Table S1. **Sequence and reactivity data from GABAAR encephalitis cerebrospinal fluid antibody repertoire.**

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| mAb source cell | | | heavy chain | | | | | light chain | | | | | reactivity | | |
| mAb  ID | **pheno-type** | **sub-**  **class** | **IGHV** | **IGHD** | **IGHJ** | **IGH CDR3L** | **IGHV SHM** | **IGK/**  **IGL** | **IGKV/**  **IGLV** | **IGKJ/**  **IGLJ** | **IGK/IGL**  **CDR3L** | **IGKV/IGLV SHM** | **GABAAR**  **CBA** | **brain tissue** | **brain tissue**  **staining pattern** |
| #113-101 | ASC | IgG1 | 3 | 3 | 4 | 15 | 9 | IGL | 8 | 3 | 10 | 6 | **pos.** | **pos.** | GABAAR pattern |
| #113-103 | NMBC | IgM | 1 | 3 | 4 | 20 | 15 | IGK | 1 | 1 | 9 | 12 | neg. | neg. |  |
| #113-104 | MBC | IgG1 | 3 | 3 | 4 | 14 | 8 | IGK | 1 | 4 | 9 | 2 | neg. | neg. |  |
| #113-107 | MBC | IgG1 | 3 | 5 | 3 | 15 | 14 | IGK | 3 | 2 | 11 | 11 | neg. | neg. |  |
| #113-109 | NMBC | IgM | 1 | N/A | 4 | 13 | 3 | IGK | 1 | 2 | 9 | 1 | neg. | **pos.** | blood vessels |
| #113-110 | NMBC | IgM | 3 | 3 | 5 | 19 | 7 | IGL | 1 | 2 | 10 | 2 | neg. | neg. |  |
| #113-111 | NMBC | IgM | 3 | 3 | 3 | 19 | 0 | IGK | 1 | 1 | 9 | 0 | neg. | **pos.** | blood vessels, choroid plexus, basal ganglia |
| #113-112 | NMBC | IgM | 1 | 3 | 3 | 16 | 3 | IGL | 2 | 1 | 10 | 3 | neg. | neg. |  |
| #113-114 | NMBC | IgM | 3 | 6 | 3 | 15 | 16 | IGL | 2 | 3 | 10 | 10 | neg. | **pos.** | cerebellum (cellular pattern in gcl), hippocampus (neuropil in CA1-3, sparing of MoDG), basal ganglia |
| #113-115 | ASC | IgG1 | 1 | 3 | 5 | 18 | 12 | IGL | 1 | 2 | 12 | 5 | **pos.** | **pos.** | GABAAR pattern |
| #113-116 | NMBC | IgG1 | 3 | 4 | 5 | 10 | 10 | IGK | 1 | 2 | 9 | 5 | neg. | neg. |  |
| #113-117 | NMBC | IgM | 3 | 6 | 6 | 21 | 9 | IGL | 1 | 3 | 11 | 6 | neg. | neg. |  |
| #113-118 | NMBC | IgM | 4 | 2 | 6 | 17 | 2 | IGK | 3 | 2 | 8 | 0 | neg. | neg. |  |
| #113-119 | NMBC | IgM | 3 | 4 | 4 | 11 | 3 | IGK | 3 | 2 | 11 | 3 | neg. | neg. |  |
| #113-121 | MBC | IgM | 3 | 7 | 4 | 13 | 11 | IGK | 4 | 2 | 9 | 1 | neg. | neg. |  |
| #113-122 | NMBC | IgM | 1 | N/A | 5 | 12 | 4 | IGL | 1 | 1 | 11 | 4 | neg. | neg. |  |
| #113-123 | NMBC | IgM | 1 | 1 | 4 | 15 | 17 | IGK | 3 | 3 | 9 | 6 | neg. | neg. |  |
| #113-124 | NMBC | IgM | 4 | 1 | 5 | 18 | 1 | IGK | 3 | 4 | 9 | 0 | neg. | neg. |  |
| #113-125 | NMBC | IgM | 3 | 3 | 4 | 13 | 10 | IGK | 3 | 2 | 7 | 0 | neg. | neg. |  |
| #113-126 | MBC | IgG1 | 3 | 3 | 4 | 16 | 15 | IGK | 1 | 1 | 9 | 10 | neg. | **pos.** | fine blood vessels frontal cortex |
| #113-127 | MBC | IgG1 | 3 | 4 | 4 | 14 | 20 | IGK | 1 | 2 | 9 | 7 | neg. | neg. |  |
| #113-128 | MBC | IgM | 4 | 7 | 5 | 14 | 13 | IGK | 2 | 4 | 9 | 4 | neg. | **pos.** | choroid plexus, blood vessels |
| #113-130 | NMBC | IgM | 3 | 6 | 6 | 15 | 0 | IGK | 2 | 3 | 9 | 0 | neg. | neg. |  |
| #113-132 | NMBC | IgG1 | 3 | 3 | 4 | 18 | 3 | IGK | 1 | 2 | 9 | 0 | neg. | neg. |  |
| #113-133 | NMBC | IgM | 3 | 1 | 4 | 12 | 13 | IGK | 3 | 4 | 9 | 9 | neg. | neg. |  |
| #113-134 | NMBC | IgM | 3 | N/A | 4 | 12 | 20 | IGK | 3 | 2 | 11 | 11 | neg. | **pos.** | somata in white matter (e.g. corpus callosum) |
| #113-135 | NMBC | IgG1 | 1 | 1 | 3 | 14 | 15 | IGK | 3 | 1 | 9 | 3 | neg. | **pos.** | cerebellum (pcl, neuropil pattern in gcl and weaker mcl), hippocampus, choroid plexus |
| #113-136 | NMBC | IgM | 3 | 1 | 4 | 13 | 0 | IGL | 1 | 2 | 13 | 1 | neg. | neg. |  |
| #113-137 | NMBC | IgM | 3 | 1 | 6 | 14 | 8 | IGK | 2 | 1 | 8 | 1 | neg. | neg. |  |
| #113-138 | NMBC | IgM | 4 | 6 | 4 | 11 | 3 | IGK | 1 | 1 | 11 | 6 | neg. | neg. |  |
| #113-139 | NMBC | IgM | 3 | 3 | 2 | 14 | 7 | IGK | 1 | 3 | 9 | 6 | neg. | neg. |  |
| #113-140 | NMBC | IgG1 | 4 | 3 | 4 | 15 | 6 | IGK | 1 | 2 | 9 | 8 | n.a.\* | n.a.\* |  |
| #113-143 | MBC | IgG1 | 1 | 3 | 6 | 24 | 25 | IGK | 1 | 3 | 9 | 13 | neg. | neg. |  |
| #113-147 | NMBC | IgM | 3 | 1 | 6 | 13 | 0 | IGK | 4 | 1 | 10 | 0 | neg. | neg. |  |
| #113-149 | NMBC | IgM | 3 | 6 | 4 | 17 | 3 | IGK | 1 | 4 | 8 | 2 | neg. | neg. |  |
| #113-159 | NMBC | IgM | 4 | 3 | 6 | 22 | 4 | IGK | 1 | 1 | 9 | 2 | neg. | (pos.) | fine punctuated signal in corpus callosum |
| #113-160 | NMBC | IgG1 | 4 | 4 | 6 | 18 | 5 | IGK | 3 | 1 | 9 | 7 | neg. | (pos.) | choroid plexus, ependyma cells |
| #113-162 | NMBC | IgM | 3 | 4 | 4 | 13 | 10 | IGK | 3 | 1 | 9 | 7 | neg. | neg. |  |
| #113-164 | MBC | IgG2 | 3 | 2 | 4 | 14 | 21 | IGK | 1 | 4 | 7 | 32 | neg. | neg. |  |
| #113-166 | NMBC | IgM | 4 | 4 | 4 | 11 | 8 | IGK | 3 | 4 | 9 | 5 | neg. | neg. |  |
| #113-171 | ASC | IgG1 | 4 | 3 | 3 | 23 | 7 | IGK | 1 | 4 | 8 | 8 | neg. | **pos.** | similar to GABAAR pattern |
| #113-172 | NMBC | IgM | 4 | 5 | 5 | 15 | 0 | IGK | 1 | 2 | 9 | 0 | neg. | neg. |  |
| #113-174 | NMBC | IgM | 4 | 4 | 6 | 26 | 2 | IGK | 3 | 5 | 8 | 0 | neg. | **pos.** | diffuse ubiquitous staining, pronounced in cerebellum |
| #113-175 | ASC | IgG1 | 3 | 3 | 4 | 17 | 12 | IGK | 3 | 2 | 10 | 0 | **pos.\*** | **pos.** | GABAAR pattern |
| #113-176 | MBC | IgG3 | 3 | 4 | 3 | 13 | 20 | IGK | 3 | 1 | 8 | 7 | neg. | neg. |  |
| #113-179 | NMBC | IgM | 1 | 3 | 4 | 14 | 0 | IGK | 1 | 3 | 10 | 0 | neg. | (pos) | blood vessels, choroid plexus, ependyma cells |
| #113-180 | NMBC | IgG3 | 4 | 3 | 5 | 20 | 9 | IGK | 3 | 1 | 9 | 6 | neg. | neg. |  |
| #113-183 | NMBC | IgM | 4 | 1 | 4 | 9 | 4 | IGK | 1 | 1 | 9 | 1 | neg. | neg. |  |
| #113-185 | MBC | IgM | 1 | 2 | 6 | 20 | 3 | IGK | 2 | 2 | 8 | 1 | neg. | neg. |  |
| #113-187 | NMBC | IgG1 | 1 | N/A | 4 | 11 | 8 | IGK | 1 | 2 | 9 | 3 | neg. | neg. |  |
| #113-189 | MBC | IgM | 4 | 1 | 4 | 16 | 17 | IGK | 3 | 1 | 11 | 5 | neg. | neg. |  |
| #113-192 | NMBC | IgM | 4 | 6 | 6 | 17 | 10 | IGK | 3 | 4 | 10 | 6 | neg. | neg. |  |
| #113-198 | ASC | IgG1 | 1 | 3 | 4 | 23 | 7 | IGK | 1 | 1 | 8 | 5 | **pos.** | **pos.** | GABAAR pattern |
| #113-199 | MBC | IgG1 | 1 | 3 | 4 | 19 | 18 | IGK | 2 | 1 | 9 | 4 | neg. | neg. |  |
| #113-201 | MBC | IgG1 | 4 | 3 | 4 | 15 | 1 | IGK | 1 | 1 | 9 | 11 | **pos.** | **pos.** | GABAAR pattern, choroid plexus, around blood vessels |
| #113-202 | NMBC | IgG2 | 3 | 4 | 4 | 6 | 10 | IGK | 2 | 4 | 8 | 5 | neg. | neg. |  |
| #113-204 | NMBC | IgG1 | 4 | 3 | 3 | 21 | 1 | IGK | 4 | 2 | 10 | 0 | neg. | **pos.** | cerebellum (neuropil pattern in mcl), meninges, basalganglia |
| #113-206 | NMBC | IgM | 3 | 3 | 4 | 16 | 14 | IGK | 1 | 1 | 9 | 14 | neg. | neg. |  |
| #113-207 | MBC | IgM | 3 | 6 | 3 | 17 | 11 | IGK | 1 | 4 | 8 | 5 | neg. | neg. |  |
| #113-208 | NMBC | IgM | 4 | 4 | 4 | 12 | 3 | IGK | 3 | 2 | 9 | 3 | neg. | neg. |  |
| #113-209 | NMBC | IgM | 4 | 4 | 4 | 13 | 0 | IGK | 1 | 2 | 9 | 0 | neg. | neg. |  |
| #113-210 | MBC | IgM | 3 | 3 | 4 | 11 | 3 | IGK | 4 | 4 | 8 | 6 | neg. | **pos.** | cerebellum (cellular pattern in gcl), hippocampus (neuropil in CA1-3), basal ganglia, fibers around corpus callosum |
| #113-212 | NMBC | IgA1 | 3 | 1 | 3 | 15 | 11 | IGK | 2 | 5 | 9 | 7 | neg. | **pos.** | cerebellum (cellular pattern in pcl), ependyma cells |
| #113-216 | NMBC | IgG1 | 4 | 4 | 4 | 15 | 3 | IGK | 1 | 1 | 9 | 0 | neg. | **pos.** | choroid plexus, ependyma cells, cortex, cerebellum (pronounced in mcl) |
| #113-219 | NMBC | IgM | 3 | 3 | 4 | 14 | 15 | IGK | 3 | 4 | 8 | 4 | neg. | neg. |  |
| #113-220 | NMBC | IgG1 | 3 | 3 | 4 | 13 | 0 | IGK | 2 | 1 | 9 | 0 | neg. | **pos.** | cerebellum (cellular pattern in gcl), lateral septal nuclei |
| #113-221 | MBC | IgG3 | 1 | 6 | 5 | 15 | 27 | IGK | 3 | 1 | 9 | 16 | neg. | neg. |  |

For each mAb, the human germline V(D)J gene families of highest sequence identity for the Ig heavy chain (IGH) and paired light chain of either κ (IGK) or λ (IGL) type are noted. The length of CDR3 and the number of SHMs are given as markers of antibody maturation. Reactivity data are provided from GABAAR CBAs and from unbiased reactivity screening on unfixed murine brain tissue sections (pos., positive; (pos.), weakly positive; neg, negative; n.a., not available as mAb was not expressed; \*, positive only on CBA with α1β3γ2-GABAAR but not α1β3-GABAAR). For tissue reactivities, staining patterns are described in detail (gcl, granule cell layer; mcl, molecular cell layer; MoDG, molecular layer of the dentate gyrus; pcl, Purkinje cell layer).