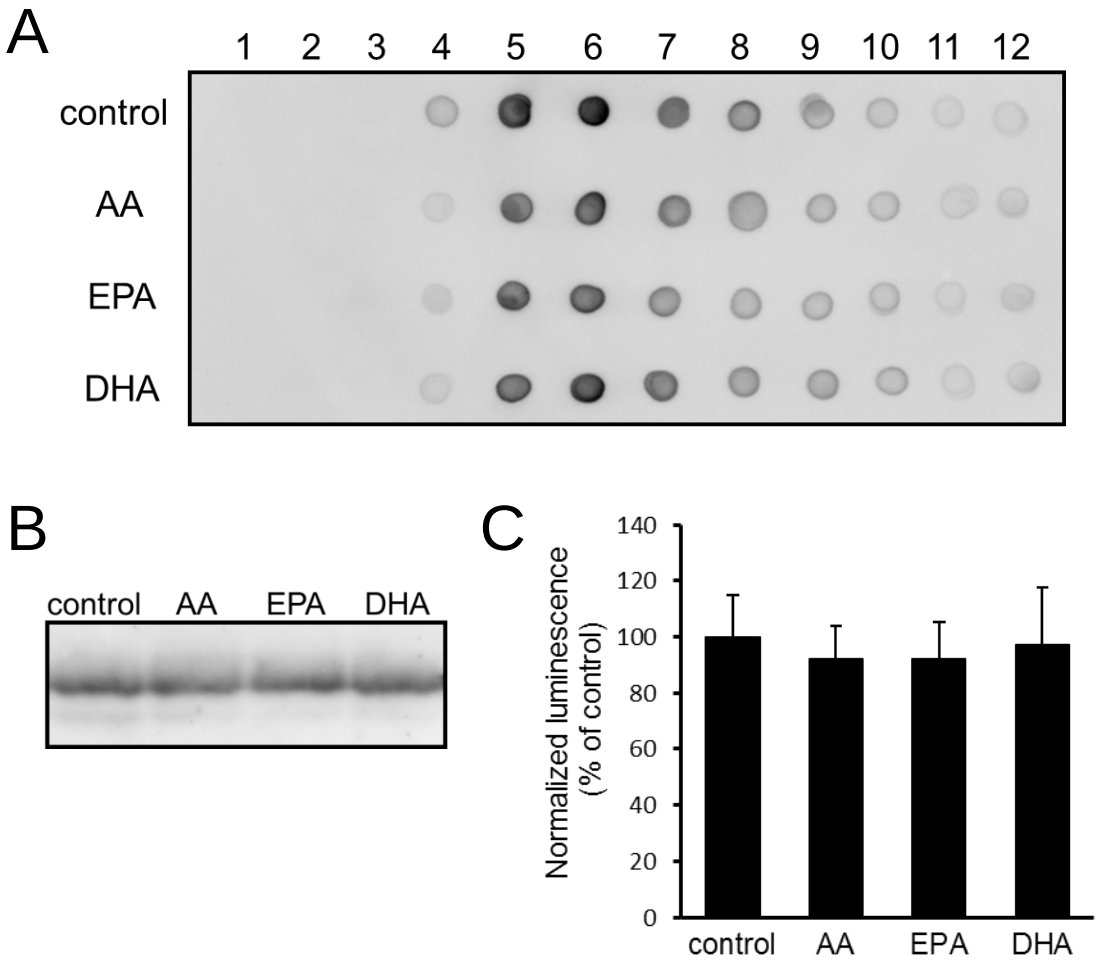
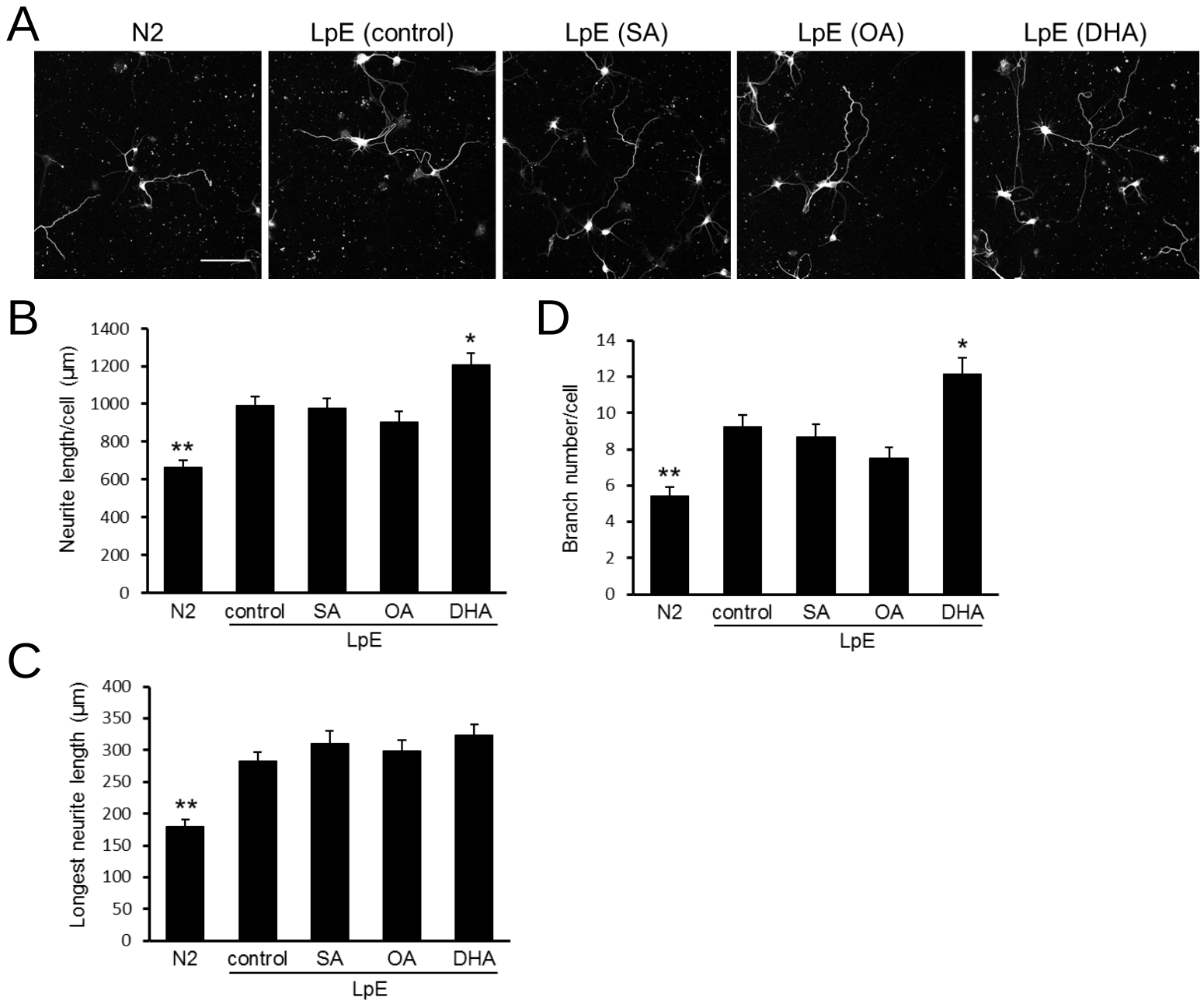
Supplementary Figure 1. Characterization of LpE. **A,** GCM was subjected to sucrose density gradient ultracentrifugation, and twelve fractions were sequentially removed from the top of the tube. Fractions containing apo E were identified by dot-blot analysis. **B,** Equal protein amounts of LpE were separated by 12% polyacrylamide gel electrophoresis, and apo E was detected by immunoblotting. **C,** The intensities of the bands were quantitated and shown as means ± S.D. (n = 3).

Supplementary Figure 2. Neurite measurements of neurons cultured with LpE secreted from cells nourished with SA or OA. **A,** Two hours after hippocampal neurons were plated, the medium was changed to N2 medium with or without LpE, and hippocampal neurons were cultured for 3 days. Neurons were immunostained for class III β-tubulin. Scale bar, 100 μm. **B–D,** Total neurite length, longest neurite length, and branch number per neuron were quantitated using ImageJ; data are expressed as means ± s.e.m. [LpE (-), n = 60; others, n = 45]. *, $P < 0.05$; **, $P < 0.01$ compared with LpE (control).

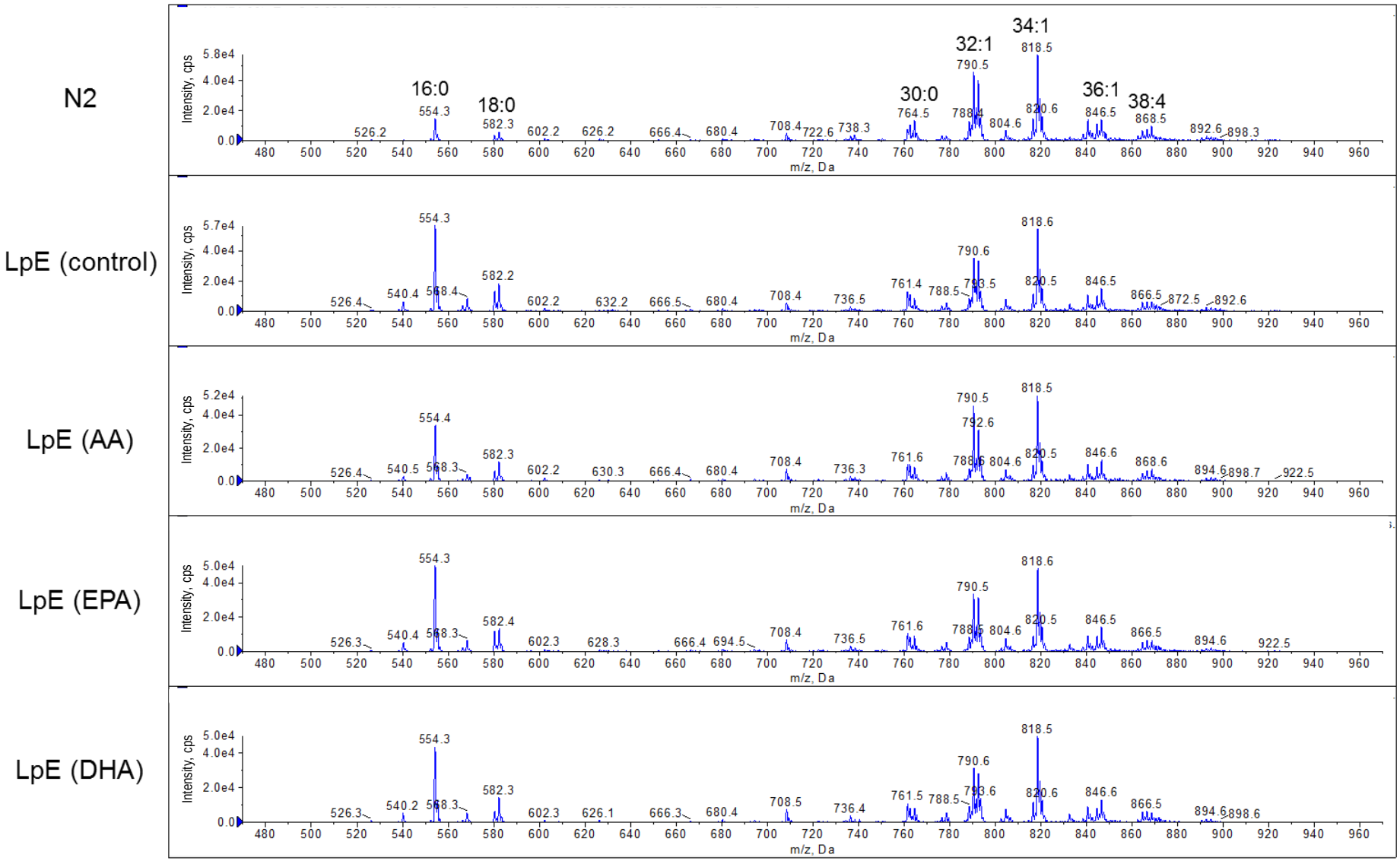
Supplementary Figure 3. Lipidomic analysis of neurons cultured with LpE secreted from glial cells nourished with PUFAs. Two hours after hippocampal neurons were plated, the medium was replaced with N2 medium with or without LpE. Then, hippocampal neurons were cultured for 3 days. The lipids of neurons were extracted with chloroform/methanol (2:1), and subjected to LC-MS analysis.



Supplementary Fig.1



Supplementary Fig.2



Supplementary Fig.3