Diffusion tensor magnetic resonance imaging revealed that forebrain commissures crossed the midline in a highly specific manner within an oblique plane of tissue, referred to as the commissural plate. This specific anatomical positioning suggests that correct patterning of the commissural plate may influence forebrain commissure formation. No analysis of the molecular specification of the commissural plate has been performed in any species; therefore, we utilized specific transcription factor markers to delineate the commissural plate and identify its various subdomains. We found that the mouse commissural plate consists of four domains and tested the hypothesis that disruption of these domains might affect commissure formation. Disruption of the dorsal domains occurred in strains with commissural defects such as Emx2 and Nfia knockout mice but commissural plate patterning was normal in other acallosal strains such as Satb2(-/-). Finally, we demonstrate an essential role for the morphogen Fgf8 in establishing the commissural plate at later developmental stages. The results demonstrate that correct patterning of the commissural plate is an important mechanism in forebrain commissure formation [1)].

1)
Moldrich RX, Gobius I, Pollak T, Zhang J, Ren T, Brown L, Mori S, De Juan Romero C, Britanova O, Tarabykin V, Richards LJ. Molecular regulation of the developing commissural plate. J Comp Neurol. 2010 Sep 15;518(18):3645-61. doi: 10.1002/cne.22445. PubMed PMID: 20653027; PubMed Central PMCID: PMC2910370.