Electronic Supplementary Material (ESI) for Analyst.

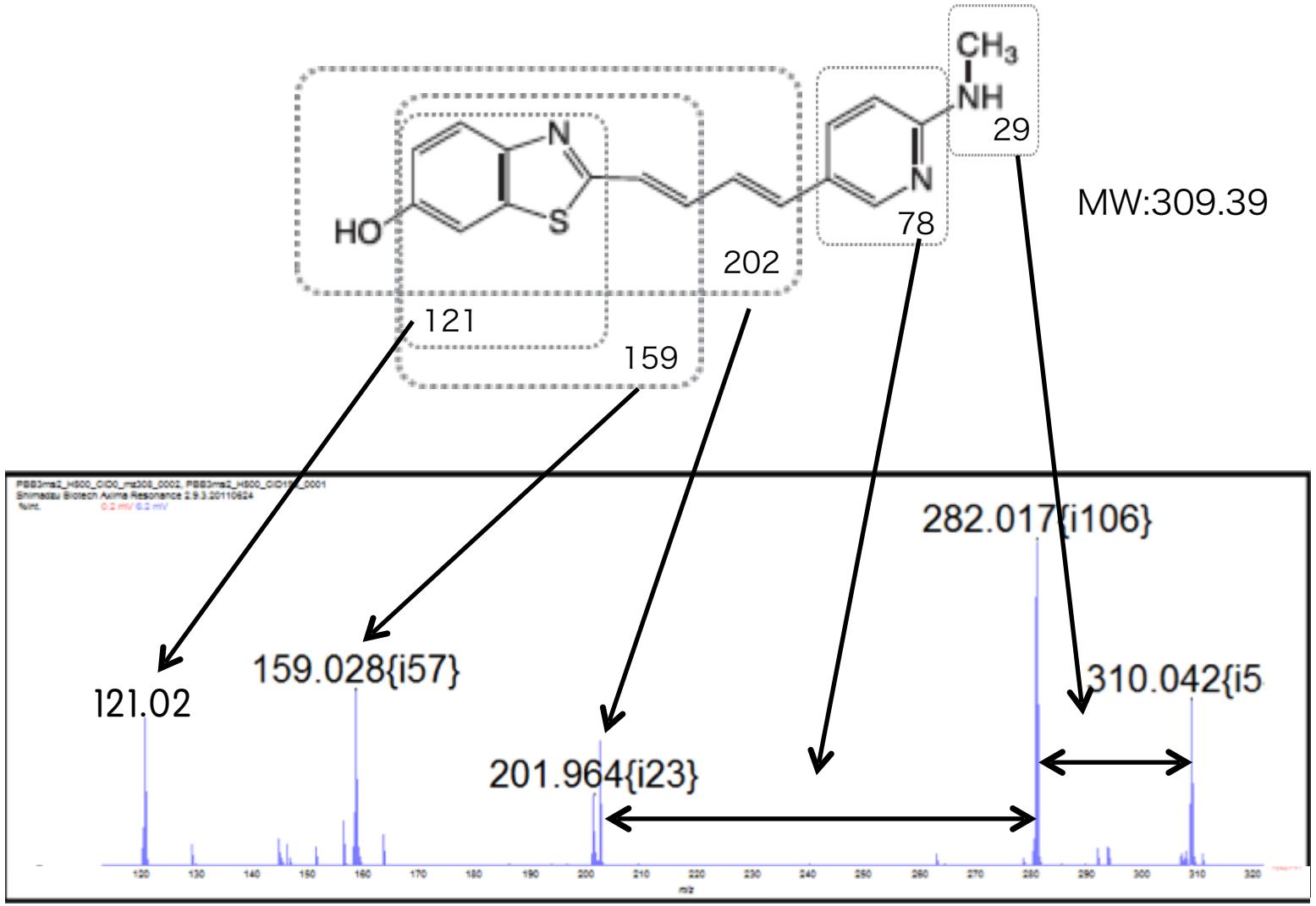

Fig. S1 MALDI TOF-MS/MS spectrum of PBB3. Data for the parental ion (m/z 310) and the daughter ions (m/z 282 and 202) were used for the overlapping image analysis shown in Fig. 5.

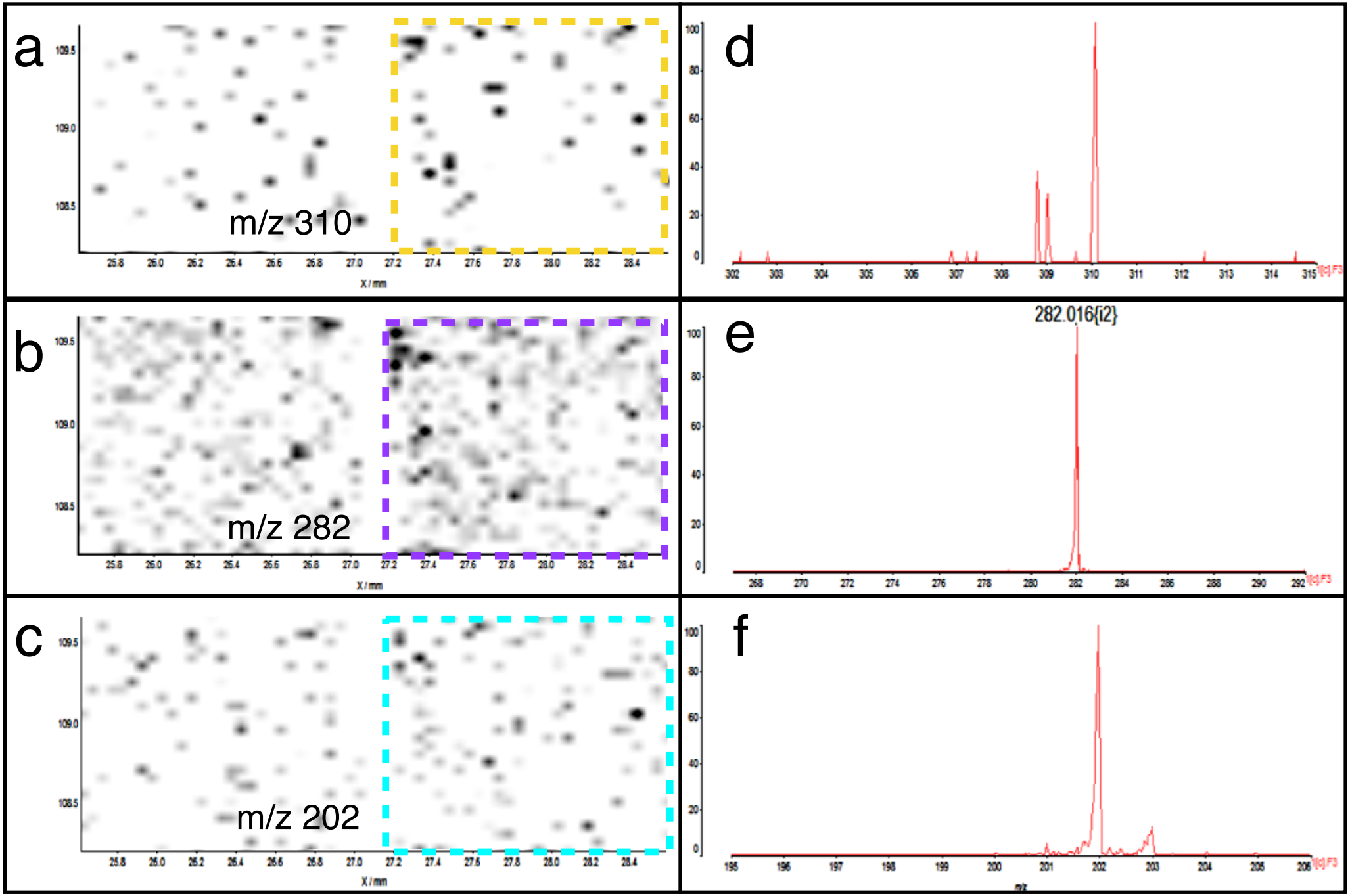

Fig. S2 Ion trap/time-of-flight MS/MS imaging spectra of PBB3. The detection settings of the AXIMA resonance mass spectrometer were: laser level 80, shots 10, MS/MS CID 195 (resolution >500), imaging a 60 x 30 rectangle with 50 μm raster step. The dotted squares were used for the overlapping image analysis shown in Fig. 5.

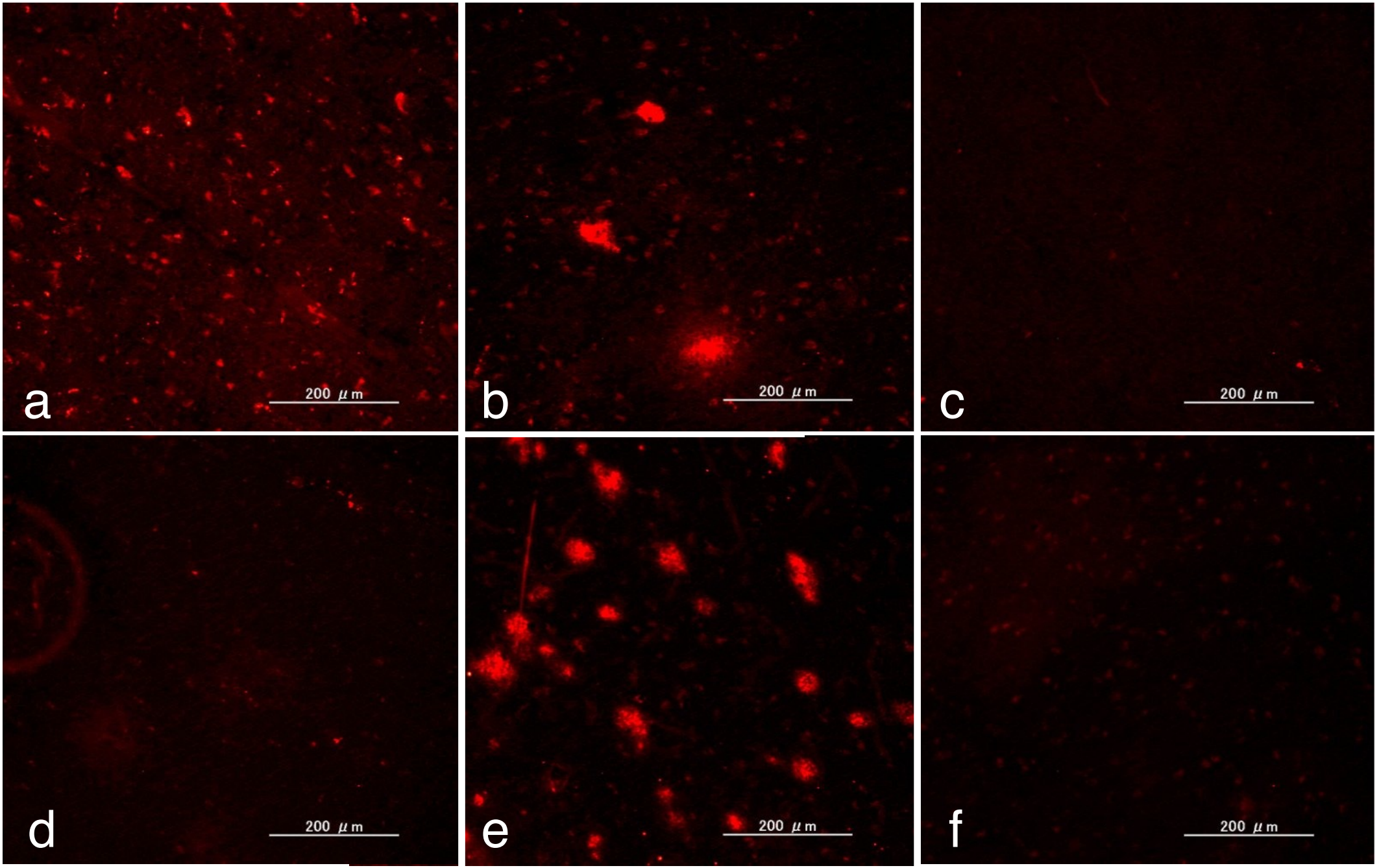

Fig. S3 Immunohistochemistry of human brain samples. Deposits of microtubule-associated protein tau, identified using antibody AT8, are present in the Alzheimer's disease brain (a) used in the study, but not in normal brain (d; control). Deposition of amyloid in both samples was demonstrated using 6E10 anti-amyloid beta antibody (b, e). Panels (c) and (f) show controls without each primary antibody, respectively.

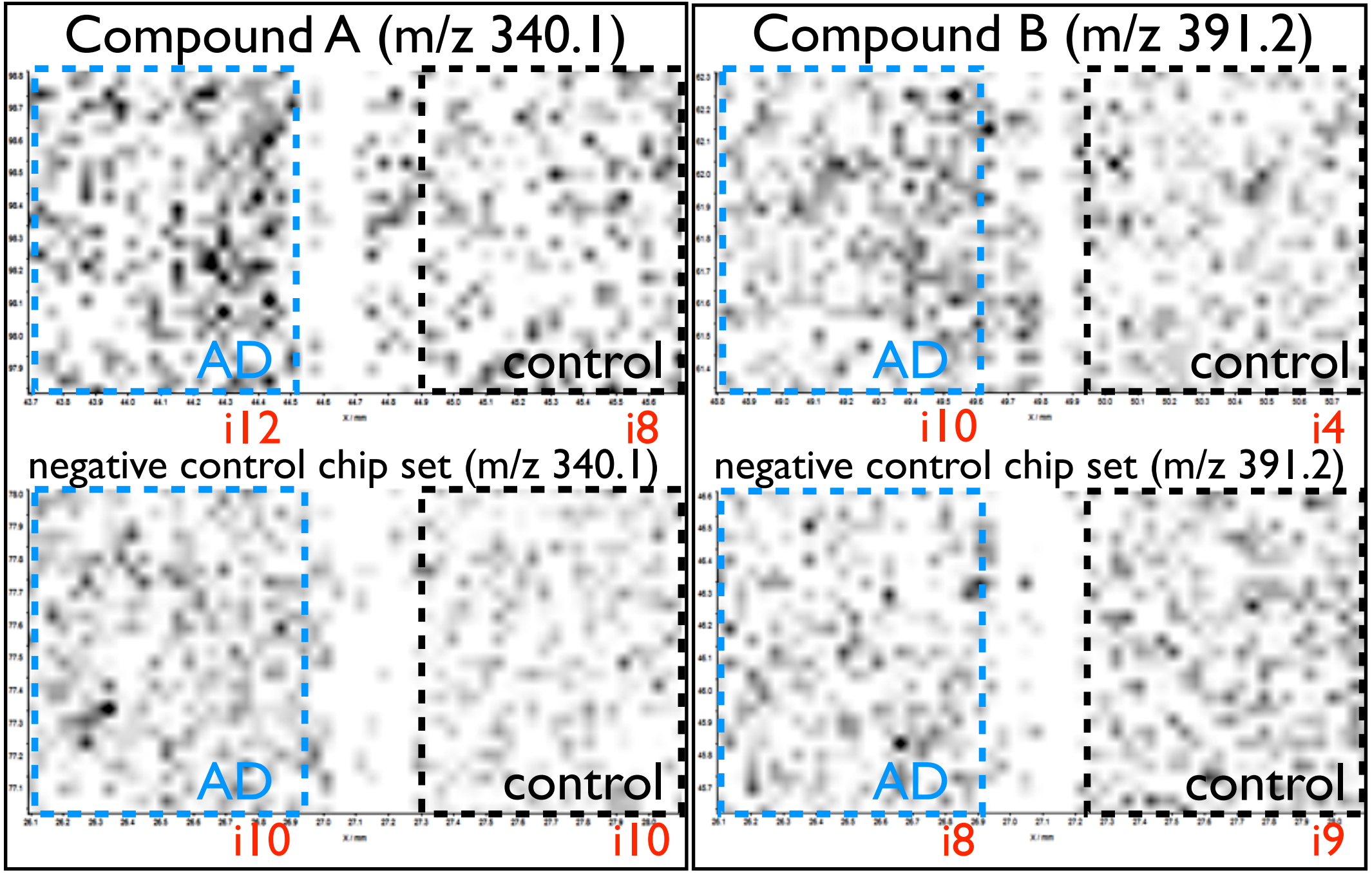

Fig. S4 Typical images of compounds with affinity for brain sections with tau deposits. Both compounds shows higher intensity in the AD section than in the control. For compound A, the tau-positive score is calculated as (12/8)/(10/10)=1.5 while the score for compound B is (10/4)/(8/9)=2.81. We interpret this to show that compound B has a definite affinity for brain sections with tau deposits, while compound A has a tendency towards binding such sections. Abbreviation i = mean intensity of the peak of the boxed area.

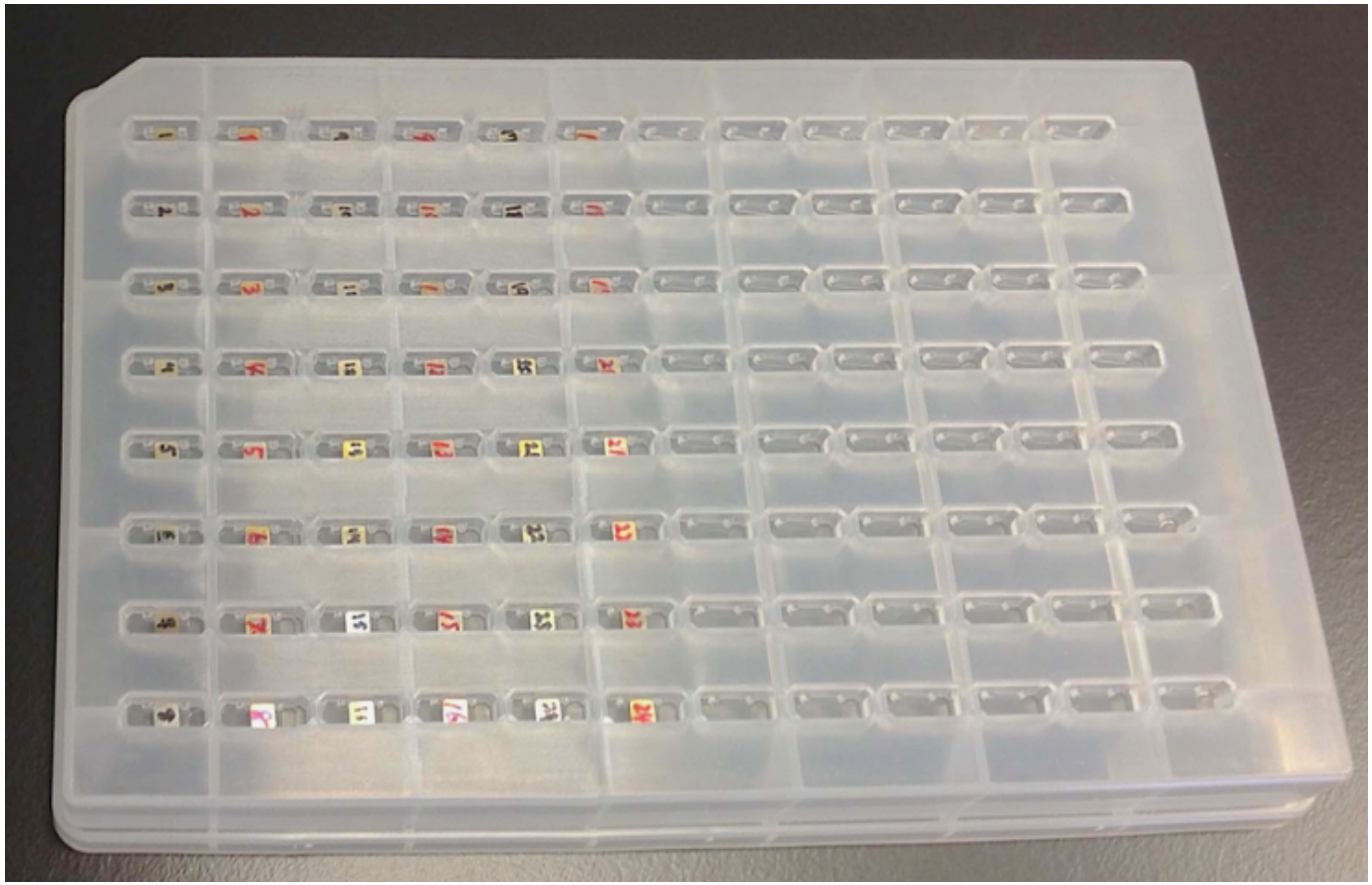

Fig. S5 Custom-made 96-well plate for incubating microchips carrying tissue sections in solutions of library compounds. Each chip set (AD and normal brain) is placed side by side and is treated with the same solution.