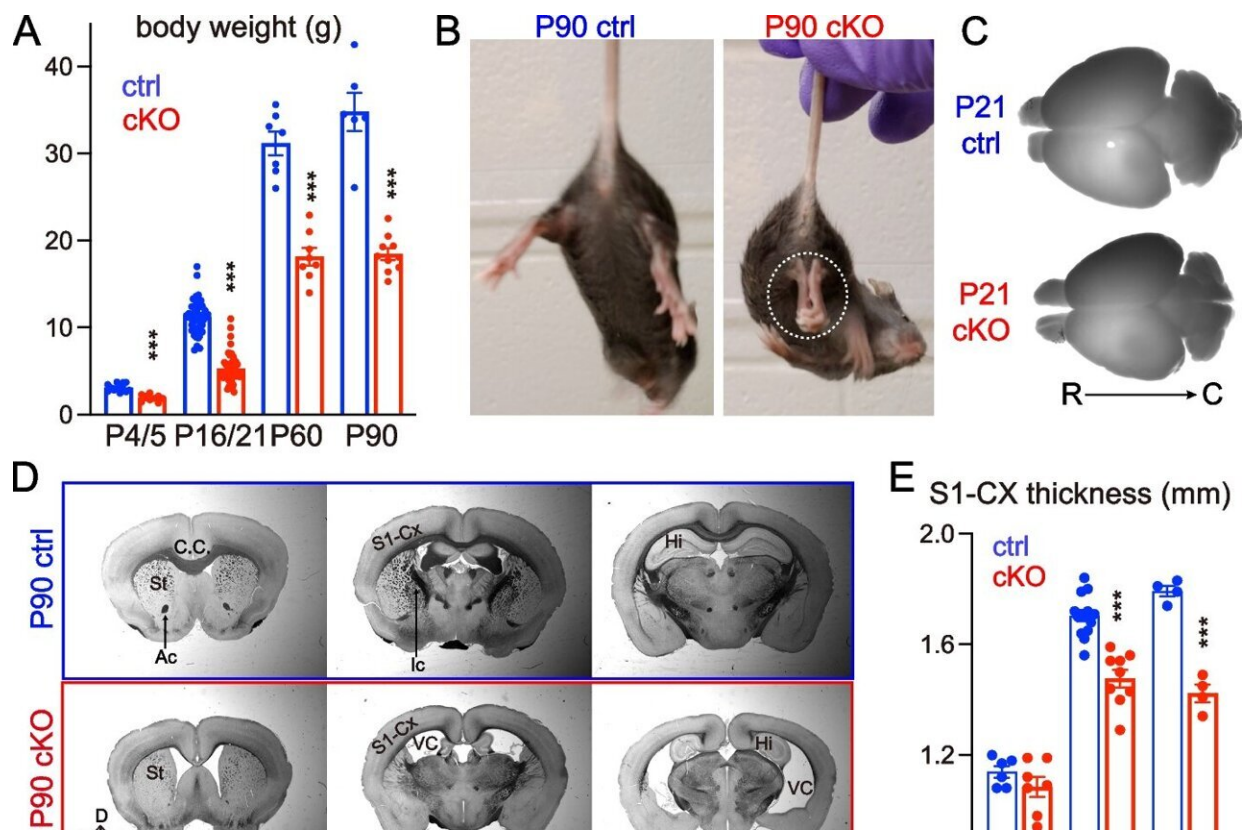


Researchers find enzyme plays much larger role in preventing neurodegenerative diseases

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Deleting NMNAT2 in cortical glutamatergic neurons results in age-dependent axonal degeneration. **A** Body weight of cKO and their littermate control (ctrl) mice at P4/5, P16/21, P60, and P90. Mice numbers: P4/5, 13 ctrl and 9 cKO; P16/P21 43 ctrl and 46 cKO; P60, 7 ctrl and 8 cKO; P90, 6 ctrl and 10 cKO. **B** Movie screenshots showing that a P90 cKO mouse exhibits hindlimb clamping behaviors (dashed white oval), a classic motor deficit observed in many neurodegenerative models (see Sup. Movies), but not in a ctrl mouse. **C, D** Bright field images showing whole brains and coronal plane brain sections

(rostral to caudal from left to right) from ctrl and cKO mice. In addition to the smaller brain sizes, cKO brains have enlarged ventricles and reduced cortical regions and hippocampal areas. E Quantification of the primary somatosensory (S1) cortex thickness in ctrl and cKO mice at different ages. Mice numbers: P4/5, 6 ctrl and 7 cKO; P16/P21, 14 ctrl and 9 cKO; P90, 4 ctrl and 4 cKO. F Confocal images of immunohistochemical staining of NFM (medium-size neurofilament) showing axonal tracts through the corpus callosum (CC) in ctrl and cKO brains at P4, P21, and P90. Yellow brackets mark the thickness of the CC. G Quantification of the CC thickness, normalized to its value in ctrl mice. Mice numbers: P4/5, 5 ctrl and 5 cKO; P16/P21, 9 ctrl and 7 cKO; P90, 3 ctrl and 3 cKO. Abbreviations: Ac, anterior commissure; Ic, internal capsule; CC, corpus callosum; Cx, cortex; Hi, hippocampus; St, striatum; VC, ventricle. Unpaired t-test and Mann–Whitney test were applied for the statistic result, ***p

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