

The unfolded protein response regulator ATF6 promotes mesodermal differentiation

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A primitive role for ATF6

The endoplasmic reticulum (ER) mediates and monitors the folding, packaging, and transport of proteins in cells. The unfolded protein response (UPR) preserves ER homeostasis in the adult organism; however, inactivating mutations in the UPR-associated transcription factor ATF6 cause congenital vision defects, suggesting an embryonic role as well. Kroeger *et al.* found that ATF6 was critical to the differentiation of stem cells to the mesodermal lineage, at least in part, by promoting the growth and maturation of the ER, which presumably enables cells to stably produce the abundance of proteins necessary for development. Thus, the ER homeostasis protein in adult cells first directs ER development in embryonic cells. Activating ATF6 promoted the development of functional vascular endothelial cells from stem cells in culture dishes, suggesting that manipulating ATF6 may facilitate the production of mesodermal tissues for research or therapy.

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