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## TALE

TALE (three amino acids loop extension) homeodomain transcription factors are required in various steps of embryo development, in many adult physiological functions, and are involved in important pathologies. This review focuses on the PREP, MEIS, and PBX sub-families of TALE factors and aims at giving information on their biochemical properties, i.e., structure, interactors, and interaction surfaces. Members of the three sets of proteins form dimers in which the common partner is PBX but they can also directly interact with other proteins forming higher-order complexes, in particular HOX. Finally, recent advances in determining the genome-wide DNA-binding sites of PREP1, MEIS1, and PBX1, and their partial correspondence with the binding sites of some HOX proteins, are reviewed. These studies have generated a few general rules that can be applied to all members of the three gene families. PREP and MEIS recognize slightly different consensus sequences: PREP prefers to bind to promoters and to have PBX as a DNA-binding partner; MEIS prefers HOX as a partner, and both PREP and MEIS drive PBX to their own binding sites. This outlines the clear individuality of the PREP and MEIS proteins, the former mostly devoted to basic cellular functions, the latter more to developmental functions <sup>10</sup>.

## 1)

Longobardi E, Penkov D, Mateos D, De Florian G, Torres M, Blasi F. Biochemistry of the tale transcription factors PREP, MEIS, and PBX in vertebrates. Dev Dyn. 2014 Jan;243(1):59-75. doi: 10.1002/dvdy.24016. Epub 2013 Sep 2. PMID: 23873833; PMCID: PMC4232920.

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