

SUPPLEMENTAL ITEM TITLES - PROTEOMICS

Supplemental Spreadsheet 1. List of total proteins identified within the injury site at different time points: 1 day, 3 days, 7 days, and 10 days, along with the sham condition. This list includes the LFQ intensity for the different conditions, protein ID, number of unique peptides per identified protein, percentage of sequence coverage, accession number, protein name, and gene name.

Supplemental Spreadsheet 2. List of proteins statistically significant, after applying ANOVA test with $p\text{-value}=0.01$, within the injury site at different time points: 1 day, 3 days, 7 days, and 10 days, along with the sham condition. This list includes the LFQ intensity for the different conditions, protein ID, number of unique peptides per identified protein, percentage of sequence coverage, accession number, protein name, and gene name.

Supplemental Spreadsheet 3. List of identified proteins corresponding to cluster 1 (upregulated proteins at sham condition as well as 1 and 10 days post-injury) in spatially-resolved shotgun proteomics of the injured cortical tissue.

Supplemental Spreadsheet 4. List of identified proteins corresponding to cluster 2 (upregulated proteins at sham condition as well as 7 and 10 days post-injury) in spatially-resolved shotgun proteomics of the injured cortical tissue.

Supplemental Spreadsheet 5. List of identified proteins corresponding to cluster 4 (upregulated proteins at 1, 3 and 7 post-injury) in spatially-resolved shotgun proteomics of the injured cortical tissue.

Supplemental Spreadsheet 6. List of identified proteins corresponding to cluster 5 (upregulated proteins at 3 and 7 days post-injury) in spatially-resolved shotgun proteomics of the injured cortical tissue.

Supplemental Spreadsheet 7. List of identified proteins corresponding to cluster 3 (upregulated proteins at 3, 7, and 10 days post-injury) in spatially-resolved shotgun proteomics of the injured cortical tissue.

Supplemental Spreadsheet 8. List of total proteins identified in substantia nigra ipsi and contra at 3 days post impact. This list includes the LFQ intensity for the different conditions, protein ID, number of unique peptides per identified protein, percentage of sequence coverage, accession number, protein name, and gene name.

Supplemental Spreadsheet 9. List of proteins statistically significant, after applying Student's T-test with $p\text{-value}=0.05$, in substantia nigra ipsi and contra at 3 days post impact. This list includes the LFQ intensity for the different conditions, protein ID, number of unique peptides per identified protein, percentage of sequence coverage, accession number, protein name, and gene name.

Supplemental Spreadsheet 10. List of proteins identified to be upregulated by spatially-resolved Shotgun proteomics in the *substantia nigra* ipsilateral 3 days post-injury.

Supplemental Spreadsheet 11. Neighboring pathways corresponding to targeted Parkinson's disease pathway analysis of proteins identified in shotgun proteomics in the *substantia nigra* 3 days post-injury. In addition, the relationship nature, along with the reported PMID are listed.

Supplemental Spreadsheet 12. List of total proteins identified in cultured astrocytes stimulated or not with palmitoylcarnitine. This list includes the LFQ intensity for the different conditions, protein ID, number of unique peptides per identified protein, percentage of sequence coverage, accession number, protein name, and gene name.

Supplemental Spreadsheet 13. List of proteins statistically significant, after applying Student's T-test with $p\text{-value}=0.05$, in cultured astrocytes stimulated or not with palmitoylcarnitine. This list includes the LFQ intensity for the different conditions, protein ID, number of unique peptides per

identified protein, percentage of sequence coverage, accession number, protein name, and gene name.

Supplemental Spreadsheet 14. List of proteins identified to be upregulated in control condition of astrocytes when compared to palmitoylcarnitine stimulated condition in the cell line shotgun experiments.

Supplemental Spreadsheet 15. Neighboring pathways unique and common between astrocytes stimulated with palmitoylcarnitine or not (Control).

Supplemental Spreadsheet 16. List of proteins identified to be upregulated in palmitoylcarnitine stimulated condition of astrocytes when compared to control condition in the cell line shotgun experiments.

Supplemental Spreadsheet 17. List of total proteins identified in cultured WT macrophages stimulated or not with palmitoylcarnitine. This list includes the LFQ intensity for the different conditions, protein ID, number of unique peptides per identified protein, percentage of sequence coverage, accession number, protein name, and gene name.

Supplemental Spreadsheet 18. List of proteins statistically significant, after applying Student's T-test with $p\text{-value}=0.05$, in cultured WT macrophages stimulated or not with palmitoylcarnitine. This list includes the LFQ intensity for the different conditions, protein ID, number of unique peptides per identified protein, percentage of sequence coverage, accession number, protein name, and gene name.

Supplemental Spreadsheet 19. List of proteins identified to be upregulated in control condition of WT macrophages when compared to palmitoylcarnitine stimulated condition in the cell line shotgun experiments.

Supplemental Spreadsheet 20. Neighboring pathways unique and common between WT macrophages stimulated with PC or not (Control).

Supplemental Spreadsheet 21. List of proteins identified to be upregulated in WT macrophages after stimulation with palmitoylcarnitine when compared to control condition in the cell line shotgun experiments.