**Figure 1.** T-statistics map on group difference. The Jacobian determinant of surface deformation was contrasted between maltreated children and normal controls.

Red parts are where maltreated children show more cortical surface deformation relative to the controls.

**Figure 2.** Top: Circles are node positions where Jacobian determinants are computed. Bottom: White matter fiber tracts are superimposed with fractional anisotropy measure that is used to measure the homogeneity of white matter neuronal fibers.

**Figure 3.** White matter fiber tracts are superimposed with fractional anisotropy measure (circles) that is used to measure the homogeneity of white matter neuronal fibers.

**Figure 1-3** are published in Chung, M.K., Hanson, J.L., Lee, H., Adluru, N., Alexander, A.L., Davidson, R.J., Pallak, S.D. 2013. Persistent homological approach to detecting white matter abnormality in maltreated children: MRI and DTI multimodal study. MICCAI:8149:300-307

**Figure 4.** White matter fibers connecting two brain regions across hemispheres using diffusion tensor imaging.

**Figure 5.** Node degree based graph theory in characterizing structural brain connectivity in maltreated children

**Figure 4-5** are under review in Chung, M.K., Hanson, J.L., Lee, H., Adluru, N., Alexander, A.L., Davidson, R.J., Pallak, S.D. 2017. Integrative structural brain network analysis in maltreated children, Brain Connectivity, under review

Figure 6. T-statistic map showing significant growth rate difference between children from low-income and high-income families. Highly focalized regions of group difference were detected in the right hippocampus.

Figure 7. Hippocampus shape modeling using heat kernel smoothing

**Figure 6-7** are published in Chung, M.K., Hanson, J.L., Pollak, S.D. 2016. Statistical analysis on brain surfaces, Handbook of Neuroimaging Data Analysis. 233-262