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Derivation and Characterization of *Pcbp1*-Deficient Mouse Embryonic Stem Cells

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KH-domain PolyC-binding proteins perform many functions ranging from transcription regulation to alternative splicing. There are several evidences of their important role in embryogenesis and in embryonic stem cells (ESCs). ESCs are cultures counterparts of epiblast cells before implantation, and both cell types are in naïve state of pluripotency. We have previously shown that members of this family – hnRNP-K, Pcbp1 and Pcbp2 proteins – are able to bind to the PolyC-sites within the regulatory elements of the *Pou5f1* gene, which encodes the key pluripotency gatekeeper Oct4. In addition, early lethal phenotype of *Pcbp1*$^{-/-}$ mouse embryos is described in literature. In this study, we set to assess role of Pcbp1 in ESCs. To this end, we obtained null-Pcbp1 ESCs. Contrary to previously observed by us lethal phenotype *hnRNP-K* in ESCs, *Pcbp1*$^{-/-}$ ESCs were viable, continued to express Oct4 and retained overall pluripotent properties. The obtained data reveal no critical role of Pcbp1 in self-renewal of naïve pluripotent stem cells. Further studies should address whether this is the case in or during the transition to the primed state of pluripotency, as well as during the exit from this state due course of differentiation into the three germ layers.

Keywords: Pcbp1, Oct4, hnRNP-K, embryonic stem cells, pluripotency