

# Dysfunctional TGF-beta signaling contributes to Loeys-Dietz syndrome-associated aortic aneurysm

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Patients with the connective tissue disorder Loeys-Dietz syndrome (LDS) are at high risk for aortic aneurysm. LDS results in the presence of missense mutations within either of the genes encoding receptors for TGF- $\beta$ . LDS-associated mutations are predicted to reduce TGF- $\beta$  signaling; however, aortic tissue samples from LDS patients indicate that TGF- $\beta$  signaling may be enhanced.

In this issue of the *Journal of Clinical Investigation*, Harry Dietz and colleagues at Johns Hopkins School of Medicine developed a mouse model of LDS, in which transgenic animals expressing *Tgfbr1* or *Tgfbr2* with LDS-associated [mutations](#) recapitulated human phenotypes. Using this model, the authors determined that even though the mutated TGF- $\beta$  receptors were functionally defective, there was evidence of increased TGF- $\beta$  signaling as indicated by elevated Smad2 phosphorylation. Furthermore, development of [aortic aneurysms](#) in these mice was ameliorated by treatment with an Angiotensin II type 1 (AT1) [receptor antagonist](#).

In a companion commentary, Alan Daugherty and colleagues at the University of Kentucky discuss the therapeutic implications of this study on the use of AT1 receptor agonists to treat LDS-associated aneurism.

**More information:** Angiotensin II-dependent TGF- $\beta$  signaling contributes to Loeys-Dietz syndrome vascular pathogenesis, *J Clin Invest*.

[DOI: 10.1172/JCI69666](https://doi.org/10.1172/JCI69666)

Aortic aneurysms in Loeys-Dietz syndrome—a tale of two pathways? *J Clin Invest.* 2014;124(1):79–81. [DOI: 10.1172/JCI73906](https://doi.org/10.1172/JCI73906)

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