

**Supplemental Table 1.** Estimated effects of various predictors from linear mixed model predicting lesional DTI metrics, including interaction term between transplantation and time since screening.

|                        | Effect                    |
|------------------------|---------------------------|
| <b>Lesion FA</b>       |                           |
| Intercept              | 0.309                     |
| Age                    | 0.001 (p=0.441)           |
| Male                   | 0.014 (p=0.162)           |
| SPMS                   | 0.001 (p=0.878)           |
| Time                   | <b>0.001 (p=0.050)</b>    |
| Transplantation        | -0.005 (p=0.462)          |
| Transplantation * Time | 0.001 (p=0.748)           |
| <b>Lesion MD</b>       |                           |
| Intercept              | 1.009                     |
| Age                    | <0.001 (p=0.998)          |
| Male                   | -0.025 (p=0.292)          |
| SPMS                   | 0.012 (p=0.606)           |
| Time                   | -0.019 (p=0.066)          |
| Transplantation        | -0.028 (p=0.942)          |
| Transplantation * Time | <b>0.019 (p&lt;0.001)</b> |
| <b>Lesion RD</b>       |                           |
| Intercept              | 0.845                     |
| Age                    | -0.001 (p=0.789)          |
| Male                   | -0.029 (p=0.195)          |
| SPMS                   | 0.007 (p=0.729)           |
| Time                   | <b>-0.016 (p=0.027)</b>   |
| Transplantation        | -0.019 (p=0.864)          |
| Transplantation * Time | <b>0.014 (p=0.004)</b>    |
| <b>Lesion AD</b>       |                           |
| Intercept              | 1.337                     |
| Age                    | 0.001 (p=0.688)           |
| Male                   | -0.016 (p=0.593)          |
| SPMS                   | 0.020 (p=0.490)           |
| Time                   | -0.027 (p=0.410)          |
| Transplantation        | -0.047 (p=0.709)          |
| Transplantation * Time | <b>0.028 (p&lt;0.001)</b> |

DTI metrics (MD, RD, AD) are presented as  $\times (10^{-3} \text{ mm}^2/\text{sec})/\text{month}$ ; FA: fractional anisotropy; MD: mean diffusivity; RD: radial diffusivity; AD: axial diffusivity; SPMS: secondary progressive MS. \*: interaction. Bolded values indicate statistical significance ( $p < 0.05$ )

**Supplemental Table 2.** Estimated effects of various predictors from linear mixed model predicting CST DTI metrics, including interaction term between transplantation and time since screening.

|                        | Effect                  |
|------------------------|-------------------------|
| <b>CST FA</b>          |                         |
| Intercept              | 0.442                   |
| Age                    | <-0.001 (p=0.830)       |
| Male                   | -0.002 (p=0.880)        |
| SPMS                   | 0.014 (p=0.199)         |
| Time                   | -0.005 (p=0.870)        |
| Transplantation        | -0.011 (p=0.233)        |
| Transplantation * Time | <b>0.005 (p=0.001)</b>  |
| <b>CST MD</b>          |                         |
| Intercept              | 0.785                   |
| Age                    | -0.001 (p=0.660)        |
| Male                   | -0.018 (p=0.253)        |
| SPMS                   | 0.020 (p=0.178)         |
| Time                   | 0.001 (p=0.789)         |
| Transplantation        | 0.006 (p=0.206)         |
| Transplantation * Time | -0.002 (p=0.161)        |
| <b>CST RD</b>          |                         |
| Intercept              | 0.579                   |
| Age                    | <-0.001 (p=0.831)       |
| Male                   | -0.015 (p=0.271)        |
| SPMS                   | 0.007 (p=0.571)         |
| Time                   | 0.004 (p=0.737)         |
| Transplantation        | 0.011 (p=0.132)         |
| Transplantation * Time | <b>-0.005 (p=0.008)</b> |
| <b>CST AD</b>          |                         |
| Intercept              | 1.198                   |
| Age                    | -0.001 (p=0.588)        |
| Male                   | -0.025 (p=0.380)        |
| SPMS                   | 0.046 (p=0.082)         |
| Time                   | -0.003 (p=0.955)        |
| Transplantation        | -0.006 (p=0.900)        |
| Transplantation * Time | 0.004 (p=0.051)         |

CST: corticospinal tract; DTI metrics (MD, RD, AD) are presented as  $\times (10^{-3} \text{ mm}^2/\text{sec})/\text{month}$ ; FA: fractional anisotropy; MD: mean diffusivity; RD: radial diffusivity; AD: axial diffusivity; SPMS: secondary progressive MS; \*: interaction. Bolded values indicate statistical significance ( $p < 0.05$ )

**Supplemental Table 3.** Estimated effects of various predictors from linear mixed model predicting TCM DTI metrics, including interaction term between transplantation and time since screening.

|                               | <b>Effect</b>     |
|-------------------------------|-------------------|
| <b>TCM FA</b>                 |                   |
| <b>Intercept</b>              | 0.459             |
| <b>Age</b>                    | <-0.001 (p=0.895) |
| <b>Male</b>                   | -0.008 (p=0.469)  |
| <b>SPMS</b>                   | -0.008 (p=0.468)  |
| <b>Time</b>                   | <-0.001 (p=0.712) |
| <b>Transplantation</b>        | -0.003 (p=0.547)  |
| <b>Transplantation * Time</b> | 0.001 (p=0.692)   |
| <b>TCM MD</b>                 |                   |
| <b>Intercept</b>              | 0.818             |
| <b>Age</b>                    | -0.001 (p=0.645)  |
| <b>Male</b>                   | -0.017 (p=0.486)  |
| <b>SPMS</b>                   | 0.034 (p=0.136)   |
| <b>Time</b>                   | -0.002 (p=1.000)  |
| <b>Transplantation</b>        | -0.001 (p=0.532)  |
| <b>Transplantation * Time</b> | 0.002 (p=0.234)   |
| <b>TCM RD</b>                 |                   |
| <b>Intercept</b>              | 0.588             |
| <b>Age</b>                    | -0.001 (p=0.798)  |
| <b>Male</b>                   | -0.010 (p=0.667)  |
| <b>SPMS</b>                   | 0.031 (p=0.155)   |
| <b>Time</b>                   | -0.001 (p=0.809)  |
| <b>Transplantation</b>        | 0.001 (p=0.421)   |
| <b>Transplantation * Time</b> | 0.001 (p=0.584)   |
| <b>TCM AD</b>                 |                   |
| <b>Intercept</b>              | 1.278             |
| <b>Age</b>                    | -0.002 (p=0.459)  |
| <b>Male</b>                   | -0.031 (p=0.292)  |
| <b>SPMS</b>                   | 0.0395 (p=0.148)  |
| <b>Time</b>                   | -0.004 (p=0.709)  |
| <b>Transplantation</b>        | -0.007 (p=0.954)  |
| <b>Transplantation * Time</b> | 0.005 (p=0.109)   |

TCM: Transcallosal motor tract; DTI metrics (MD, RD, AD) are presented as  $\times (10^{-3} \text{ mm}^2/\text{sec})/\text{month}$ ; FA: fractional anisotropy; MD: mean diffusivity; RD: radial diffusivity; AD: axial diffusivity; SPMS: secondary progressive MS; \*: interaction. Bolded values indicate statistical significance ( $p < 0.05$ )

**Supplemental Table 4.** Estimated effects of various predictors from linear mixed model predicting Cth

|                               | <b>Effect (p-value)</b> |
|-------------------------------|-------------------------|
| <b>Intercept</b>              | 3.767                   |
| <b>Age</b>                    | -0.010 (p=0.308)        |
| <b>Male</b>                   | 0.005 (p=0.966)         |
| <b>SPMS</b>                   | -0.151 (p=0.134)        |
| <b>Time</b>                   | <b>-0.001 (p=0.049)</b> |
| <b>Transplantation</b>        | -0.007 (p=0.105)        |
| <b>Transplantation * Time</b> | -0.001 (p=0.841)        |

SPMS: Secondary progressive MS; \*: interaction. Bolded values indicate statistical significance (p < 0.05)

**Supplemental Table 5.** Estimated effects of various predictors from linear mixed model predicting T2LV, including interaction term between transplantation and time since screening. Significant value is bolded.

|                               | <b>Effect</b>           |
|-------------------------------|-------------------------|
| <b>Intercept</b>              | 7.200                   |
| <b>Age</b>                    | 0.236 (p=0.656)         |
| <b>Male</b>                   | -6.756 (p=0.242)        |
| <b>SPMS</b>                   | 9.088 (p=0.095)         |
| <b>Time</b>                   | 0.291 (p=0.688)         |
| <b>Transplantation</b>        | 0.929 (p=0.096)         |
| <b>Transplantation * Time</b> | <b>-0.355 (p=0.013)</b> |

SPMS: Secondary progressive MS; \*: interaction. Bolded values indicate statistical significance (p < 0.05)