

Interrogating the Metabolomic Profile of Amyotrophic Lateral Sclerosis in the Post-Mortem Human Brain by Infrared Matrix-Assisted Laser Desorption Electrospray Ionization (IR-MALDESI) Mass Spectrometry Imaging (MSI)

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Arginine Biosynthesis

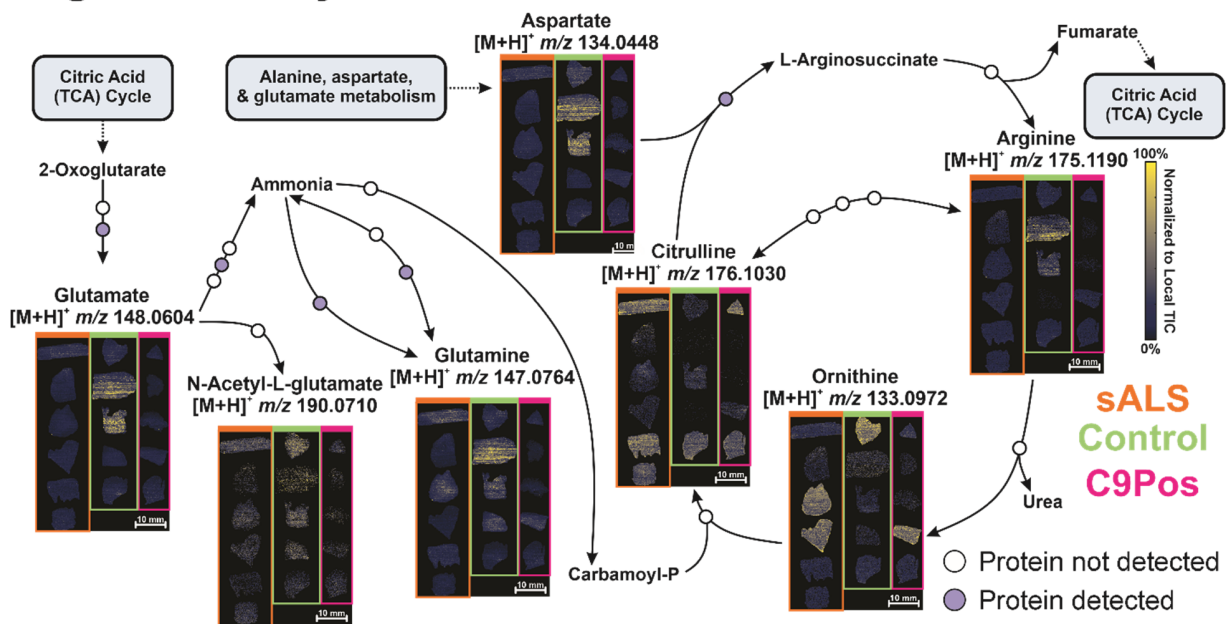
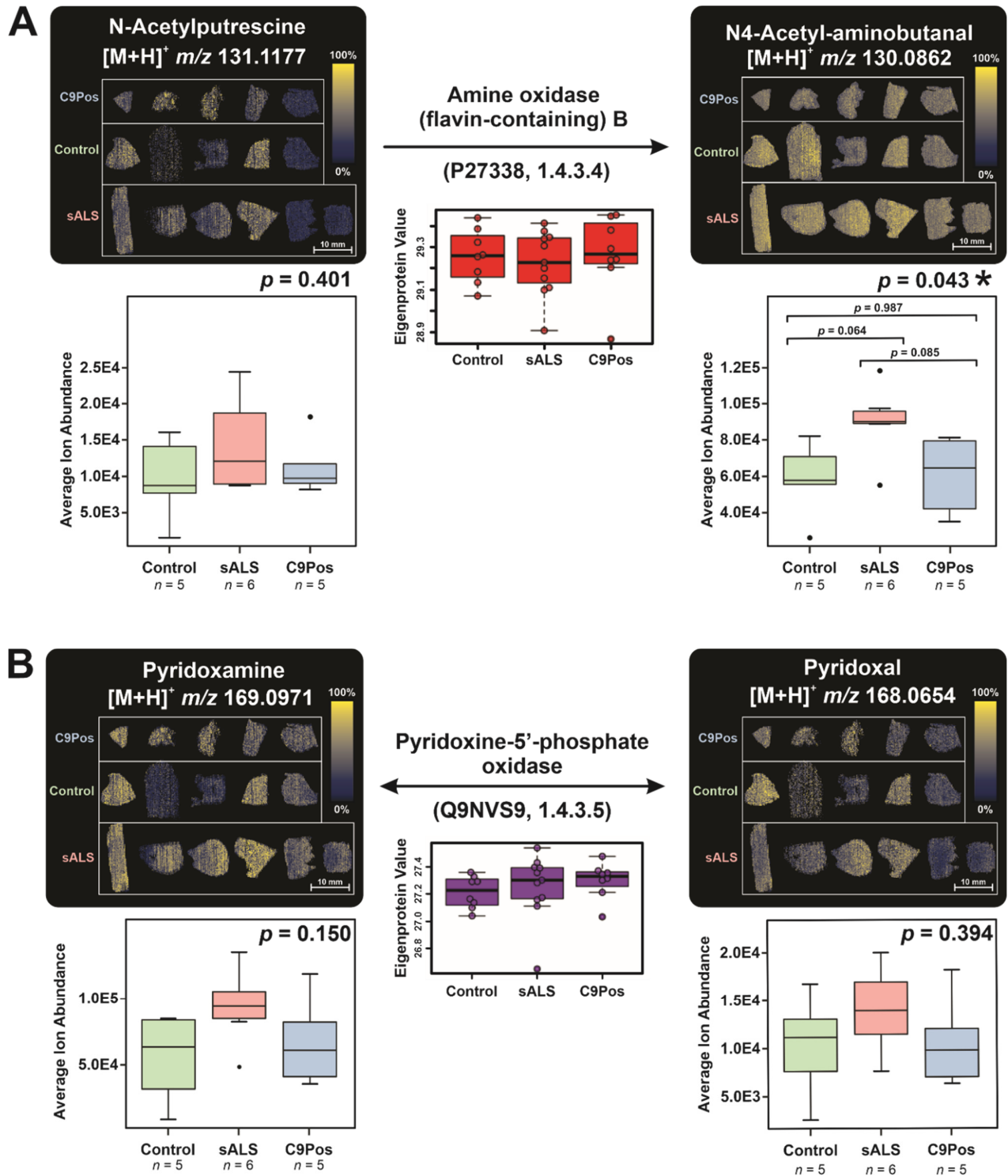


Figure S1. Arginine biosynthesis pathway annotated with associated metabolite ion images by IR-MALDESI. Glutamate was found to be dysregulated between disease classifications and could cause disruption in the synthesis of arginine. Circles along conversion indicate the quantity of proteins involved in metabolomic conversion as reported by KEGG database, and color is indicative of detection or lack thereof. Each disease classification is indicated by the color of the box surrounding the samples (bottom right).



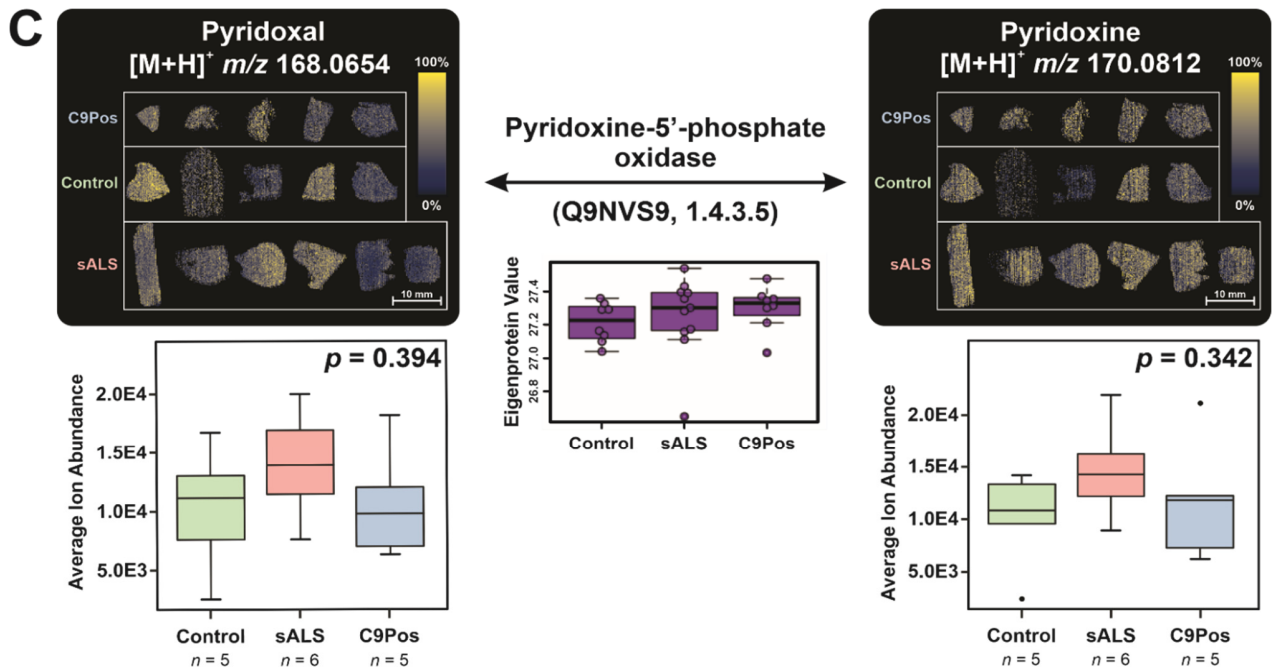


Figure S2. Three additional examples of metabolite conversions by the respective intermediate proteins. Ion images represent metabolomic detection by IR-MALDESI from post-mortem brain samples separated by disease classification, C9Pos, control, and sALS (respectively blue, green, and pink). Ion images are accompanied with boxplots of average ion abundance for each sample and p -values from one-way ANOVA testing. Significant results were found with *m/z* 130.0862 (A, right), so further testing by Tukey's HSD tests for pairwise comparisons were performed. Brackets are above each combination of cohort to show p -value associated from Tukey's tests in addition to the results from ANOVA. The protein involved in conversion is shown with its Uniprot accession ID and EC number.

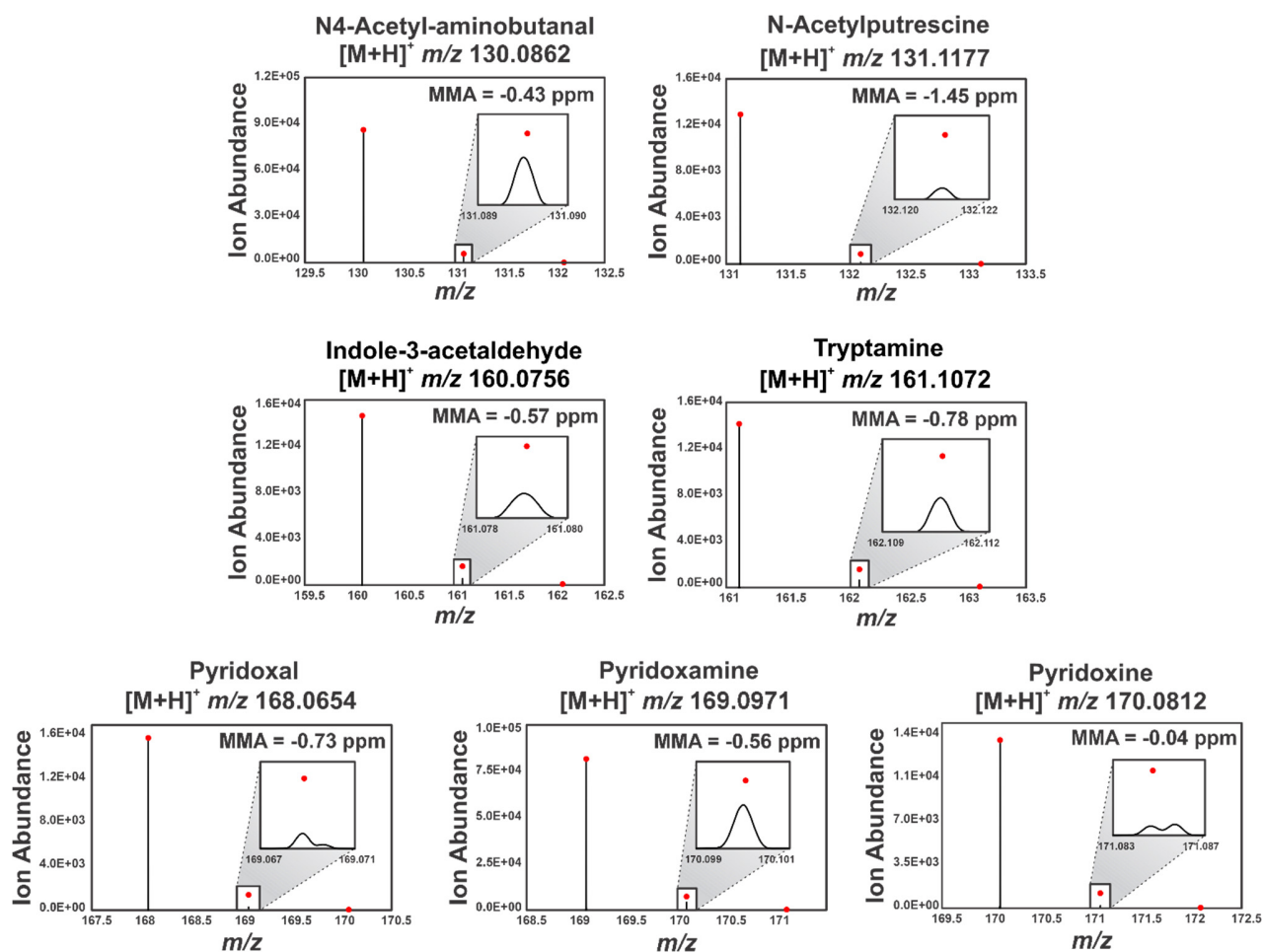


Figure S3. Experimental isotopic distributions for metabolite conversions from **Figures 8 and S2**. Experimental m/z values are reported with the respective mass measurement accuracy (MMA) in parts-per-million.