Evaluating g-ratio weighted changes in the corpus callosum as a function of age and sex

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Recent developments in quantitative and diffusion MRI, have made it possible to estimate the axonal g-ratio in human white-matter in-vivo. g-Ratio is the ratio between the inner and outer radii of the myelin sheath wrapped around the axon. We suggest a simplified measurement of g-ratio incorporating proton density mapping, and implement it in the corpus-callosum of 92 subjects (ages 8-80). We find the g-ratio values to agree with previously published results. Furthermore, g-ratio values are stable over the lifespan and between the sexes. These results converge with theoretical evidence suggesting g-ratio has an optimal value for white-matter function.
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