Identification of neural networks preferentially engaged by epileptogenic mass lesions: A lesion network mapping analysis

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## Supplementary Table 1. Clinical and tumor characteristics of lesions identified from the literature for external validation

| Author (year) | Age (years) | Sex | Tumor Type | Grade | Impacted structure | Seizure Type | Seizure Duration (years) |
|---------------|-------------|-----|------------|-------|--------------------|--------------|----------------------------|
| Aaron (1984)  | 21          | M   | Neoplasm   | NA    | Right temporal lobe| Partial, complex| 20                         |
|               | 45          | M   | Astrocytoma| 3     | Left temporal lobe | Generalized | 0.25                      |
| Alimohamadi (2016) | 30      | F   | Glioma     | 2     | Left temporal lobe | NA           | 0.33                      |
| Anneken (2006) | 48          | F   | Astrocytoma| 2     | Left frontotemporal lobe | Generalized tonic-clonic | 7                         |
| Bai (2015)    | 26          | F   | Astrocytoma| 2     | Left inferior temporal lobe | Complex partial | 0.04                      |
| Buklina (2014) | 23          | M   | Astrocytoma (anaplastic) | 3     | Left inferior precentral gyrus | Clonic seizure (tongue) | 0.66                      |
| Buklina (2014) | 52          | M   | Astrocytoma| 2     | Left superior & middle temporal gyri | Generalized | 12                        |
| Chowdhury (2010) | 41       | M   | Ganglioma (anaplastic) | 3     | Right amygdala | NA           | NA                        |
| Duffau (2006) | 38          | F   | Oligoastrocytoma| 2     | Right insula, temporal pole, mesiotemporal lobe | Generalized | 4                         |
| Duffau        | 39          | M   | Glioma     | 2     | Right frontal pole | NA           | 0.66                      |
| Year       | Age | Gender | Diagnosis                      | Lobe                                      | Epilepsy                          | Duration |
|------------|-----|--------|---------------------------------|-------------------------------------------|------------------------------------|----------|
| Garcia Pulido (2013) | 38  | F      | Oligodendroglialoma (multicentric) | Left frontal, parietal, occipital lobes | Generalised tonic-clonic            | 27       |
| Harmsen (2019) | 25  | M      | Glioma (angiocentric)           | Right frontal lobe                        | NA                                 | 2        |
| Henry (1994) | 24  | F      | Astrocytoma                     | Right frontal, inferior temporal lobes, insula | Complex partial                     | 16       |
| Hoque (2009) | 67  | M      | Astrocytoma                     | Left lateral perirolandic cortex          | Simple partial, clonic (tongue)    | NA       |
| Kennedy (2013) | 38  | M      | Oligodendroglioma               | Right temporal lobe                       | NA                                 | NA       |
| Maesawa (2016) | 24  | M      | Pleomorphic xanthoastrocytoma    | Left deep parietal operculum, transverse parietal gyrus | Medically refractory daily         | 7        |
| Majores (2008) | 45  | M      | Ganglioma (anaplastic)          | Left temporo-mesial lobe                  | Single, generalized                | NA       |
|             | 60  | M      | Ganglioma (atypical)            | Right frontocentral lobe                  | Refractory epilepsy                 | NA       |
|             | 37  | M      | Ganglioma (atypical)            | Left frontal lobe, insula, basal ganglia | Single, generalized                | NA       |
| Marucci     | 27  | M      | Intracerebral hamartoma         | Left frontal lobe                         | Tonic seizure                      | 20       |
| Year | Age | Gender | Tumor Type | Tumor Location | MRI Description | Other Details |
|------|-----|--------|------------|----------------|----------------|--------------|
| 2011 | 27  | NA     | Astrocytoma| Left temporo-mesial lobe | Intractable complex partial | 9.6 (mean) |
| Vajkoczy (1998) | 27  | NA     | Astrocytoma| Left temporo-mesial lobe | Intractable complex partial | 9.6 (mean) |
| 28  | F   | Astrocytoma (anaplastic) | Right mid-rolandic cortex | Partial Left sensory | 0.66 |
| Whittle (1992) | 28  | F   | Astrocytoma (anaplastic) | Right mid-rolandic cortex | Partial Left sensory | 0.66 |
**Supplementary Table 2.** Anatomical areas with the greatest likelihood of being functionally connected with epileptogenic versus non-epileptogenic lesions (AAL Atlas)

| Brain Region                     | Mean Voxelwise Odds Ratio |
|----------------------------------|---------------------------|
| Right Medial Frontal Gyrus       | 4.227846                  |
| Left Medial Frontal Gyrus        | 4.010104                  |
| Right Parahippocampal Gyrus      | 3.993287                  |
| Right Temporal Pole              | 3.828816                  |
| Right Inferior Parietal Lobe     | 3.745296                  |
| Right Middle Frontal Gyrus       | 3.736978                  |
| Left Parahippocampal Gyrus       | 3.696352                  |
| Left Temporal Pole               | 3.64159                   |
| Left Fusiform Gyrus              | 3.469102                  |
| Right Anterior Cingulate Cortex  | 3.426886                  |
| Right Superior Frontal Gyrus     | 3.244597                  |
| Left Inferior Temporal Lobe      | 3.230719                  |
| Right Fusiform Gyrus             | 3.176906                  |
| Left Calcarine Fissure           | 3.140045                  |
| Left Cuneus                      | 3.127826                  |
| Left Caudate Nucleus             | 3.124714                  |
| Right Supramarginal Gyrus        | 3.102246                  |
| Left Inferior Parietal Lobe      | 3.086116                  |
| Left Globus Pallidus             | 3.064151                  |
Supplementary Table 3. Anatomical areas with the greatest likelihood of being functionally connected with non-epileptogenic versus epileptogenic lesions (AAL Atlas)

| Brain Region                        | Mean Voxelwise Odds Ratio |
|-------------------------------------|---------------------------|
| Right Cerebellum                    | 9.581622                  |
| Left Cerebellum                     | 5.37431                   |
| Right Precuneus                     | 2.988474                  |
| Left Precuneus                      | 2.922513                  |
| Right Rolandic Operculum            | 2.831945                  |
| Left Anterior Cingulate Cortex      | 2.620148                  |
| Right Precentral Gyrus              | 2.404755                  |
| Left Precentral Gyrus               | 2.349517                  |
| Left Rolandic Operculum             | 2.111296                  |
**Supplementary Table 4.** Resting-state networks with the greatest likelihood of being functionally connected with epileptogenic versus non-epileptogenic lesions.\(^{31}\)

| Functional Network            | Mean Voxelwise Odds Ratio |
|-------------------------------|---------------------------|
| Limbic Network                | 1.92                      |
| Frontoparietal Network        | 2.04                      |
**Supplementary Table 5.** Resting-state networks with the greatest likelihood of being functionally connected with non-epileptogenic versus epileptogenic lesions (Rojas et al.)\(^{31}\)

| Functional Network   | Mean Voxelwise Odds Ratio |
|----------------------|---------------------------|
| Dorsal Attention     | 2.12                      |
| Ventral Attention    | 1.52                      |
| Default              | 2.08                      |