Cite this as: Rong-gang MA, Yang ZHANG, Ting-ting SUN, Bo CHENG, 2014. Epigenetic regulation by polycomb group complexes: focus on roles of CBX proteins. *Journal of Zhejiang University-Science B (Biomedicine & Biotechnology)*, 15(5):412-428. [doi:10.1631/jzus.B1400077]

Epigenetic regulation by polycomb group complexes: focus on roles of CBX proteins

Key words: **Polycomb repressive complexes (PRC), CBX proteins, Epigenetic regulation, Cancer**

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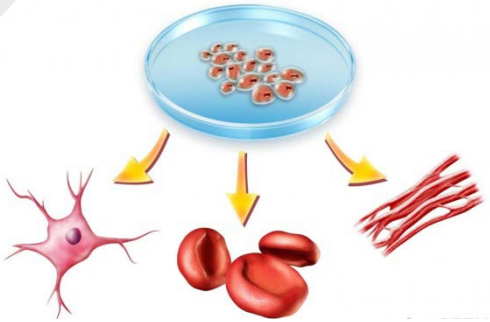
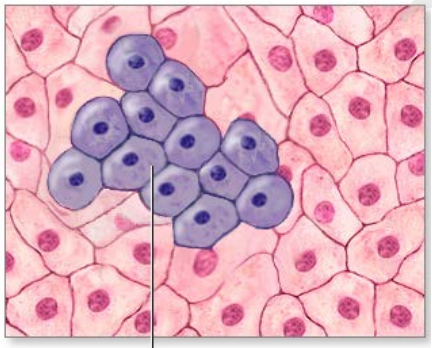
Research Summary

This review mainly focused on the core components of mammalian PRC1 complexes, CBX proteins, and summarized the key roles they played in the following aspects:

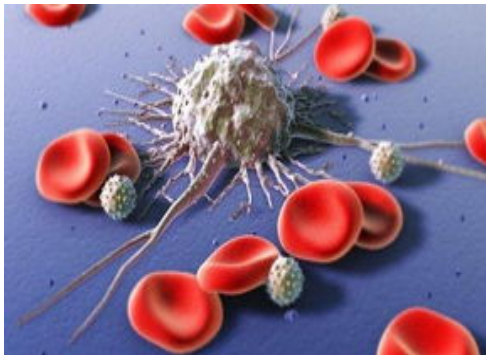




- **Regulation of gene transcription**
- **Cell growth and differentiation**
- **Cell proliferation and senescence**
- **Tumorigenesis**



Proliferation of cancer cells



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Innovation points

- **Introduction** of the five mammalian CBX family proteins from domain organization to molecular functions.

- **Summary** of the most updated research progress about CBX proteins in cellular biology studies and in cancer biology studies.

- **Emphasis** of the newly identified interplay among CBX family members in various of cell types .

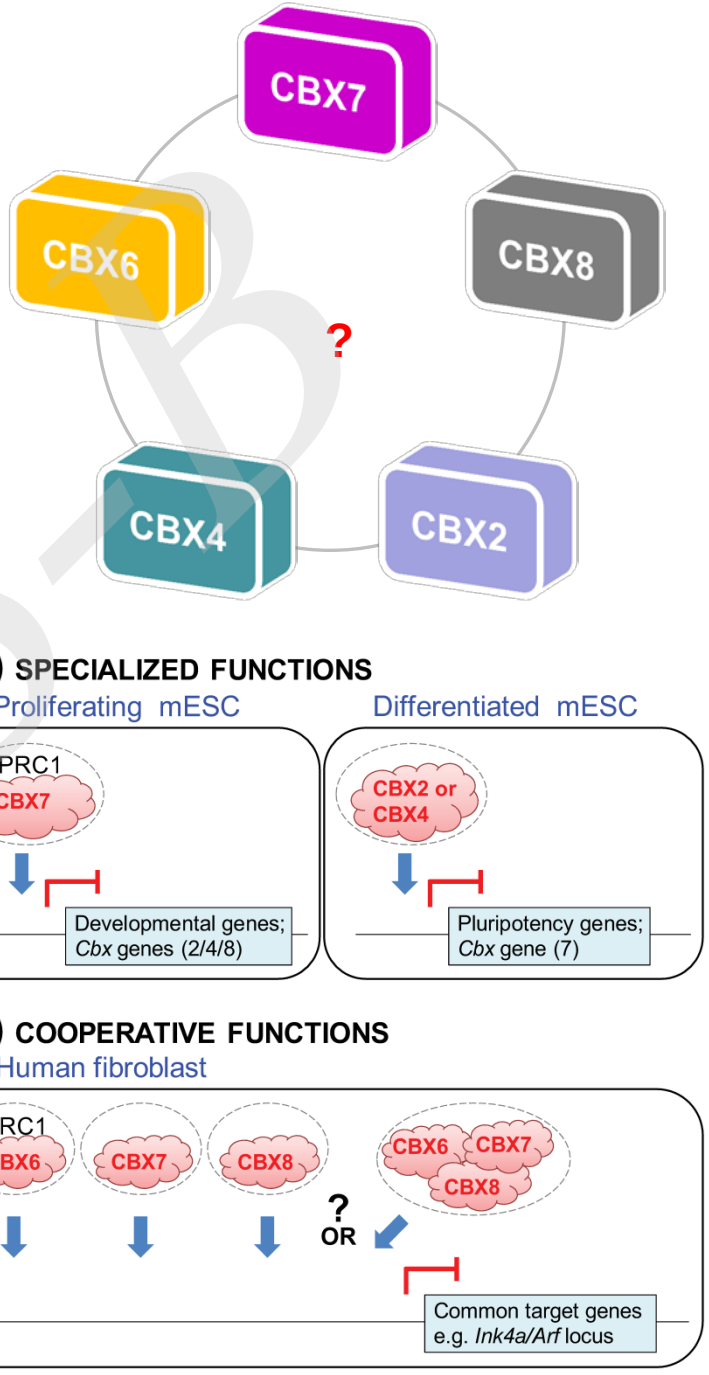

Figure 4

Innovation points

A series of comprehensive tables were generated to summarize the latest knowledge about CBX proteins.

Table 1 | Effects of knock down or overexpression of *Cbx* genes.

Table 2 | Phenotypes of *Cbx* KO mice and human patient with point mutations.

Table 3 | SUMOlyation substrates of CBX4.

Table 4 | Post translational modification of CBX proteins.

Table 5 | Cancers associated with aberrant expression of CBX proteins.

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