

Poster Presentation : PS1-03



2021년도 한국현미경학회 춘계학술대회

Structure and functional changes of mitochondria and lysosome
in propionic acid and neurotropic factor treated hippocampal neurons

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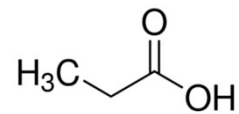
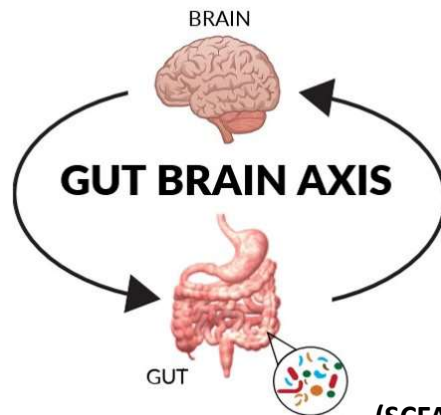
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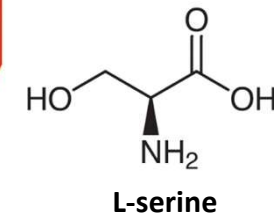
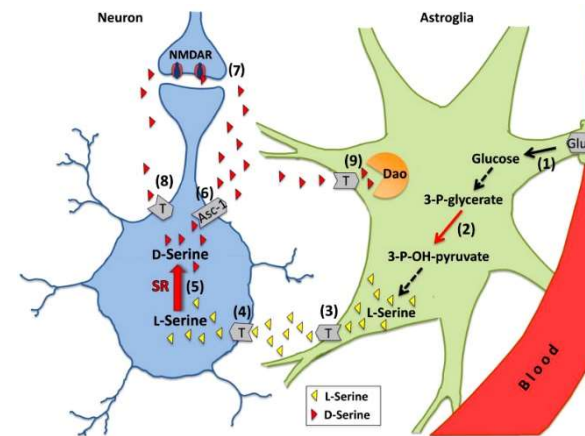
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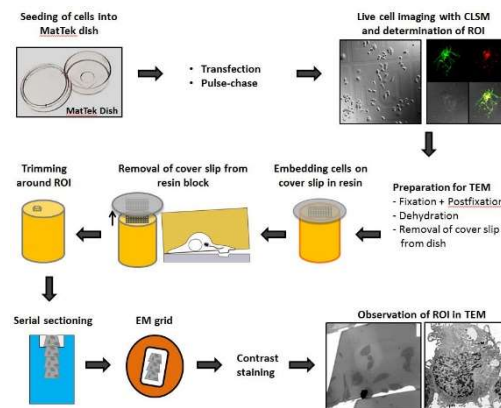
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Short-chain fatty acids
(SCFAs; butyrate, **propionate** and acetate)



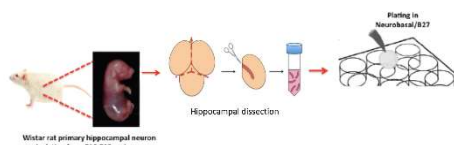
3. Sample preparation for EM



2. Confocal live cell analysis



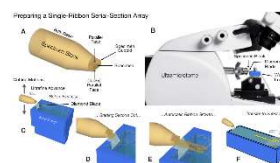
5. TEM analysis



1. Primary culture

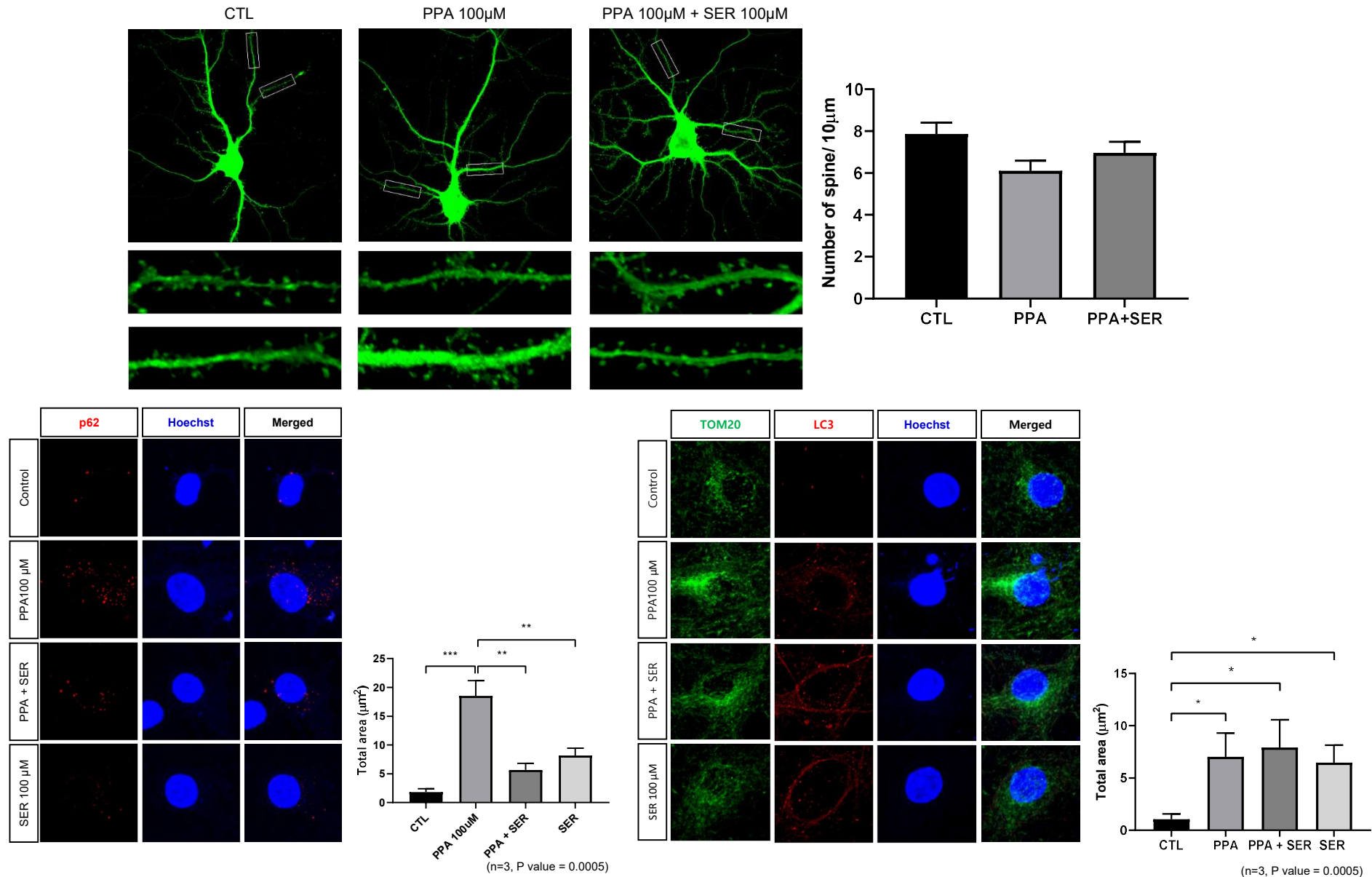
DIV 17 : treatment of PPA

DIV 21 : Confocal and TEM analysis



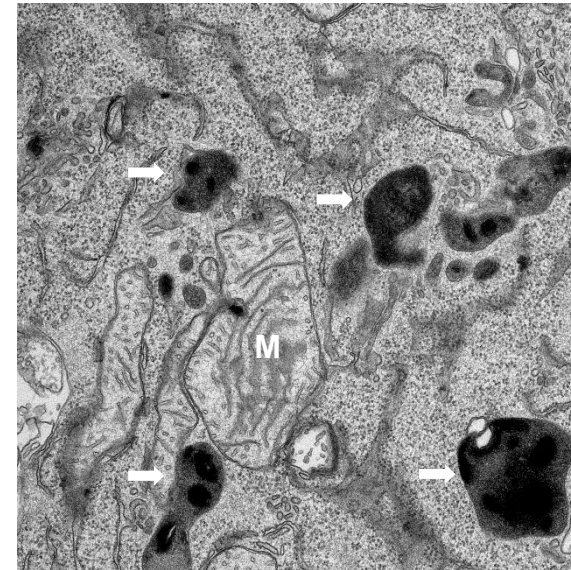
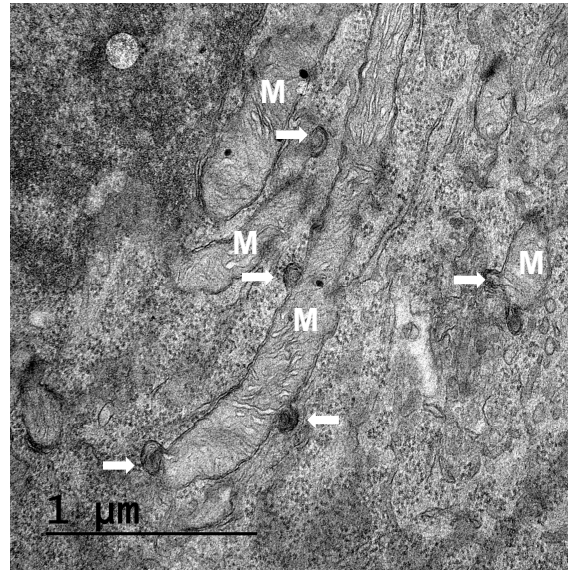
4. Serial sectioning

The effect of PPA and serine in hippocampal neurons

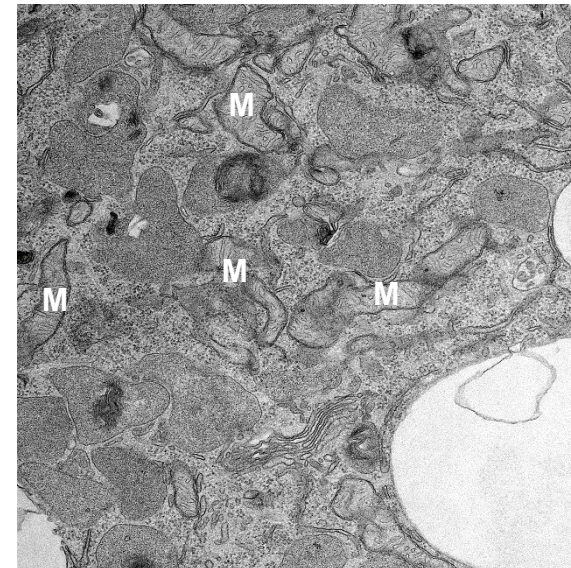
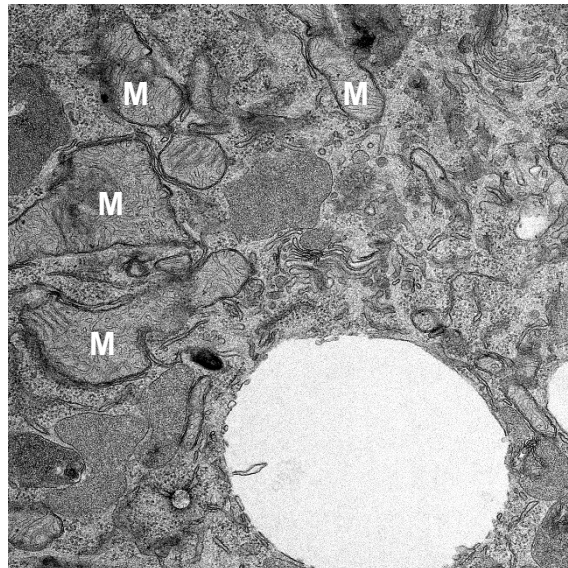


Representative TEM image in hippocampal neurons

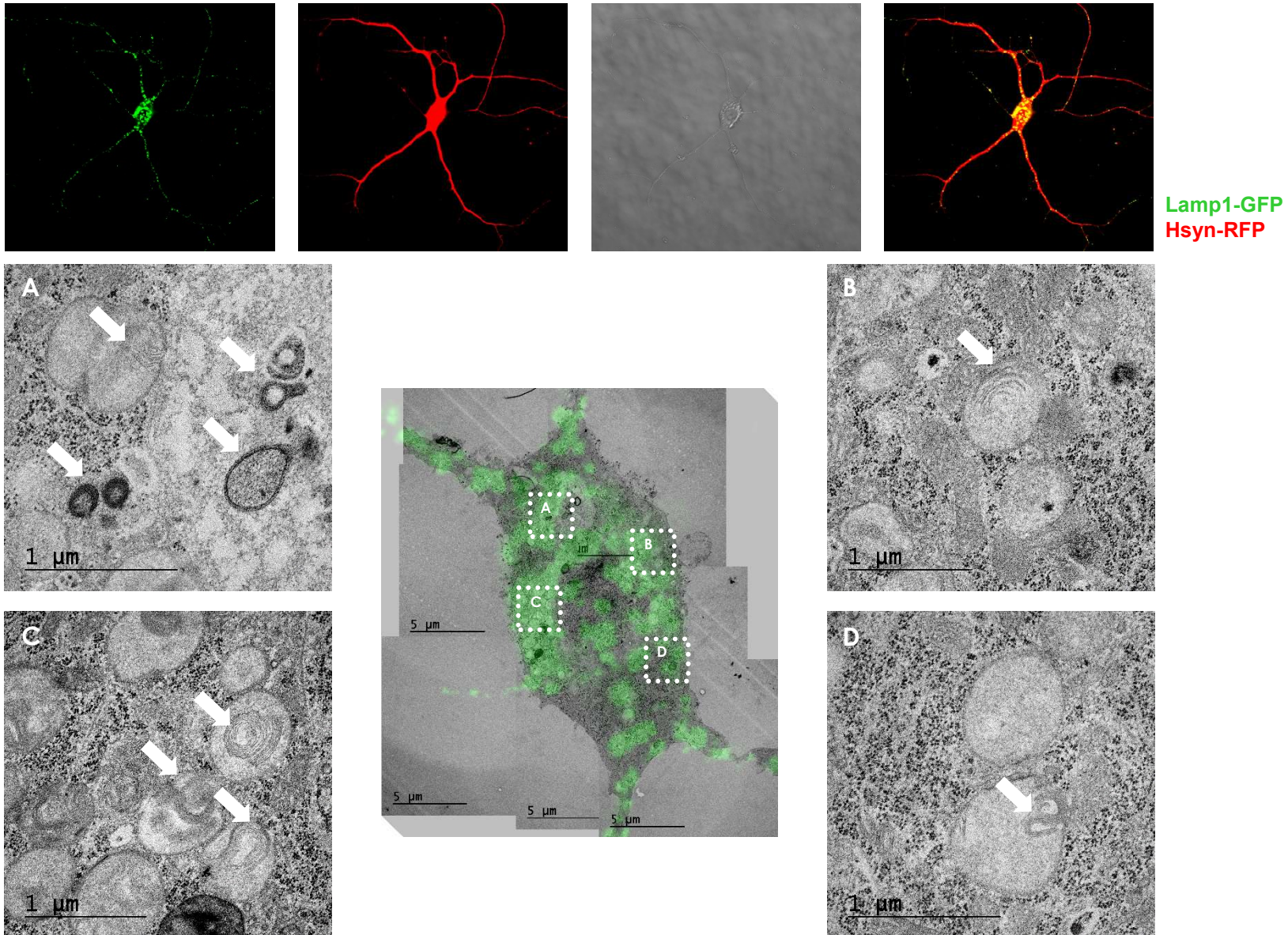
PPA 100 μ M



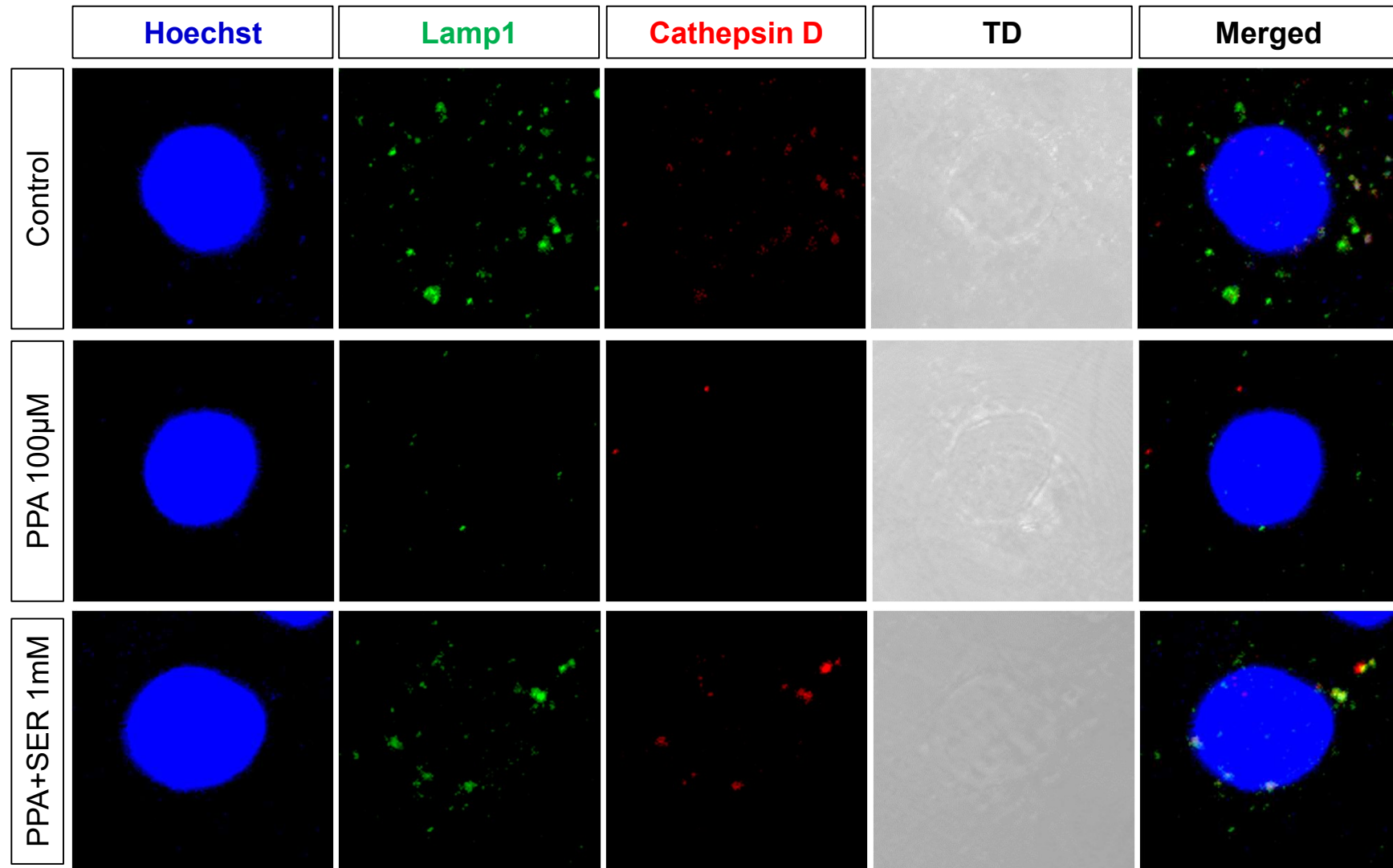
PPA 100 μ M + SER 100 μ M



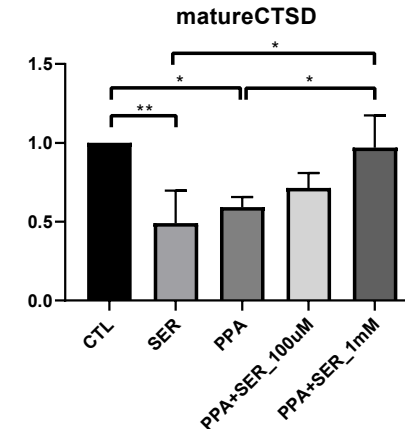
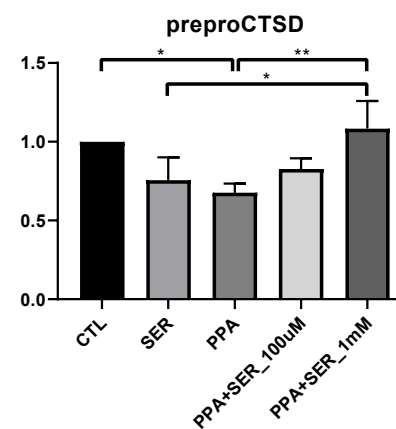
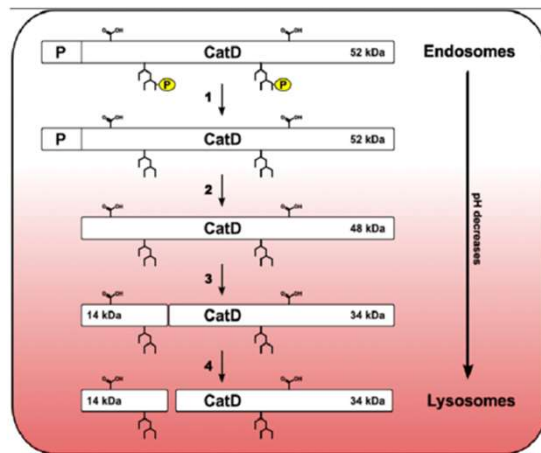
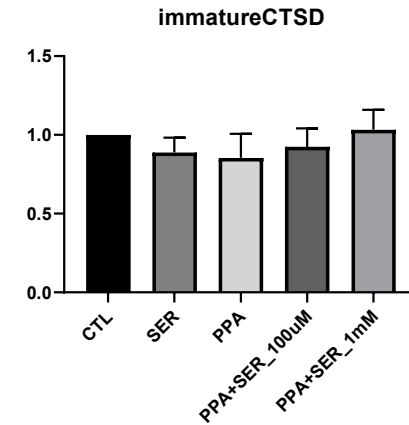
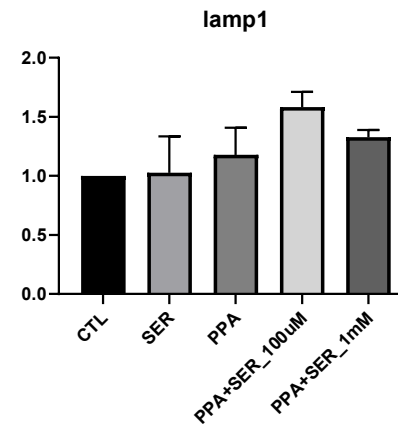
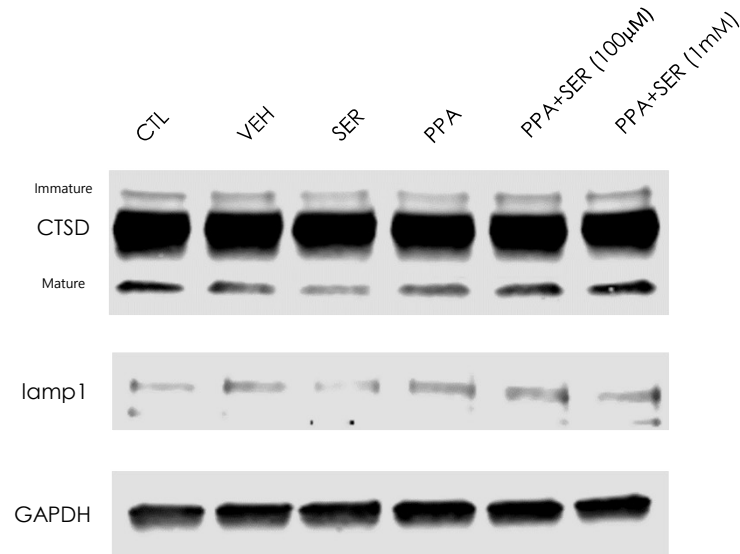
Representative correlative light and electron microscopy images in PPA (100 μ M)



Representative fluorescence images of cultured hippocampal neurons



Western blot analysis of hippocampal neurons using lysosomal markers



(P value = 0.0057, n=3)

(P value = 0.0040, n=3)

- 1. Propionic acid (PPA) affect dendritic spine in hippocampal neurons through autophagy defect.**
- 2. PPA increases mitochondria-driven vesicles in hippocampal neurons.**
- 3. PPA inhibits the activity of lysosomes and increases the production of multi lamella bodies in hippocampal neurons.**
- 4. L-serine increases the activity of lysosome and decreases the multi lamella bodies.**
- 5. L-serine can regulate the autophagic defect by PPA treatment in hippocampal neurons.**

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