

Publication

A conserved activation element in BMP signaling during Drosophila development

JournalArticle (Originalarbeit in einer wissenschaftlichen Zeitschrift)**ID** 490970**Author(s)** Weiss, Alexander; Charbonnier, Enrica; Ellertsdottir, Elin; Tsirigos, Aristotelis; Wolf, Christian; Schuh, Reinhard; Pyrowolakis, George; Affolter, Markus**Author(s) at UniBasel** [Affolter, Markus](#) ;**Year** 2010**Title** A conserved activation element in BMP signaling during Drosophila development**Journal** Nature structural & molecular biology**Volume** 17**Number** 1**Pages / Article-Number** 69-U91

The transforming growth factor β (TGF- β) family member Decapentaplegic (Dpp) is a key regulator of patterning and growth in Drosophila development. Previous studies have identified a short DNA motif called the silencer element (SE), which recruits a trimeric Smad complex and the repressor Schnurri to downregulate target enhancers upon Dpp signaling. We have now isolated the minimal enhancer of the dad gene and discovered a short motif we termed the activating element (AE). The AE is similar to the SE and recruits the Smad proteins via a conserved mechanism. However, the AE and SE differ at important nucleotide positions. As a consequence, the AE does not recruit Schnurri but rather integrates repressive input by the default repressor Brinker and activating input by the Smad signal transducers Mothers against Dpp (Mad) and Medea via competitive DNA binding. The AE allows the identification of hitherto unknown direct Dpp targets and is functionally conserved in vertebrates.

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