

Supplementary Table 1. P values for comparisons of Spearman's rho correlation coefficients across SyMRI_{MVF}, MTsat, T1w/T2w, and RD. These P values are corrected for false discovery rate.

| | Spearman's Rho | SyMRI _{MVF} vs. T1w/T2w | SyMRI _{MVF} vs. RD | MTsat vs. T1w/T2w | MTsat vs. RD | T1w/T2w vs. RD |
|------------|-------------------------------------|--|--------------------------------|----------------------|-----------------|-------------------|
| All ROI | SyMRI _{MVF} vs. MTsat | <0.001 | 0.018 | 0.11 | <0.001 | <0.001 |
| | SyMRI _{MVF} vs. T1w/T2w | | <0.001 | <0.001 | <0.001 | <0.001 |
| | SyMRI _{MVF} vs. RD | | | 0.13 | 0.29 | <0.001 |
| | MTsat vs. T1w/T2w | | | | 0.038 | <0.001 |
| Plaque | MTsat vs. RD | | | | | 0.075 |
| | SyMRI _{MVF} vs. MTsat | 0.24 | <0.001 | 0.34 | 0.060 | 0.24 |
| | SyMRI _{MVF} vs. T1w/T2w | | <0.001 | 0.067 | <0.001 | 0.036 |
| | SyMRI _{MVF} vs. RD | | | 0.03 | 0.23 | 0.067 |
| Periplaque | MTsat vs. T1w/T2w | | | | 0.067 | 0.46 |
| | Mtsat vs. RD | | | | | 0.24 |
| | SyMRI _{MVF} vs. MTsat | 0.19 | 0.96 | 0.96 | 0.96 | 0.015 |
| | SyMRI _{MVF} vs. T1w/T2w | | 0.13 | 0.13 | 0.13 | <0.001 |
| NAWM | SyMRI _{MVF} vs. RD | | | 0.96 | 0.96 | <0.001 |
| | MTsat vs. T1w/T2w | | | | 0.96 | <0.001 |
| | Mtsat vs. RD | | | | | 0.06 |
| | SyMRI _{MVF} vs. MTsat | 0.47 | 0.63 | 0.78 | 0.63 | 0.35 |
| | SyMRI _{MVF} vs. T1w/T2w | | 0.30 | 0.30 | 0.30 | <0.001 |
| | SyMRI _{MVF} vs. RD | | | 0.77 | 0.94 | 0.73 |
| | MTsat vs. T1w/T2w | | | | 0.77 | 0.48 |
| | MTsat vs. RD | | | | | 0.73 |