkor 24-85mm	Nikon	#1929	This lens is recommended, however other lens can be used. Make sure it contains a large aperture (i.e., smaller F-stop values), to capture FTIR signals
Software			
MATLAB R2022b	MathWorks		
Python 3.9.13	Python Software Foundation		
Anaconda Navigator 2.1.4	Anaconda, Inc.		
Spyder 5.1.5	Spyder Project Contributors		
Walkway wall			
2 large rectangular acrylics with 100 x 15 cm	Any bricolage convenience store		
2 Trapezian acrylic laterals with 6-10 length x 15 cm height	Any bricolage convenience store		
GitHub Materials			
Folder name	URL		
Boxplots	https://github.com/NeurogeneLocomotion/MouseWalker/tree/main/Boxplots		Script to create Boxplots
Docs	https://github.com/NeurogeneLocomotion/MouseWalker/tree/main/Docs		Additional documents
Heatmap	https://github.com/NeurogeneLocomotion/MouseWalker/tree/main/Heatmaps		Script to create heatmap
Matlab script	https://github.com/NeurogeneLocomotion/MouseWalker/tree/main/Matlab %20Script		MouseWalker matlab script
PCA	https://github.com/NeurogeneLocomotion/MouseWalker/tree/main/PCA %20plots		Script to perform Principal Component Analysis
Raw data Plots	https://github.com/NeurogeneLocomotion/MouseWalker/tree/main/Rawdata %20Plots		Script to create Raw data plots
Residual Analysis	https://github.com/NeurogeneLocomotion/MouseWalker/tree/main/Residual_Analysis		Code to compute residuals from Raw data