

# **APPLIED MICROBIOLOGY AND BIOTECHNOLOGY**

## **Supplementary materials for The alteration of intestinal mucosal $\alpha$ -synuclein expression and mucosal microbiota in Parkinson's disease**

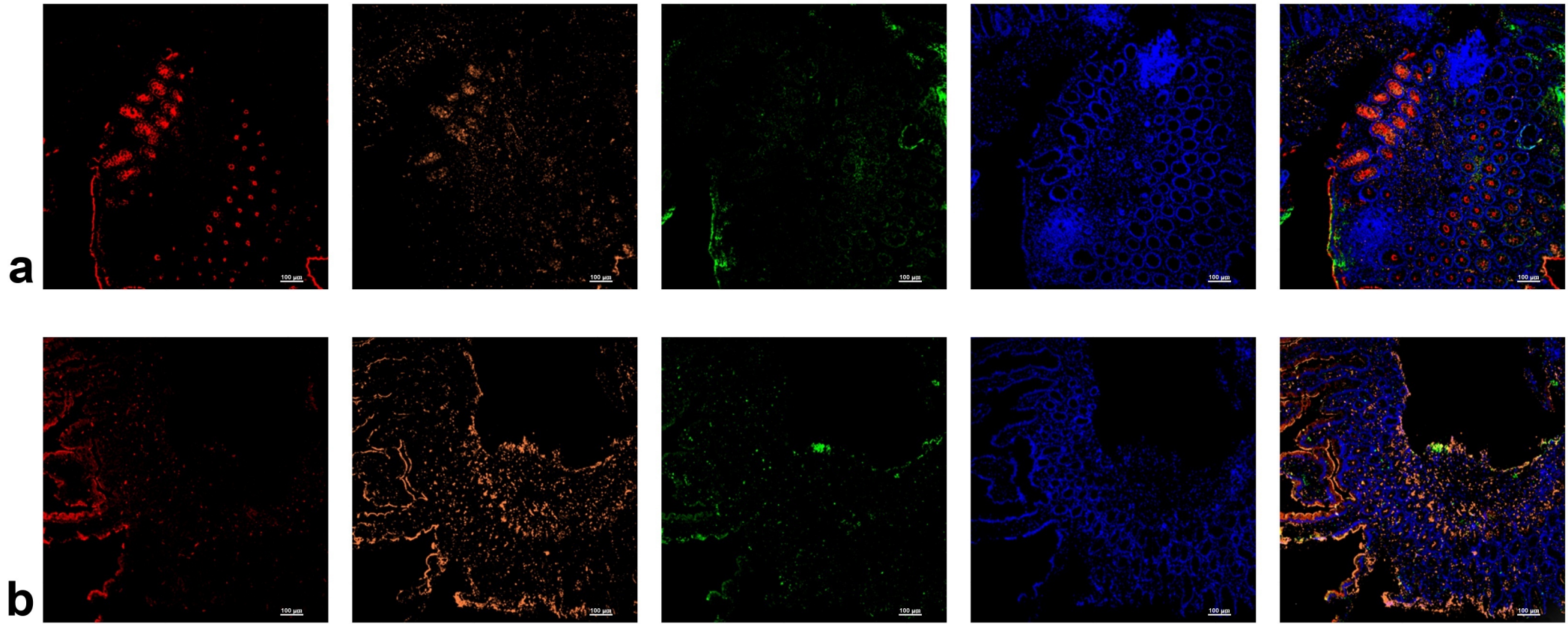
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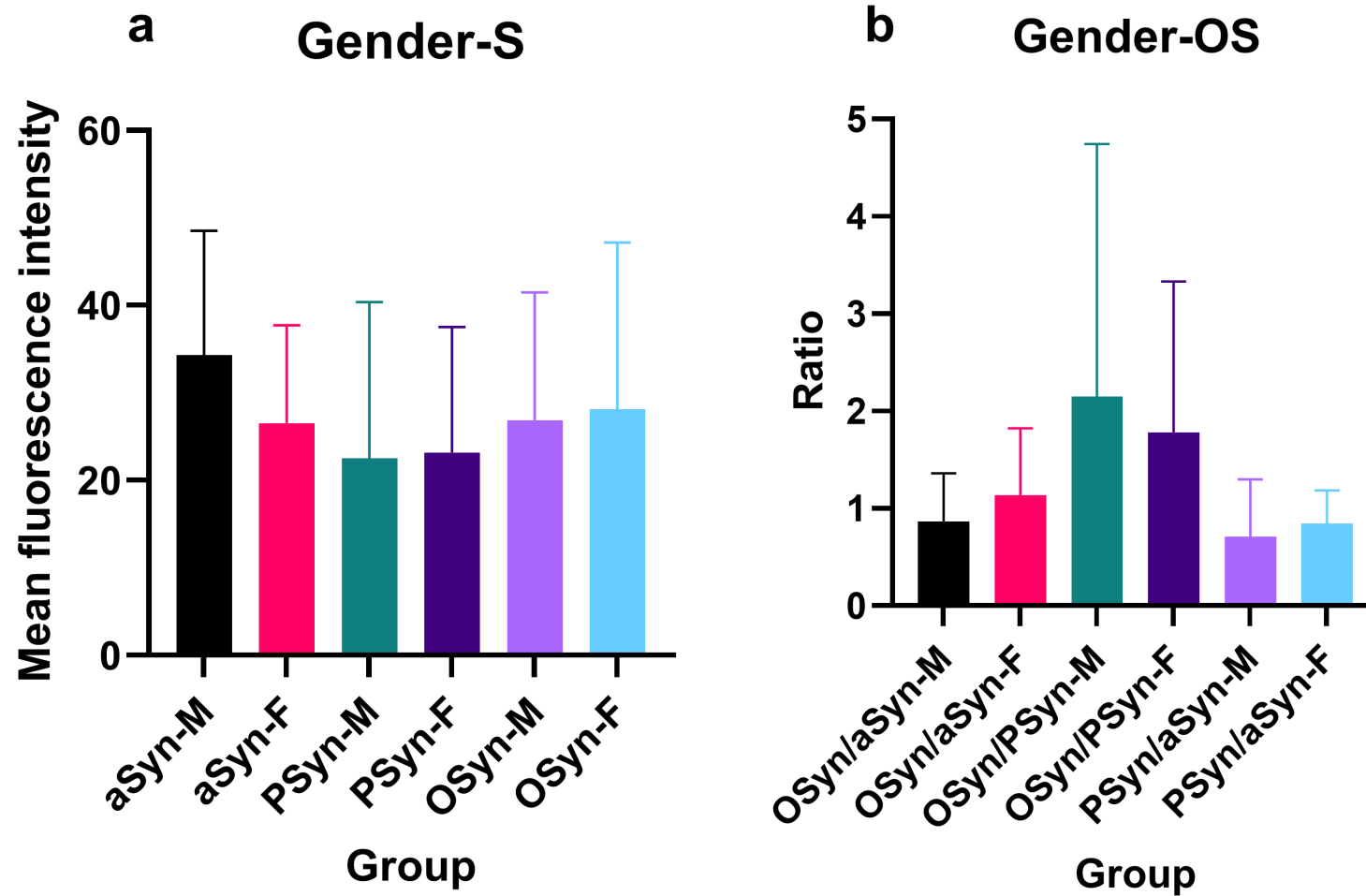
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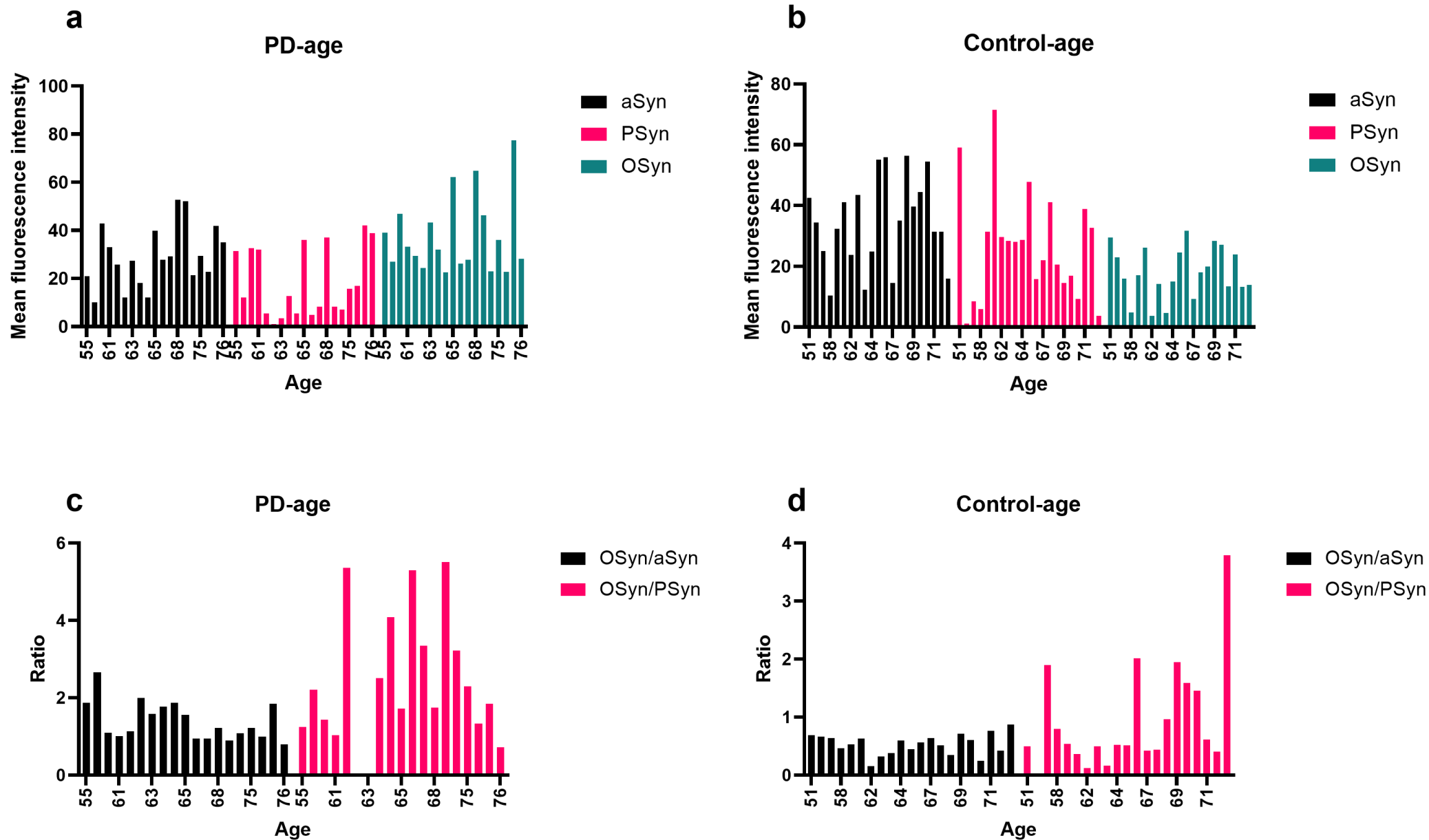
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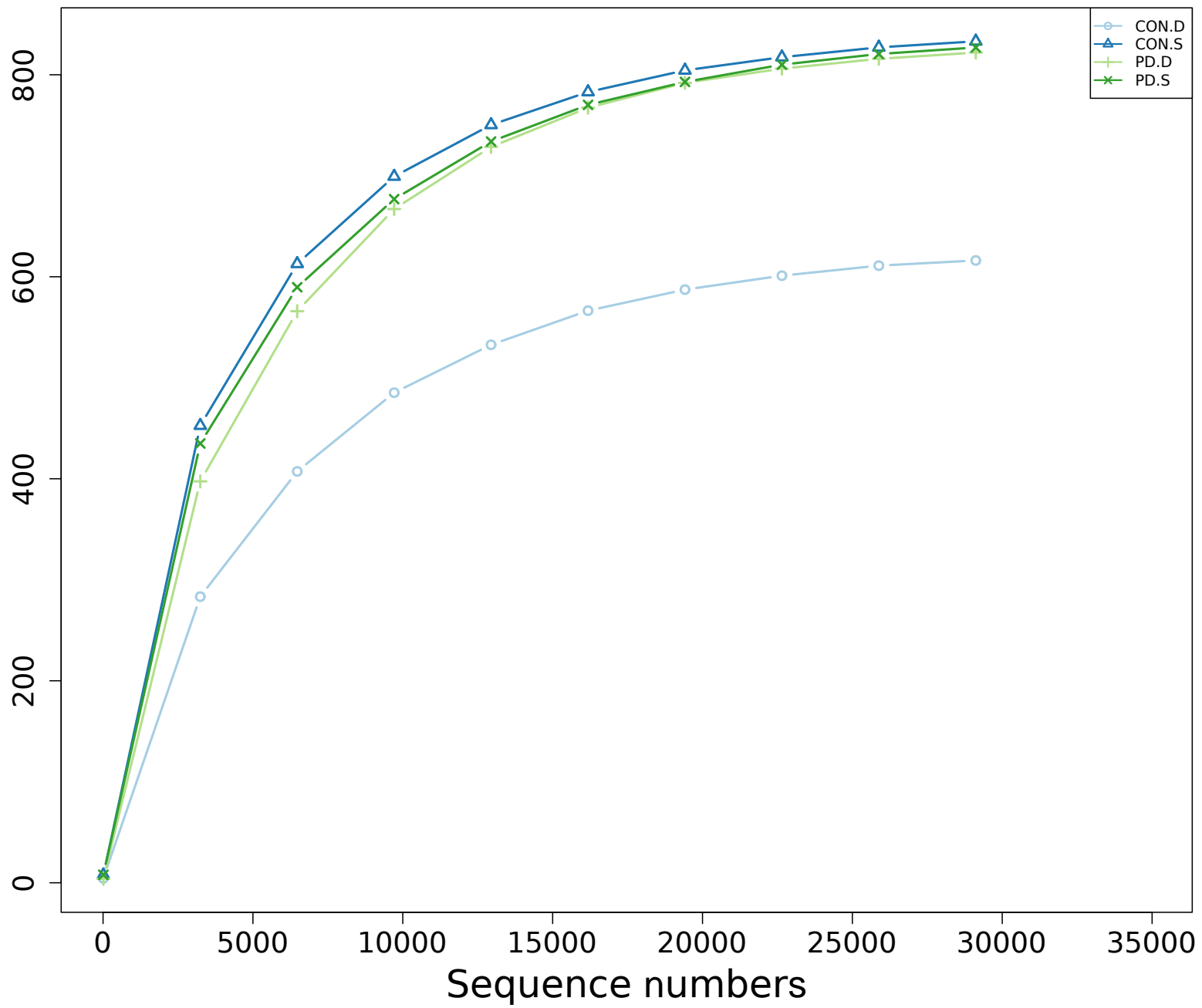
**Figure S1** The distribution of different types of  $\alpha$ Syn in duodenal mucosa of healthy control (a) and PD patients (b);  $\times 100$ . The scale bars are in the bottom right corner of each picture, indicating 100  $\mu$ m. As listed from left to right: red is total  $\alpha$ -synuclein; orange is oligomer  $\alpha$ -synuclein; green is phosphorylated  $\alpha$ -synuclein; blue is cell nucleus; multi-color is the merged picture.



**Figure S2** The mean fluorescence intensity (a) and ratio (b) of different types of  $\alpha$ -synuclein are grouped by sex. M: male; F: female. aSyn: total  $\alpha$ -synuclein; OSyn: oligomer  $\alpha$ -synuclein; PSyn: phosphorylate  $\alpha$ -synuclein.



**Figure S3** The mean fluorescence intensity (a) and ratio (b) of different types of  $\alpha$ -synuclein showed according to age. aSyn: total  $\alpha$ -synuclein; OSyn: oligomer  $\alpha$ -synuclein; PSyn: phosphorylate  $\alpha$ -synuclein.



**Figure S4** Sample rarefaction curves for observed species per group.