

Supplementary Materials: The Increased Densities, but Different Distributions, of Both C3 and S100A10 Immunopositive Astrocyte-Like Cells in Alzheimer's Disease Brains Suggest Possible Roles for Both A1 and A2 Astrocytes in the Disease Pathogenesis

Andrew King, Boglarka Szekely, Eda Calapkulu, Hanan Ali, Francesca Rios, Shalmal Jones and Claire Troakes

Table S1. Details of antibodies used for immunoperoxidase analysis.

| Antibody | Details | Supplier (Code) | Concentration |
|-----------------|-------------------------------|------------------------|----------------------|
| C3 | Anti-C3d monoclonal rabbit | AbCam (ab 136916) | 1:500 |
| S100A10 | Anti-S100A10 monoclonal mouse | Lifespan (LS-B3445) | 1:500 |

Table S2. Details of antibodies used for immunofluorescence.

| Antibody | Details | Supplier (Code) | Concentration |
|-----------------|-------------------------------|------------------------|----------------------|
| C3 | Anti-C3d monoclonal rabbit | AbCam (ab136916) | 1:200 |
| S100A10 | Anti-S100A10 monoclonal mouse | Lifespan (LS-B3445) | 1:200 |
| GFAP | Anti-GFAP polyclonal rabbit | DAKO (Z0334) | 1:500 |
| GFAP | Anti-GFAP monoclonal mouse | AbCam (ab4648) | 1:1000 |

Table S3. Table showing details of the Control and Alzheimer’s disease cases in the study including the relative densities of C3 and S100A10 immunopositive astrocyte-like glial cells in different cerebral areas.

| CASE | AGE | SEX | C3 | | | S100A10 | | | Other |
|------|---------------|-----|------------------|--|--|------------------|--|----------------------|-------|
| | | | Cerebrum Frontal | Cerebrum Temporal | Hippo | Cerebrum Frontal | Cerebrum Temporal | Hippo | |
| C | BBN_4 193 | 51 | F | Frontal upp cx +/- Low cx ++ wm + | | | Frontal cx - wm ++ (pv) | | |
| C | BBN_1 5612 | 44 | M | Frontal upp cx +/- Low cx +++ wm +++ | | | Frontal cx - wm +/- (pv) | Some oedema | |
| C | BBN_1 7130 | 35 | M | Frontal upp cx + Low cx + wm +++ | | | Frontal upp cx +/- low cx +/- wm +/- | | |
| C | BBN_1 6768 | 25 | M | | Temp upp cx +/- Low cx ++/+ wm + | | Temp cx - wm +/- | Congen heart disease | |
| C | BBN_1 6507 | 33 | F | Frontal upp cx +/- Low cx +++ wm +++ | | | Frontal cx - wm + (pv) | | |

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|---|----------------------|----|---|---|--|--|-------------------|---|---|------------------|
| C | BBN_1 6906 | 40 | M | | | | Hippo CA4 +/- | | | Hippo CA4 + |
| C | BBN_2 1005 | 76 | F | Frontal upp cx +/- Low cx +++ wm +++ | Temp upp cx +/- Low cx + wm focal ++ | | Hippo CA4 + | Frontal cx - wm ++/+ (pv) | Temp upp cx + (pia) Low cx - wm ++/+ | Hippo Ca4 + |
| C | BBN00 2.3263 3 | 81 | F | Frontal upp cx + Low cx +++ wm +++ | Temp Upp cx +/- low cx+++ wm +++ (diffuse plaques +) | | Hippo CA4 ++ | Frontal upp cx +/- (pia) Low cx +/- wm +(pv) | Temp upp cx +/- (pia) Low cx - wm + (pv) | Hippo CA4 +/- |
| C | BBN00 2.2835 0 | 74 | M | Frontal upp cx +/- Low cx +++ wm +++ | Temp upp cx - Low cx +++ wm +++ | | Hippo CA4 ++/+ | Frontal cx - wm ++/+ | Temp cx - wm + | Hippo Ca4 + |

| | | | | C3 | | | S100A10 | | | Other |
|---|----------------------|---------|---------|--|--|---------------------|---|-------------------------|-----------------|-------|
| | CASE | AG E | SE X | Cerebrum Frontal | Cerebrum Temporal | Hippo | Cerebrum Frontal | Cerebrum Temporal | Hippo | |
| C | BBN00 2.3017 1 | 86 | F | Frontal upp cx +/- Low cx +++ wm +++ | Temp upp cx - Low cx +++ wm +++ | Hippo CA4 +++/++ | Frontal upp cx +/- (pia) Low cx - wm + | Temp cx - wm ++/+ | Hippo Ca4 ++ | |
| C | BBN00 2.2908 9 | 81 | M | Frontal upp cx + Low Cx ++ | Temp upp cx + Low cx +++ wm +++ | Hippo CA4 ++ | Frontal upp cx + (pia) Low cx - | Temp cx - wm + | Hippo CA4 ++ | |

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|---|----------------------|----|---|----------------|-----------------|--------------------------------|------------------|---|-------------------------|------------------|--------|--|
| | | | | | wm ++/+ (focal) | | | wm + (pv) | | | | |
| C | BBN00 2.3284 4 | 81 | F | Frontal +/- | upp cx +/- | Temp upp cx +/- | Hippo CA4 ++ | Frontal cx- wm ++/+ (pv) | Temp cx- wm ++/+(pv) | Hippo CA4 +/- | | |
| | | | | Low +++ | Wm +++ | Low cx +++ wm +++ | | | | | | |
| | | | | | | Temp upp cx ++/+ | | | | | | |
| C | BBN_2 2594 | 77 | F | | | Low cx +++ wm +++ | | | Temp cx - wm - | | | |
| | | | | Frontal +/- | upp cx +/- | Temp upp cx +/- | Hippo CA4 N/A | Frontal cx - Frontal wm - | Temp cx - wm - | Hippo CA4 N/A | | |
| | BBN_1 6242 | 90 | F | Low cx +++ | wm +++ | Low cx +++ wm +++ | | | | | | |
| | | | | | | Temp upp cx +/- | | | | | | |
| C | BBN_1 6360 | 81 | F | Frontal +/- | upp cx +/- | Temp upp cx +/- | Hippo CA4 +/- | Frontal upp cx +/- Low cx - wm + (pv) | Temp cx - Wm + (pv) | Hippo CA4 - | Sepsis | |
| | | | | Low cx + | wm + | Low cx +/- wm ++ (focal) | | | | | | |
| | | | | | | Temp upp cx +/- | | | | | | |
| C | BBN_1 6251 | 66 | M | Frontal +/- | upp Cx +/- | Temp upp cx +/- | Hippo CA4 + | Frontal cx - wm +/- (pv) | Temp cx - Wm - | Hippo CA4 - | | |
| | | | | Low cx +++ | wm +++/++ | Low cx +++ wm +++ | | | | | | |
| | | | | | | Temp upp cx ++/+ | | | | | | |
| C | BBN_1 6662 | 73 | F | Frontal + | upp cx + | Temp upp cx ++/+ | Hippo CA4 + | Frontal cx - | Temp upp cx +/- | Hippo CA4 - | | |

| | | | | C3 | | | S100A10 | | | Other |
|------|----------------------|-----|------------------|--|---|--|--|--|------------------|-------|
| CASE | AGE | SEX | Cerebrum Frontal | Cerebrum Temporal | Hippo | Cerebrum Frontal | Cerebrum Temporal | Hippo | | |
| C | BBN00 2.3088 2 | 77 | F | Frontal upp cx - Low Cx + wm + | Temp upp cx - Low cx + wm ++/+ | Hippo CA4 + | Frontal cx - Frontal wm + (pv) | Temp cx - Temp wm +(pv) | Hippo CA4 +/- | |
| C | BBN00 2.3284 4 | 81 | F | Frontal upp Cx ++ Low Cx +++ wm +++ | Temp upp cx + Low cx +++ wm +++ | Hippo CA4 ++ | Frontal upp cx +/- Low cx +/- wm + (pv) | Temp Cx - wm +/- (pv) | Hippo Ca4 +/- | COPD |
| C | BBN00 2.3281 7 | 97 | F | Frontal upp cx +/- Low Cx + wm +/- | Temp upp cx - Low cx +/- wm - cx diff plaques +/- | Hippo CA4 +/- (diff plaques +/-) | Frontal upp Cx +/- Low cx +/- wm +/- cx diff plaques +/- | Temp upp cx - Low cx - wm +/- cx diff plaques +/- | Hippo CA4 - | |
| C | BBN00 2.3258 8 | 75 | F | Frontal upp cx + Low cx ++ (focal) wm +++ (focal) | Temp upp cx - Low cx +++ wm +++ | Hippo CA4 + | Frontal upp cx - Low cx - wm + (pv) | Temp upp cx - Low cx- wm +/- (pv) | Hippo CA4 +/- | |

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|---|----------------------|----|---|------------------------|----------------------------|-----------------|------------------|---------------------|-------------|
| | | 78 | | Frontal upp cx - | Temp upp cx - | | Frontal upp cx - | Temp upp cx - | |
| C | BBN00 2.3522 2 | | F | Low cx ++ wm +++/++ | Low cx +++ wm +++ | Hippo CA4 ++ | Low cx - wm + | Low cx - wm + | Hippo CA4 - |

| | | | | C3 | | | S100A10 | | | Other |
|------------------|---------------|---------|---|---|--|--|--|---|--|-------|
| CASE | AG E | SE X | | Cerebrum Frontal | Cerebrum Temporal | Hippo | Cerebrum Frontal | Cerebrum Temporal | Hippo | |
| AD VI +LB | BBN_2 4557 | 86 | F | Frontal upp cx + Low cx + wm +/- cx plaques ++ tangles | Temp upp cx + Low cx + wm + cx plaques +++ tangles | Hippo CA4 + plaques +++ tangles | Frontal upp cx +++ Low cx +++ wm +++ /++ cx plaques +++ tangles | Temp upp cx +++ Low cx +++ wm +++ cx plaques +++ tangles | Hippo CA4 +++ plaques +++ tangles | |
| AD VI + LB | BBN_2 4199 | 83 | M | Frontal upp cx ++ Low cx +++ wm +++ cx plaques ++ tangles | Temp upp cx +++ Low Cx +++ wm +++ cx plaques +++ | Hippo CA4 +++/++ Plaques +++ | Frontal upp cx +++/++ Low cx + wm + cx plaques +++/++ tangles | Temp upp cx +++/++ Low cx +++/++ wm ++ cx plaques ++ tangles | Hippo CA4 ++ Plaques + | |

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|-------|---------------|----|---|---|---|--------------------------------|--|---|---------------------------------|
| AD V | BBN_1 6230 | 80 | F | Frontal upp cx +/- Low cx +/- wm + cx plaques + | Temp upp cx +/- Low cx +/- wm +/- cx plaques + | Hippo Ca4 + Plaques ++ | Frontal upp cx + Low cx ++/+ wm ++/+ cx plaques ++/+ | Temp upp cx +++/ Low cx +++/ wm + cx plaques +++/ ++ | Hippo CA4 + Plaques ++ |
| AD VI | BBN_9 824 | 71 | F | Frontal upp cx ++ Low cx +++ wm +++ cx plaques +++ | Temp upp cx + Low cx +/- wm + cx plaques +++ | Hippo CA4 ++ plaques +++ | Frontal upp cx ++ Low cx ++ Wm +++ cx plaques +++ | Temp upp cx ++ Low cx ++ wm +++ cx plaques +++ | Hippo CA4 ++ plaques +++ |
| AD V | BBN_9 881 | 80 | F | Frontal upp cx +++ Low cx + wm ++ cx plaques ++ | Temp upp cx ++/+ Low cx + wm + cx plaques +++ | Hippo CA4 + plaques +++ | Frontal upp cx +++ Low cx ++ wm +++ cx plaques +++ | Temp upp cx +++ Low cx ++ wm +++ cx plaques +++ | Hippo CA4 +++ plaques +++ |
| AD VI | BBN_9 846 | 92 | F | Frontal upp cx ++ Low cx +++ wm +++ cx plaques +++ | Temp upp cx +++ Low cx +++ wm +++ Cx plaques + | Hippo CA4 +++ Plaques ++ | Frontal upp cx ++ Low Cx ++/+ wm ++ cx plaques +++ | Temp upp cx ++ Low cx ++ wm ++ Cx plaques +++ | Hippo CA4 +++ plaques +++ |

C3

S100A10

Other

| | CASE | AG E | SE X | Cerebrum Frontal | Cerebrum Temporal | Hippo | Cerebrum Frontal | Cerebrum Temporal | Hippo |
|----------|----------------------|---------|---------|--|---|----------------------------------|---|--|---------------------------------|
| AD VI | BBN_9 898 | 80 | M | Frontal upp cx ++/+ Low cx + wm + cx plaques + | Temp upp cx ++ Low cx + wm ++ cx plaques ++/+ tangles | Hippo CA4 + plaques +++ | Frontal upp cx +++ Low cx ++/+ Wm ++/+ Cx plaques ++ | Temp upp cx +++ Low cx +++ wm +++ cx plaques ++ tangles | Hippo CA4 +/- Plaques +++ |
| AD VI | BBN00 2.3285 6 | 74 | F | Frontal upp cx +++/>++ Low cx +++ wm ++ cx plaques +++ | Temp upp cx ++ Low cx ++/+ wm +++ cx plaques +++ | Hippo CA4 ++ Plaques ++ | Frontal upp cx ++ low Cx ++ wm ++ cx plaques +++ | Temp upp cx +++ low cx ++ wm ++ cx plaques +++ tangles | Hippo CA4 +++ plaques +++ |
| AD VI | BBN00 232829 | 78 | F | Frontal upp Cx ++ Low cx ++ wm + cx plaques +++ | Temp upp cx ++ Low cx ++ wm, ++ cx plaques ++ | Hippo CA4 +/- Plaques + | Frontal upp cx ++ Low cx ++ wm + (pv) cx plaques +++ | Temp upp cx ++ Low cx ++ wm +++ (pv) cx plaques +++ | Hippo CA4 + plaques + |
| AD VI | BBN32 545 | 75 | F | Frontal upp cx +++ Low cx ++ wm +++ (focal) cx plaques +++ | Temp upp cx ++ Low cx ++ wm ++ cx plaques +/- | Hippo CA4 ++/+ Plaques ++ | Frontal upp cx +++ Low cx ++ wm ++ cx plaques +++ | Temp upp cx ++ Low cx + wm ++ cx plaques ++ | Hippo CA4 +++ plaques ++ |

| | | | | | | | | | |
|----|----------------------|----|---|---|---|-------------------------------|--|--|-------------------------------|
| AD | BBN00 2.3259 7 | 85 | F | Frontal upp cx ++ Low cx ++/+ wm ++ cx plaques ++ | Temp upp cx ++ Low cx + wm + cx plaques ++ | Hippo CA4 ++ plaques ++ | Frontal upp cx +++ Low cx ++ wm ++ cx plaques ++ | Temp upp cx +++ Low cx ++/+ wm +++ cx plaques +++ | Hippo CA4 ++ Plaques ++ |
| AD | BBN00 2.3376 8 | 92 | F | Frontal upp cx ++ Low cx ++ (focal) wm +++ cx plaques ++ | Temp upp Cx + Low Cx ++ wm ++/+ cx plaques +/- | Hippo CA4 N/A | Frontal upp cx +++ Low cx +++/++ wm +++ cx plaques ++ | Temp upp cx ++ Low cx ++ wm +++ Cx plaques ++ | Hippo CA4 N/A |

AD - Alzheimer's disease (followed by modified Braak (BNE) stage), C-Control, Congen-congenital, COPD-chronic obstructive pulmonary disease, cx-cortex, diff-diffuse, Hippo-Hippocampus, LB-Lewy Bodies , pia-astroctye(s) only seen in direct vicinity of pia, pv-perivascular only, temp-temoral, upp-upper, wm-white matter. Scores refer to density of astrocyte-like cells in particular areas unless specified otherwise: - negative, +/- only very infrequent, + infrequent, ++ moderate numbers/moderate density, +++ large numbers/high density.

Table S4. C3 immunopositive astrocyte-like cell counts in frontal upper and lower cortex and white matter.

| C3 | Controls | AD | Controls | AD | Controls | AD | | | | | |
|-------------|-------------|-------------|-------------|-------------|-------------|-------------|---|-------------|----|-------------|---|
| Upper Cx | | | Lower Cx | | Frontal wm | | | | | | |
| BBN00232633 | BBN00233768 | BBN00232633 | BBN00233768 | BBN00232633 | BBN00233768 | | | | | | |
| 1 | 10 | 31 | 4 | 53 | 28 | | | | | | |
| 1 | 6 | 32 | 4 | 74 | 44 | | | | | | |
| 2 | 14 | 26 | 3 | 60 | 30 | | | | | | |
| 5 | 10 | 29 | 5 | 63 | 34 | | | | | | |
| 6 | 8 | 24 | 6 | 51 | 32 | | | | | | |
| 3 | 9 | 33 | 7 | 57 | 24 | | | | | | |
| 5 | 5 | 33 | 14 | 50 | 25 | | | | | | |
| 5 | 7 | 20 | 17 | 49 | 32 | | | | | | |
| 4 | 8 | 26 | 13 | 42 | 22 | | | | | | |
| 8 | 9 | 27 | 15 | 35 | 14 | | | | | | |
| BBN00232588 | 4 | BBN00232597 | 2 | BBN00232588 | 6 | BBN00232597 | 3 | BBN00232588 | 39 | BBN00232597 | 4 |

| | | | | | | | | | | | |
|-------------|---|-------------|----|-------------|----|-------------|----|-------------|----|-------------|----|
| | 2 | | 2 | | 0 | | 4 | | 32 | | 12 |
| | 3 | | 3 | | 4 | | 4 | | 67 | | 11 |
| | 2 | | 1 | | 7 | | 2 | | 42 | | 13 |
| | 0 | | 8 | | 0 | | 2 | | 30 | | 8 |
| | 1 | | 3 | | 6 | | 5 | | 28 | | 5 |
| | 0 | | 2 | | 6 | | 7 | | 31 | | 9 |
| | 0 | | 5 | | 6 | | 1 | | 24 | | 2 |
| | 0 | | 4 | | 9 | | 3 | | 13 | | 2 |
| | 2 | | 3 | | 11 | | 1 | | 19 | | 9 |
| BBN0023522 | 1 | BBN32545 | 12 | BBN0023522 | 5 | BBN32545 | 4 | BBN0023522 | 37 | BBN32545 | 6 |
| | 0 | | 5 | | 16 | | 2 | | 32 | | 20 |
| | 0 | | 5 | | 11 | | 6 | | 47 | | 20 |
| | 1 | | 4 | | 9 | | 3 | | 22 | | 15 |
| | 0 | | 5 | | 13 | | 2 | | 39 | | 12 |
| | 1 | | 4 | | 13 | | 1 | | 33 | | 22 |
| | 1 | | 5 | | 7 | | 4 | | 40 | | 2 |
| | 0 | | 3 | | 11 | | 5 | | 23 | | 19 |
| | 1 | | 3 | | 4 | | 2 | | 25 | | 9 |
| | 0 | | 4 | | 21 | | 4 | | 20 | | 2 |
| BBN00232588 | 2 | BBN00232856 | 2 | BBN00232588 | 4 | BBN00232856 | 19 | BBN00232588 | 2 | BBN00232856 | 34 |
| | 1 | | 10 | | 4 | | 18 | | 6 | | 13 |
| | 2 | | 4 | | 5 | | 19 | | 5 | | 14 |
| | 2 | | 13 | | 8 | | 17 | | 3 | | 16 |
| | 2 | | 14 | | 4 | | 13 | | 3 | | 16 |
| | 3 | | 7 | | 9 | | 10 | | 3 | | 12 |
| | 2 | | 14 | | 4 | | 19 | | 2 | | 13 |
| | 1 | | 5 | | 5 | | 16 | | 0 | | 14 |
| | 2 | | 14 | | 7 | | 21 | | 2 | | 13 |
| | 2 | | 5 | | 5 | | 18 | | 0 | | 15 |
| BBN00230882 | 0 | BBN16230 | 16 | BBN00230882 | 3 | BBN16230 | 5 | BBN00230882 | 5 | BBN16230 | 4 |
| | 0 | | 6 | | 2 | | 5 | | 3 | | 2 |
| | 1 | | 7 | | 4 | | 8 | | 6 | | 7 |
| | 0 | | 8 | | 8 | | 3 | | 6 | | 13 |
| | 0 | | 8 | | 5 | | 4 | | 3 | | 9 |
| | 0 | | 5 | | 3 | | 3 | | 7 | | 2 |
| | 0 | | 10 | | 2 | | 2 | | 2 | | 2 |

| | | | | | | | | | | | |
|----------|----------|---------|----------|----------|----------|---------|----------|----------|----------|---------|----------|
| | 1 | | 5 | | 2 | | 2 | | 3 | | 3 |
| | 1 | | 5 | | 1 | | 2 | | 3 | | 3 |
| | 0 | | 8 | | 2 | | 1 | | 8 | | 6 |
| BBN16662 | 1 | BBN9846 | 7 | BBN16662 | 13 | BBN9846 | 17 | BBN16662 | 19 | BBN9846 | 68 |
| | 1 | | 7 | | 14 | | 27 | | 16 | | 89 |
| | 0 | | 4 | | 14 | | 16 | | 14 | | 64 |
| | 1 | | 2 | | 8 | | 16 | | 17 | | 67 |
| | 1 | | 3 | | 12 | | 25 | | 8 | | 92 |
| | 2 | | 4 | | 14 | | 17 | | 25 | | 73 |
| | 2 | | 3 | | 19 | | 21 | | 20 | | 79 |
| | 2 | | 4 | | 16 | | 18 | | 14 | | 67 |
| | 3 | | 1 | | 19 | | 13 | | 16 | | 58 |
| | 4 | | 1 | | 16 | | 17 | | 12 | | 55 |
| BBN16251 | 3 | BBN9824 | 4 | BBN16251 | 5 | BBN9824 | 25 | BBN16251 | 13 | BBN9824 | 65 |
| | 0 | | 4 | | 5 | | 21 | | 10 | | 35 |
| | 3 | | 5 | | 5 | | 33 | | 9 | | 64 |
| | 0 | | 4 | | 6 | | 28 | | 11 | | 40 |
| | 1 | | 8 | | 11 | | 30 | | 15 | | 16 |
| | 1 | | 4 | | 5 | | 19 | | 15 | | 15 |
| | 2 | | 9 | | 5 | | 23 | | 10 | | 16 |
| | 1 | | 9 | | 9 | | 28 | | 3 | | 26 |
| | 0 | | 4 | | 3 | | 29 | | 5 | | 33 |
| | 1 | | 8 | | 6 | | 20 | | 10 | | 26 |
| BBN16242 | 0 | BBN9898 | 6 | BBN16242 | 30 | BBN9898 | 4 | BBN16242 | 36 | BBN9898 | 16 |
| | 1 | | 8 | | 32 | | 5 | | 53 | | 26 |
| | 0 | | 4 | | 21 | | 9 | | 56 | | 7 |
| | 0 | | 6 | | 16 | | 2 | | 39 | | 11 |
| | 0 | | 3 | | 16 | | 7 | | 47 | | 9 |
| | 1 | | 2 | | 20 | | 6 | | 53 | | 9 |
| | 3 | | 5 | | 19 | | 10 | | 41 | | 12 |
| | 0 | | 6 | | 16 | | 8 | | 36 | | 9 |
| | 2 | | 10 | | 11 | | 8 | | 48 | | 3 |
| | 1 | | 6 | | 20 | | 9 | | 37 | | 8 |
| SD | 1.590916 | | 3.393124 | | 8.996123 | | 8.673755 | | 19.43567 | | 22.42817 |
| Mean | 1.475 | | 6.075 | | 11.7375 | | 10.8625 | | 24.4625 | | 23.2 |
| SEM | 0.17787 | | 0.379363 | | 1.005797 | | 0.969755 | | 2.172974 | | 2.507546 |

| | | |
|---------|----------|----------|
| H=84.02 | H=0.852 | H=0.475 |
| P<0.001 | P=0.3559 | P=0.4906 |

Table S5. S100A10 immunopositive astrocyte like cell counts in frontal upper and lower cortex and white matter.

| S100A10 | Control s | AD | Controls | AD | control s | AD |
|------------|--------------|-------------|-------------|-------------|--------------|-------------|
| Upper cx | | | Low Cx | | Front wm | |
| | BBN00232633 | BBN00233768 | BBN00232633 | BBN00233768 | BBN00232633 | BBN00233768 |
| | 0 | 6 | 0 | 5 | 1 | 17 |
| | 0 | 4 | 0 | 3 | 0 | 15 |
| | 0 | 4 | 0 | 5 | 0 | 15 |
| | 0 | 1 | 0 | 5 | 0 | 11 |
| | 0 | 5 | 0 | 7 | 1 | 18 |
| | 0 | 9 | 0 | 1 | 0 | 12 |
| | 0 | 5 | 0 | 2 | 1 | 11 |
| | 0 | 5 | 0 | 6 | 0 | 12 |
| | 1 | 3 | 0 | 6 | 0 | 9 |
| | 0 | 2 | 0 | 1 | 0 | 13 |
| BBN0023258 | BBN0023259 | | BBN0023258 | BBN0023259 | BBN0023258 | BBN0023259 |
| 8 | 0 | 7 | 7 | 8 | 0 | 7 |
| | 0 | 3 | 1 | 1 | 0 | 7 |
| | 0 | 3 | 0 | 0 | 0 | 12 |
| | 0 | 3 | 0 | 0 | 1 | 11 |
| | 0 | 4 | 0 | 0 | 0 | 15 |
| | 0 | 6 | 1 | 2 | 0 | 10 |
| | 0 | 3 | 0 | 3 | 1 | 17 |
| | 0 | 6 | 0 | 1 | 0 | 10 |

| | | | | | | | | | | | |
|------------|---|------------|----|------------|---|------------|---|------------|---|------------|----|
| | 0 | | 3 | | 0 | | 2 | | 0 | | 6 |
| | 0 | | 1 | | 1 | | 4 | | 0 | | 2 |
| BBN0023522 | 0 | BBN32545 | 20 | BBN0023522 | 0 | BBN32545 | 3 | BBN0023522 | 1 | BBN32545 | 1 |
| | 0 | | 9 | | 0 | | 3 | | 0 | | 2 |
| | 0 | | 7 | | 0 | | 0 | | 1 | | 1 |
| | 0 | | 7 | | 0 | | 3 | | 0 | | 1 |
| | 0 | | 9 | | 0 | | 3 | | 0 | | 5 |
| | 0 | | 7 | | 0 | | 1 | | 0 | | 2 |
| | 0 | | 8 | | 0 | | 2 | | 0 | | 3 |
| | 0 | | 6 | | 0 | | 4 | | 2 | | 2 |
| | 0 | | 4 | | 0 | | 2 | | 0 | | 2 |
| | 0 | | 8 | | 0 | | 0 | | 0 | | 2 |
| BBN0023258 | 1 | BBN0023285 | 2 | BBN0023258 | 2 | BBN0023285 | 3 | BBN0023258 | 1 | BBN0023285 | 6 |
| 8 | | 6 | | 8 | | 6 | | 8 | | 6 | |
| | 0 | | 4 | | 1 | | 3 | | 3 | | 4 |
| | 0 | | 0 | | 0 | | 2 | | 0 | | 6 |
| | 0 | | 2 | | 0 | | 2 | | 0 | | 7 |
| | 0 | | 1 | | 0 | | 3 | | 0 | | 4 |
| | 0 | | 2 | | 0 | | 2 | | 1 | | 4 |
| | 1 | | 2 | | 1 | | 2 | | 0 | | 6 |
| | 0 | | 1 | | 0 | | 0 | | 2 | | 13 |
| | 0 | | 6 | | 1 | | 1 | | 0 | | 3 |
| | 1 | | 4 | | 0 | | 2 | | 0 | | 5 |
| BBN0023088 | 0 | BBN16230 | 3 | BBN0023088 | 0 | BBN16230 | 6 | BBN0023088 | 0 | BBN16230 | 8 |
| 2 | | | | 2 | | | | 2 | | | |
| | 0 | | 2 | | 0 | | 4 | | 0 | | 11 |
| | 1 | | 2 | | 0 | | 4 | | 0 | | 7 |

| | | | | | | | | | | | |
|----------|----|---------|----|----------|----|---------|---|----------|---|---------|---|
| 0 | 3 | 0 | 9 | 0 | 9 | | | | | | |
| 0 | 3 | 0 | 10 | 0 | 5 | | | | | | |
| 0 | 0 | 0 | 7 | 1 | 7 | | | | | | |
| 0 | 4 | 0 | 13 | 0 | 20 | | | | | | |
| 0 | 2 | 1 | 2 | 1 | 16 | | | | | | |
| 0 | 2 | 0 | 3 | 2 | 11 | | | | | | |
| 0 | 3 | 0 | 1 | 1 | 16 | | | | | | |
| BBN16662 | 0 | BBN9846 | 3 | BBN16662 | 0 | BBN9846 | 1 | BBN16662 | 0 | BBN9846 | 5 |
| 0 | 1 | 0 | 2 | 0 | 7 | | | | | | |
| 0 | 1 | 0 | 1 | 0 | 7 | | | | | | |
| 0 | 1 | 0 | 1 | 0 | 5 | | | | | | |
| 0 | 3 | 0 | 2 | 2 | 4 | | | | | | |
| 0 | 1 | 0 | 3 | 0 | 5 | | | | | | |
| 0 | 4 | 0 | 3 | 0 | 3 | | | | | | |
| 0 | 15 | 0 | 1 | 0 | 8 | | | | | | |
| 0 | 4 | 0 | 4 | 0 | 7 | | | | | | |
| 0 | 9 | 0 | 1 | 0 | 5 | | | | | | |
| BBN16251 | 0 | BBN9824 | 8 | BBN16251 | 0 | BBN9824 | 3 | BBN16251 | 1 | BBN9824 | 9 |
| 0 | 5 | 0 | 0 | 0 | 10 | | | | | | |
| 0 | 3 | 0 | 4 | 1 | 6 | | | | | | |
| 0 | 1 | 0 | 6 | 0 | 9 | | | | | | |
| 0 | 4 | 0 | 4 | 0 | 13 | | | | | | |
| 0 | 6 | 0 | 1 | 0 | 9 | | | | | | |
| 0 | 1 | 0 | 2 | 1 | 7 | | | | | | |
| 0 | 7 | 0 | 1 | 0 | 6 | | | | | | |
| 0 | 2 | 0 | 1 | 0 | 5 | | | | | | |
| 0 | 5 | 0 | 1 | 0 | 6 | | | | | | |

| | | | | | | | | | | | |
|----------|----------|---------|-----------|----------|---------|---------|----------|----------|---------|---------|----------|
| BBN16242 | 0 | BBN9898 | 9 | BBN16242 | 0 | BBN9898 | 3 | BBN16242 | 0 | BBN9898 | 3 |
| | 0 | | 7 | | 0 | | 3 | | 0 | | 4 |
| | 0 | | 5 | | 0 | | 5 | | 0 | | 3 |
| | 1 | | 7 | | 0 | | 3 | | 0 | | 1 |
| | 0 | | 10 | | 0 | | 1 | | 0 | | 3 |
| | 0 | | 2 | | 0 | | 1 | | 0 | | 4 |
| | 0 | | 16 | | 0 | | 3 | | 0 | | 2 |
| | 1 | | 10 | | 0 | | 3 | | 0 | | 0 |
| | 0 | | 4 | | 0 | | 3 | | 0 | | 3 |
| | 0 | | 2 | | 0 | | 2 | | 0 | | 4 |
| SD | 0.284349 | | 3.57239 | | 0.35556 | | 2.31721 | | 0.63195 | | 4.68224 |
| | | | 8 | | 2 | | | | 5 | | 5 |
| Mean | 0.0875 | | 4.65 | | 0.1125 | | 2.8125 | | 0.325 | | 7.275 |
| SEM | 0.031791 | | 0.39940 | | 0.03975 | | 0.25907 | | 0.07065 | | 0.52349 |
| | | | 6 | | 3 | | 2 | | 5 | | 1 |
| | | | H=110.335 | | | | H=16.202 | | | | H=91.5 |
| | | | P<0.001 | | | | P<0.001 | | | | P< 0.001 |

Table S6. AD cases - Comparison of C3 and S100 astrocyte-like cell counts in upper and lower frontal cortex and white matter.

| Upper cx | AD | AD | lower cx | AD | AD | Frontal wm | AD | AD |
|-------------|-------------|----|-------------|-------------|----|-------------|-------------|----|
| S100A10 | C3 | | S100A10 | C3 | | S100A10 | C3 | |
| BBN00233768 | BBN00233768 | | BBN00233768 | BBN00233768 | | BBN00233768 | BBN00233768 | |
| 6 | 10 | | 5 | 4 | | 17 | 28 | |
| 4 | 6 | | 3 | 4 | | 15 | 44 | |
| 4 | 14 | | 5 | 3 | | 15 | 30 | |
| 1 | 10 | | 5 | 5 | | 11 | 34 | |
| 5 | 8 | | 7 | 6 | | 18 | 32 | |

| | | | | | | | | | | | |
|-------------|----|-------------|----|-------------|---|-------------|----|-------------|----|-------------|----|
| | 9 | | 9 | | 1 | | 7 | | 12 | | 24 |
| | 5 | | 5 | | 2 | | 14 | | 11 | | 25 |
| | 5 | | 7 | | 6 | | 17 | | 12 | | 32 |
| | 3 | | 8 | | 6 | | 13 | | 9 | | 22 |
| | 2 | | 9 | | 1 | | 15 | | 13 | | 14 |
| BBN00232597 | 7 | BBN00232597 | 2 | BBN00232597 | 2 | BBN00232597 | 3 | BBN00232597 | 7 | BBN00232597 | 4 |
| | 3 | | 2 | | 1 | | 4 | | 7 | | 12 |
| | 3 | | 3 | | 0 | | 4 | | 12 | | 11 |
| | 3 | | 1 | | 0 | | 2 | | 11 | | 13 |
| | 4 | | 8 | | 0 | | 2 | | 15 | | 8 |
| | 6 | | 3 | | 2 | | 5 | | 10 | | 5 |
| | 3 | | 2 | | 3 | | 7 | | 17 | | 9 |
| | 6 | | 5 | | 1 | | 1 | | 10 | | 2 |
| | 3 | | 4 | | 2 | | 3 | | 6 | | 2 |
| | 1 | | 3 | | 4 | | 1 | | 2 | | 9 |
| BBN32545 | 20 | BBN32545 | 12 | BBN32545 | 3 | BBN32545 | 4 | BBN32545 | 1 | BBN32545 | 6 |
| | 9 | | 5 | | 3 | | 2 | | 2 | | 20 |
| | 7 | | 5 | | 0 | | 6 | | 1 | | 20 |
| | 7 | | 4 | | 3 | | 3 | | 1 | | 15 |
| | 9 | | 5 | | 3 | | 2 | | 5 | | 12 |
| | 7 | | 4 | | 1 | | 1 | | 2 | | 22 |
| | 8 | | 5 | | 2 | | 4 | | 3 | | 2 |
| | 6 | | 3 | | 4 | | 5 | | 2 | | 19 |
| | 4 | | 3 | | 2 | | 2 | | 2 | | 9 |
| | 8 | | 4 | | 0 | | 4 | | 2 | | 2 |
| BBN00232856 | 2 | BBN00232856 | 2 | BBN00232856 | 3 | BBN00232856 | 19 | BBN00232856 | 6 | BBN00232856 | 34 |
| | 4 | | 10 | | 3 | | 18 | | 4 | | 13 |

| | | | | | | | | | | | |
|----------|----|----------|----|----------|----|----------|----|----------|---|----------|----|
| 0 | 4 | 2 | 19 | 6 | 14 | | | | | | |
| 2 | 13 | 2 | 17 | 7 | 16 | | | | | | |
| 1 | 14 | 3 | 13 | 4 | 16 | | | | | | |
| 2 | 7 | 2 | 10 | 4 | 12 | | | | | | |
| 2 | 14 | 2 | 19 | 6 | 13 | | | | | | |
| 1 | 5 | 0 | 16 | 13 | 14 | | | | | | |
| 6 | 14 | 1 | 21 | 3 | 13 | | | | | | |
| 4 | 5 | 2 | 18 | 5 | 15 | | | | | | |
| BBN16230 | 3 | BBN16230 | 16 | BBN16230 | 6 | BBN16230 | 5 | BBN16230 | 8 | BBN16230 | 4 |
| 2 | 6 | 4 | 5 | 11 | 2 | | | | | | |
| 2 | 7 | 4 | 8 | 7 | 7 | | | | | | |
| 3 | 8 | 9 | 3 | 9 | 13 | | | | | | |
| 3 | 8 | 10 | 4 | 5 | 9 | | | | | | |
| 0 | 5 | 7 | 3 | 7 | 2 | | | | | | |
| 4 | 10 | 13 | 2 | 20 | 2 | | | | | | |
| 2 | 5 | 2 | 2 | 16 | 3 | | | | | | |
| 2 | 5 | 3 | 2 | 11 | 3 | | | | | | |
| 3 | 8 | 1 | 1 | 16 | 6 | | | | | | |
| BBN9846 | 3 | BBN9846 | 7 | BBN9846 | 1 | BBN9846 | 17 | BBN9846 | 5 | BBN9846 | 68 |
| 1 | 7 | 2 | 27 | 7 | 89 | | | | | | |
| 1 | 4 | 1 | 16 | 7 | 64 | | | | | | |
| 1 | 2 | 1 | 16 | 5 | 67 | | | | | | |
| 3 | 3 | 2 | 25 | 4 | 92 | | | | | | |
| 1 | 4 | 3 | 17 | 5 | 73 | | | | | | |
| 4 | 3 | 3 | 21 | 3 | 79 | | | | | | |
| 15 | 4 | 1 | 18 | 8 | 67 | | | | | | |
| 4 | 1 | 4 | 13 | 7 | 58 | | | | | | |

| | | | | | | | | | | | |
|---------|----------|----------|----------|---------|----------|---------|----------|---------|----------|---------|----------|
| | 9 | | 1 | | 1 | | 17 | | 5 | | 55 |
| BBN9824 | 8 | BBN9824 | 4 | BBN9824 | 3 | BBN9824 | 25 | BBN9824 | 9 | BBN9824 | 65 |
| | 5 | | 4 | | 0 | | 21 | | 10 | | 35 |
| | 3 | | 5 | | 4 | | 33 | | 6 | | 64 |
| | 1 | | 4 | | 6 | | 28 | | 9 | | 40 |
| | 4 | | 8 | | 4 | | 30 | | 13 | | 16 |
| | 6 | | 4 | | 1 | | 19 | | 9 | | 15 |
| | 1 | | 9 | | 2 | | 23 | | 7 | | 16 |
| | 7 | | 9 | | 1 | | 28 | | 6 | | 26 |
| | 2 | | 4 | | 1 | | 29 | | 5 | | 33 |
| | 5 | | 8 | | 1 | | 20 | | 6 | | 26 |
| BBN9898 | 9 | BBN9898 | 6 | BBN9898 | 3 | BBN9898 | 4 | BBN9898 | 3 | BBN9898 | 16 |
| | 7 | | 8 | | 3 | | 5 | | 4 | | 26 |
| | 5 | | 4 | | 5 | | 9 | | 3 | | 7 |
| | 7 | | 6 | | 3 | | 2 | | 1 | | 11 |
| | 10 | | 3 | | 1 | | 7 | | 3 | | 9 |
| | 2 | | 2 | | 1 | | 6 | | 4 | | 9 |
| | 16 | | 5 | | 3 | | 10 | | 2 | | 12 |
| | 10 | | 6 | | 3 | | 8 | | 0 | | 9 |
| | 4 | | 10 | | 3 | | 8 | | 3 | | 3 |
| | 2 | | 6 | | 2 | | 9 | | 4 | | 8 |
| sd | 3.572398 | | 3.393124 | | 2.31721 | | 8.673755 | | 4.682245 | | 22.42817 |
| Mean | 4.65 | | 6.075 | | 2.8125 | | 10.8625 | | 7.275 | | 23.2 |
| SEM | 0.399406 | | 0.379363 | | 0.259072 | | 0.969755 | | 0.523491 | | 2.507546 |
| | | H=9.804 | | | | H=50288 | | | H=34.956 | | |
| | | P=0.0017 | | | | P<0.001 | | | P<0.001 | | |

Table S7. Controls- Comparison of C3 and S100 astrocyte-like cell counts in upper and lower frontal cortex and white matter.

| S100A10 | Controls | C3 | S100A10 | Controls | C3 | S100A10 | controls | C3 | |
|-------------|----------|-------------|----------|-------------|----|-------------|----------|-------------|----|
| Upper cx | | | Lower Cx | | | Frontal wm | | | |
| BBN00232633 | | BBN00232633 | | BBN00232633 | | BBN00232633 | | BBN00232633 | |
| 0 | | 1 | | 0 | | 31 | | 53 | |
| 0 | | 1 | | 0 | | 32 | | 74 | |
| 0 | | 2 | | 0 | | 26 | | 60 | |
| 0 | | 5 | | 0 | | 29 | | 63 | |
| 0 | | 6 | | 0 | | 24 | | 51 | |
| 0 | | 3 | | 0 | | 33 | | 57 | |
| 0 | | 5 | | 0 | | 33 | | 50 | |
| 0 | | 5 | | 0 | | 20 | | 49 | |
| 1 | | 4 | | 0 | | 26 | | 42 | |
| 0 | | 8 | | 0 | | 27 | | 35 | |
| BBN00232588 | 0 | BBN00232588 | 4 | BBN00232588 | 0 | BBN00232588 | 6 | BBN00232588 | 39 |
| 0 | | 2 | | 1 | | 0 | | 32 | |
| 0 | | 3 | | 0 | | 4 | | 67 | |
| 0 | | 2 | | 0 | | 7 | | 42 | |
| 0 | | 0 | | 0 | | 0 | | 30 | |
| 0 | | 1 | | 1 | | 6 | | 28 | |
| 0 | | 0 | | 0 | | 6 | | 31 | |
| 0 | | 0 | | 0 | | 6 | | 24 | |
| 0 | | 0 | | 0 | | 9 | | 13 | |
| 0 | | 2 | | 1 | | 11 | | 19 | |
| BBN0023522 | 0 | BBN0023522 | 1 | BBN0023522 | 0 | BBN0023522 | 5 | BBN0023522 | 37 |
| 0 | | 0 | | 0 | | 16 | | 32 | |
| 0 | | 0 | | 0 | | 11 | | 47 | |
| 0 | | 1 | | 0 | | 9 | | 22 | |
| 0 | | 0 | | 0 | | 13 | | 39 | |
| 0 | | 1 | | 0 | | 13 | | 33 | |
| 0 | | 1 | | 0 | | 7 | | 40 | |
| 0 | | 0 | | 0 | | 11 | | 23 | |
| 0 | | 1 | | 0 | | 4 | | 25 | |
| 0 | | 0 | | 0 | | 21 | | 20 | |

| | | | | | | | | | | | |
|-----------------|---|-----------------|---|-----------------|---|-----------------|----|-----------------|---|-----------------|----|
| BBN00232 588 | 1 | BBN00 232588 | 2 | BBN00232 588 | 2 | BBN00232 588 | 4 | BBN00232 588 | 1 | BBN00 232588 | 2 |
| | 0 | | 1 | | 1 | | 4 | | 3 | | 6 |
| | 0 | | 2 | | 0 | | 5 | | 0 | | 5 |
| | 0 | | 2 | | 0 | | 8 | | 0 | | 3 |
| | 0 | | 2 | | 0 | | 4 | | 0 | | 3 |
| | 0 | | 3 | | 0 | | 9 | | 1 | | 3 |
| | 1 | | 2 | | 1 | | 4 | | 0 | | 2 |
| | 0 | | 1 | | 0 | | 5 | | 2 | | 0 |
| | 0 | | 2 | | 1 | | 7 | | 0 | | 2 |
| | 1 | | 2 | | 0 | | 5 | | 0 | | 0 |
| BBN00230 882 | 0 | BBN00 230882 | 0 | BBN00230 882 | 0 | BBN00230 882 | 3 | BBN00230 882 | 0 | BBN00 230882 | 5 |
| | 0 | | 0 | | 0 | | 2 | | 0 | | 3 |
| | 1 | | 1 | | 0 | | 4 | | 0 | | 6 |
| | 0 | | 0 | | 0 | | 8 | | 0 | | 6 |
| | 0 | | 0 | | 0 | | 5 | | 0 | | 3 |
| | 0 | | 0 | | 0 | | 3 | | 1 | | 7 |
| | 0 | | 0 | | 0 | | 2 | | 0 | | 2 |
| | 0 | | 1 | | 1 | | 2 | | 1 | | 3 |
| | 0 | | 1 | | 0 | | 1 | | 2 | | 3 |
| | 0 | | 0 | | 0 | | 2 | | 1 | | 8 |
| BBN16662 | 0 | BBN16 662 | 1 | BBN16662 | 0 | BBN16662 | 13 | BBN16662 | 0 | BBN16 662 | 19 |
| | 0 | | 1 | | 0 | | 14 | | 0 | | 16 |
| | 0 | | 0 | | 0 | | 14 | | 0 | | 14 |
| | 0 | | 1 | | 0 | | 8 | | 0 | | 17 |
| | 0 | | 1 | | 0 | | 12 | | 2 | | 8 |
| | 0 | | 2 | | 0 | | 14 | | 0 | | 25 |
| | 0 | | 2 | | 0 | | 19 | | 0 | | 20 |
| | 0 | | 2 | | 0 | | 16 | | 0 | | 14 |
| | 0 | | 3 | | 0 | | 19 | | 0 | | 16 |
| | 0 | | 4 | | 0 | | 16 | | 0 | | 12 |
| BBN16251 | 0 | BBN16 251 | 3 | BBN16251 | 0 | BBN16251 | 5 | BBN16251 | 1 | BBN16 251 | 13 |
| | 0 | | 0 | | 0 | | 5 | | 0 | | 10 |
| | 0 | | 3 | | 0 | | 5 | | 1 | | 9 |

| | | | | | | | | | | | |
|----------|----------|----------|--------|-----------|--------|-----------|---|----------|---|----------|----|
| 0 | 0 | 0 | 6 | 0 | 11 | | | | | | |
| 0 | 1 | 0 | 11 | 0 | 15 | | | | | | |
| 0 | 1 | 0 | 5 | 0 | 15 | | | | | | |
| 0 | 2 | 0 | 5 | 1 | 10 | | | | | | |
| 0 | 1 | 0 | 9 | 0 | 3 | | | | | | |
| 0 | 0 | 0 | 3 | 0 | 5 | | | | | | |
| 0 | 1 | 0 | 6 | 0 | 10 | | | | | | |
| BBN16242 | 0 | BBN16242 | 0 | BBN16242 | 30 | BBN16242 | 0 | BBN16242 | 0 | BBN16242 | 36 |
| 0 | 1 | 0 | 32 | 0 | 53 | | | | | | |
| 0 | 0 | 0 | 21 | 0 | 56 | | | | | | |
| 1 | 0 | 0 | 16 | 0 | 39 | | | | | | |
| 0 | 0 | 0 | 16 | 0 | 47 | | | | | | |
| 0 | 1 | 0 | 20 | 0 | 53 | | | | | | |
| 0 | 3 | 0 | 19 | 0 | 41 | | | | | | |
| 1 | 0 | 0 | 16 | 0 | 36 | | | | | | |
| 0 | 2 | 0 | 11 | 0 | 48 | | | | | | |
| 0 | 1 | 0 | 20 | 0 | 37 | | | | | | |
| SD | 0.284349 | 1.5909 | 0.3555 | 8.99612 | 0.6319 | 19.43567 | | | | | |
| | | 16 | 62 | 3 | 55 | | | | | | |
| Mean | 0.0875 | 1.475 | 0.1125 | 11.7375 | 0.325 | 24.4625 | | | | | |
| SEM | 0.031791 | 0.1778 | 0.0397 | 1.00579 | 0.0706 | 2.172974 | | | | | |
| | | 7 | 53 | 7 | 55 | | | | | | |
| | H= | | | H=112.315 | | H=110.765 | | | | | |
| | 47.921 | | | | | | | | | | |
| | P<0.001 | | | P<0.001 | | P<0.001 | | | | | |
| | | | | | | 1 | | | | | |

