M/z	Component 1	Component 2	Component 3	Component 4	Component 5	Component 6
769.66	0.1134	0.2015	0.516	0	0	0
770.65	0.0823	0.3805	0.3493	0	0	0
772.65	0.061	0.4647	0.2364	0.0232	0.0127	0
798.67	0.112	0.3747	0.3334	0.0306	0	0.0717
800.67	0.1273	0.3615	0.2864	0.0554	0	0.0519
820.63	0.251	0.15	0.2066	0.1386	0	0.6322
822.63	0.3101	0.0356	0.1709	0.2484	0.0475	0.5126
824.61	0.1216	0.2781	0	0.4066	0.3582	0
826.65	0.1553	0.1942	0.1517	0.2127	0.4116	0.2496
844.62	0.3591	0.2216	0.0459	0	0.0833	0.0064
846.62	0.3258	0.24	0.0249	0	0.109	0.0071
848.68	0.1357	0.2795	0.1216	0	0.2854	0.3784
850.64	0.1702	0.046	0.0597	0.2622	0.5293	0.2915
851.62	0.1416	0	0.1313	0.3678	0.5652	0.1969
852.63	0.332	0	0.2195	0.4064	0	0.0148
868.61	0.3508	0	0.2169	0.4214	0	0.0159
870.61	0.3276	0	0.202	0.384	0	0
872.65	0.3266	0.0426	0.3056	0.0989	0	0

Table S1. Six component breakdown from NMF analysis of 18 potassium adducts of phospholipids. Values are normalized to the sum of the total ion chromatogram.

Electronic Supplementary Material (ESI) for Integrative Biology

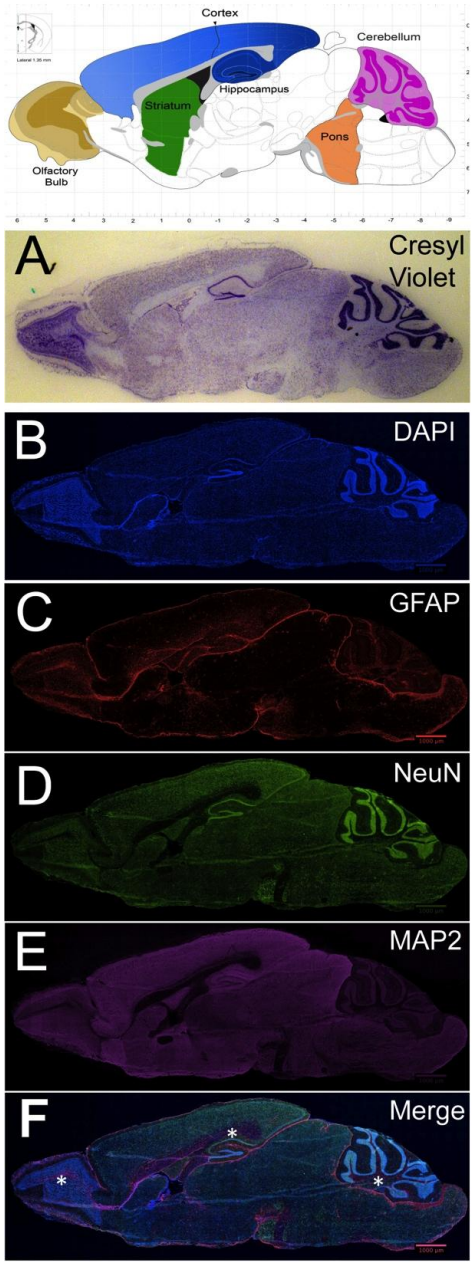


Figure S1. Imaging of Whole Brain: Fresh-frozen sections (5 µm) from fresh brain were collected on glass slides, and stained for histology to highlight specific cell features, highlighted in the graphic. Cresyl violet (Nissl) staining reveals regions of nuclear density (**A**). Slides were immunostained either with specific antibodies or with chemical stains to visualize cell type and their patterning in the brain: DAPI staining indicates the nuclei of glial or neurons (blue) (**B**); glial projections are visualized using, GFAP-Cy3 (red) (**C**); neuronal nuclei are visualized using NeuN-Alexa 488 (green) (**D**); neuronal projections are visualized using MAP2-Alexa 644 (purple) (**E**). Composite image in which all stains are overlayed to define neuron rich and glial rich areas of the brain (**F**). Neuron dense regions in the cerebellum, hippocampus and olfactory bulb (*) are easily identified as regions with well defined structures (**A-F**). Scale bar indicates 500 µm.

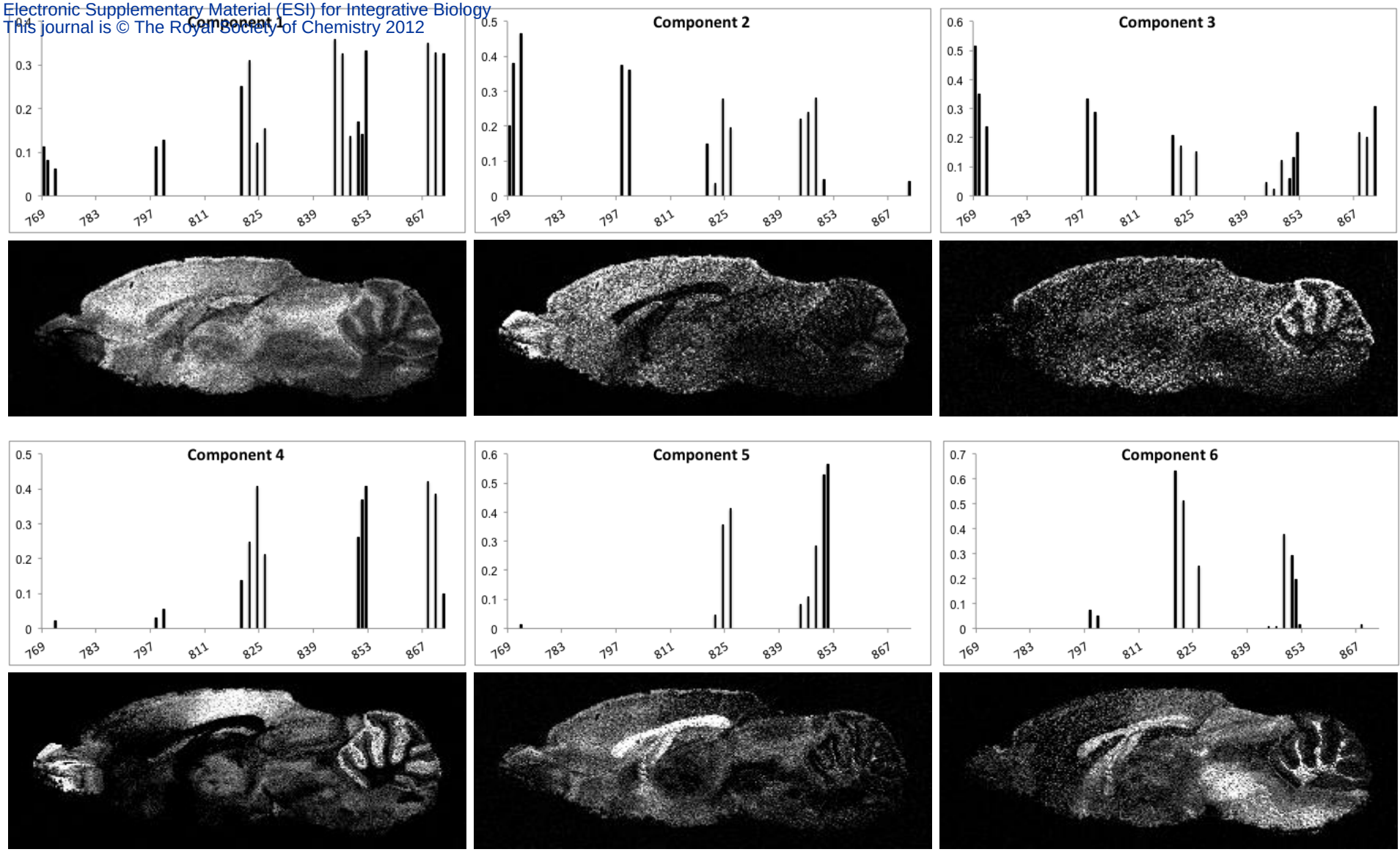
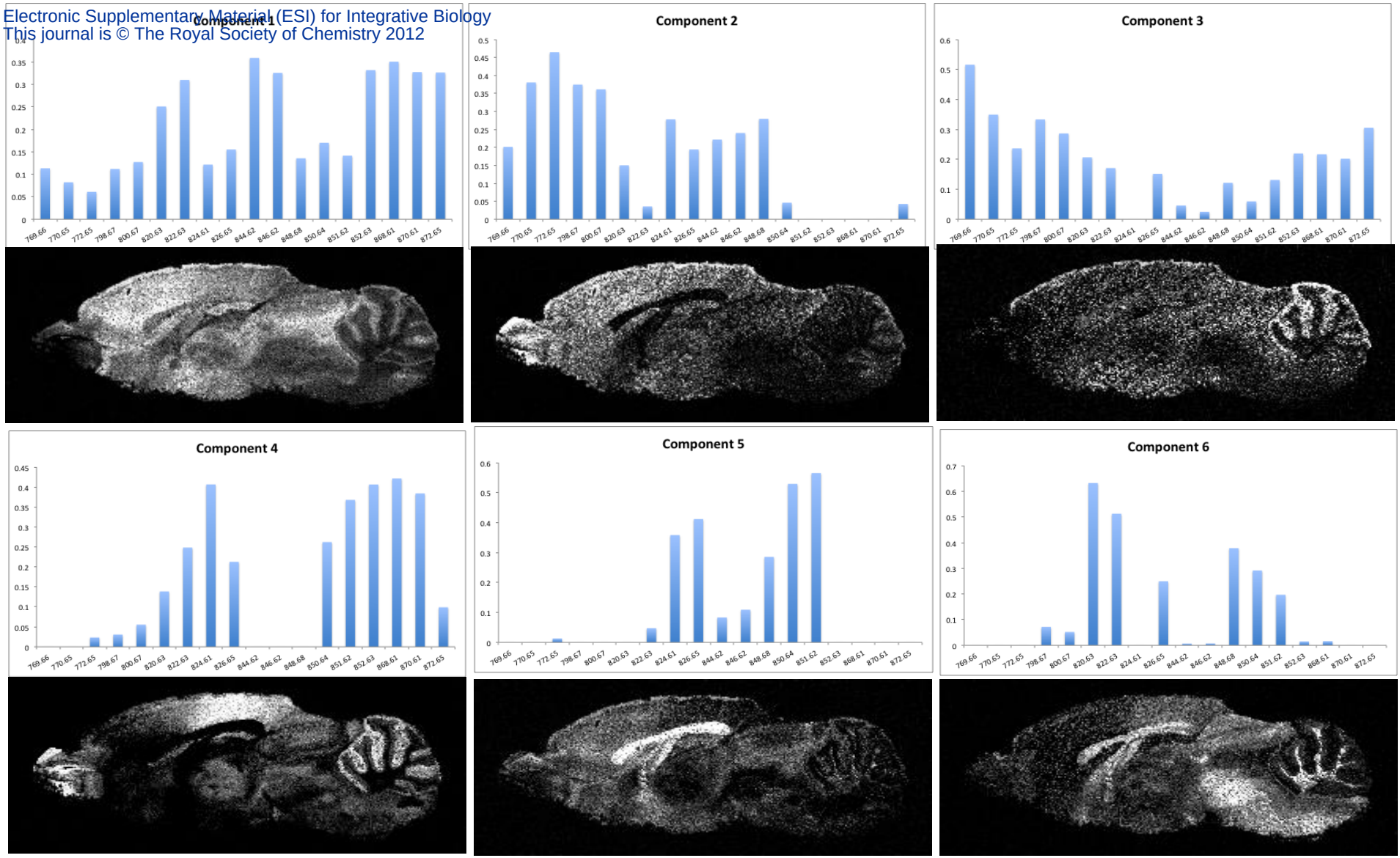


Figure S2. Six component breakdown from NMF analysis of 18 potassium adducts of phopholipids. Component 1 –Neuronal, exhibits a slight neuronal localization to frontal cortex, striatum and midbrain; Component 2 –Ubiquitous, possibly exhibits a slight neuronal localization to the olfactory bulb and frontal cortex; Component 3 –Ubiquitous, possibly exhibits slight localization to the cerebellar folds; Component 4 – Neuronal-rich, expressed intensely in the cerebellar fissures (external cerebellar folds), dorsal cortex, olfactory bulb; Component 5 – Glial-rich, expressed intensely in the corpus callosum and fimbria; Component 6 – Glial-rich, expressed intensely in the cerebellar arbor (internal cerebellar folds), pons, and the corpus callosum/fimbria.



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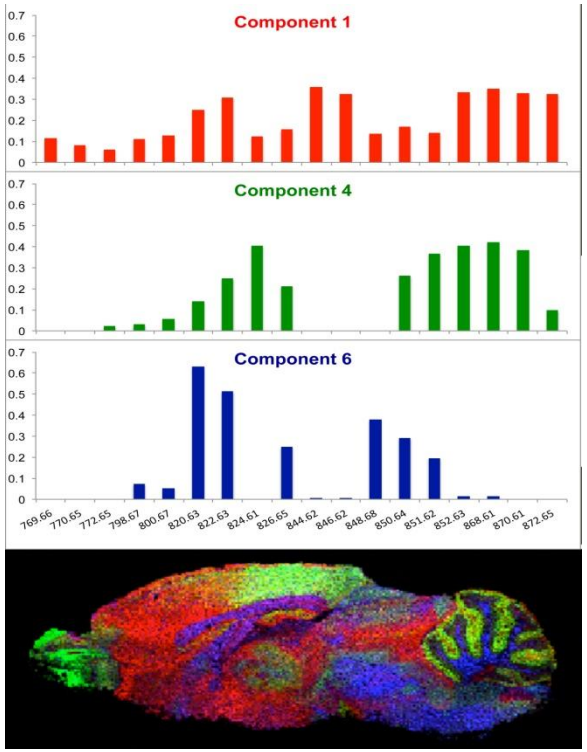

Figure S3. NMF Imaging yields a visualization of 3 components, out of 6 available components. When overlaid, components 1 (in red), 4 (in green), and 6 (in blue) yield a multiplicative image with region-specific component combinations.