Supplementary Materials
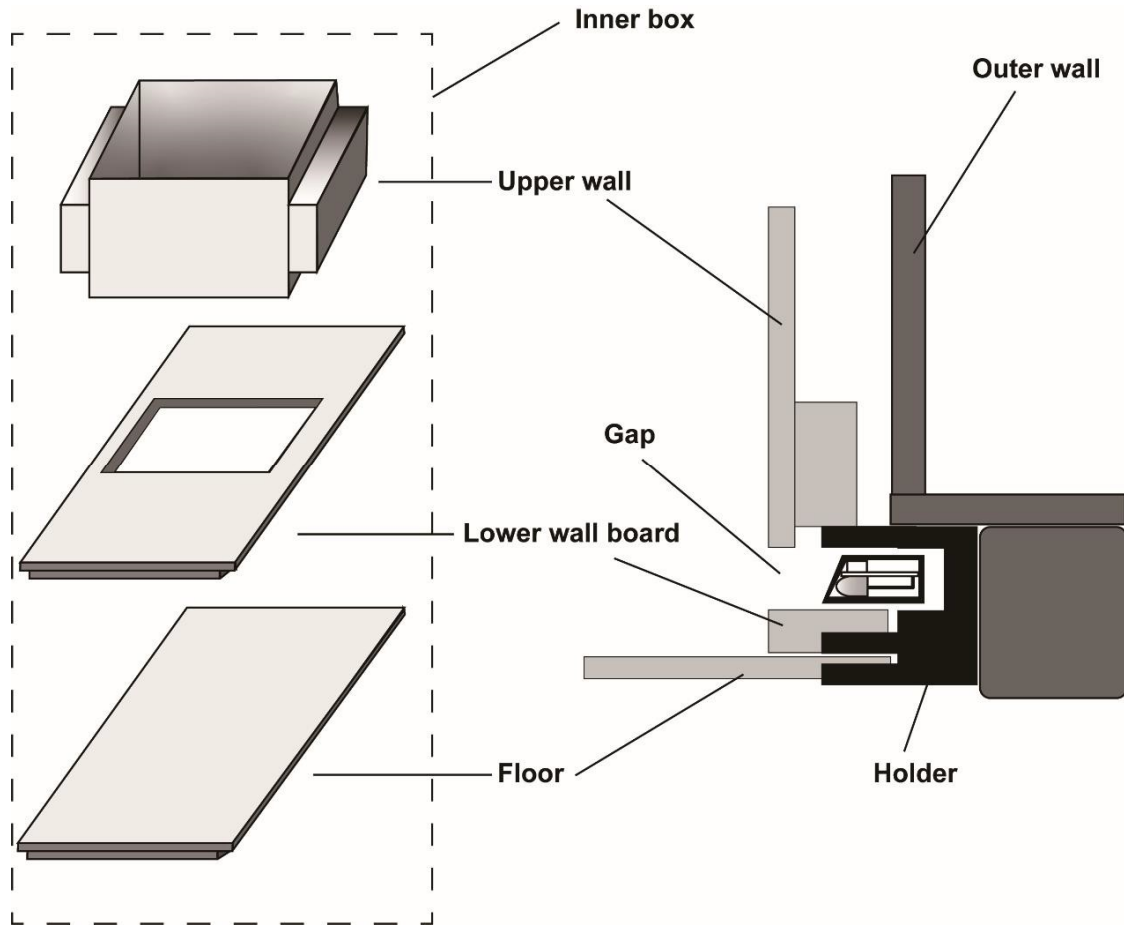
Fig. S1 The inner box and the behavior box holder. The open field test apparatus as an example of an 'inner box'. Schematic showing how the upper wall, lower wall board, and floor are combined and fitted into the box holder.

A

Footshock

Infrared detector

DAQ card

B

☐ Shock — Control
■ Shock — Shock

Distance to refuge (mm)

Time (s)

C

Latency to Refuge (s)

Control   Shock

**

D

Hiding Time (s)

Control   Shock

*

F

Shock

- 2 s
0 s (trigger point)
10 s
Trajectory

E

Distance Ratio

Control   Shock

*

G

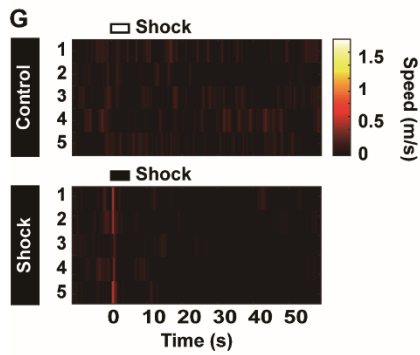☐ Shock — Control
■ Shock — Shock

Speed (m/s)

Time (s)

H

Mean Speed (m/s)

Control   Shock

**

I

Max Speed (m/s)

Control   Shock

**

J

Shock

Control
Shock

Speed (m/s)

Time (s)
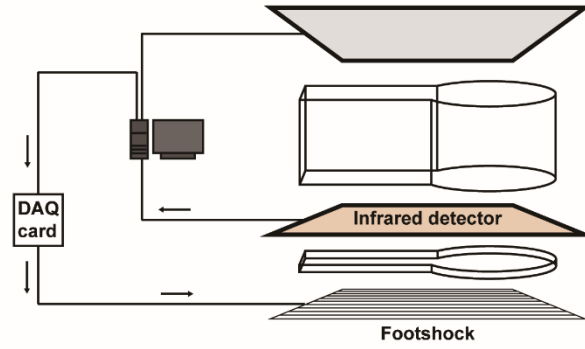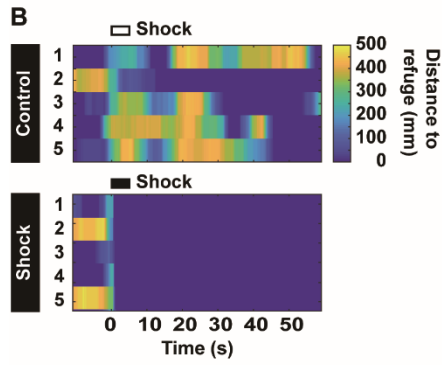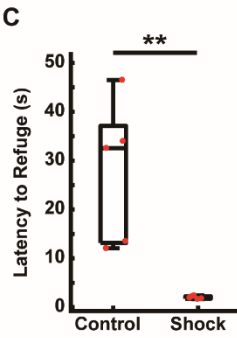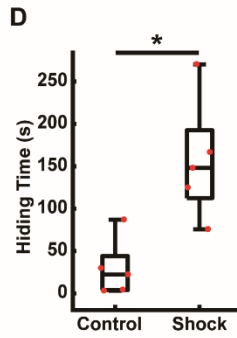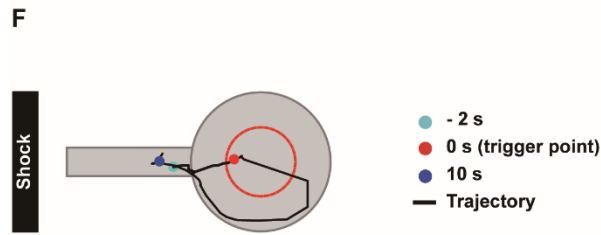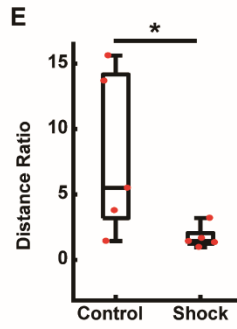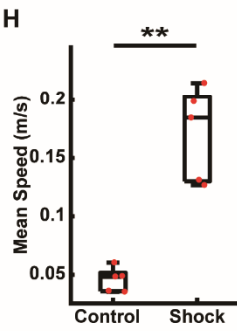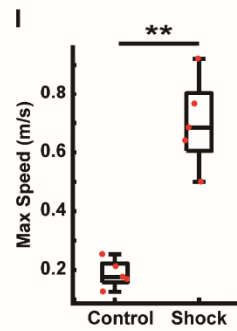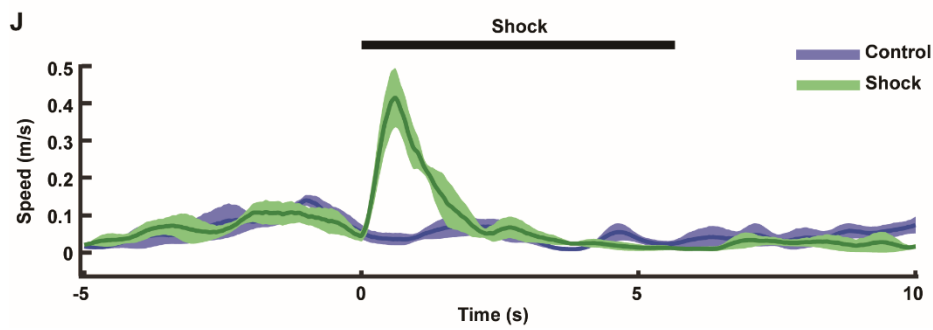
Fig. S2 Related to Fig. 3. Foot-shock test in the AIBM system. **A** Schematic of the AIBM system with the closed-loop foot-shock paradigm. The foot-shock is triggered through the data acquisition (DAQ) card. **B** Distance of mice to refuge before, during, and after foot-shock. Upper, negative control group (no foot-shocks); lower, foot-shock group (0.5 A for 6 s). **C** Latency to refuge following foot-shock. **D** Time spent hiding in the refuge following foot-shock. **E** Distance ratio of the trajectory to refuge. **F** An example trajectory showing a mouse that, after triggering the foot shock, ran forward first and entered the refuge *via* a long circuitous path. **G** Speed of mice to the refuge before, during, and after foot-shock. Upper, negative control group (no foot-shocks); lower, foot-shock group (0.5 A for 6 s). **H** Mean speed to refuge following foot-shock. **I** Maximum speed to refuge following foot-shock. **J** Average speed curve before, during, and after foot shock. $n = 5$ mice in each group. $*P < 0.05$, $**P < 0.01$, $***P < 0.001$ *vs* negative control group.