

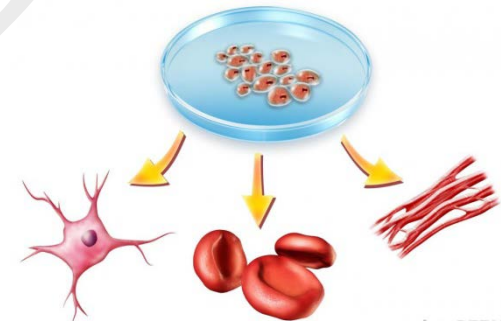
**Cite this as:** Rong-gang MA, Yang ZHANG, Ting-ting SUN, Bo CHENG, 2014. Epigenetic regulation by polycomb group complexes: focus on roles of CBX proteins. *Journal of Zhejiang University-Science B (Biomedicine & Biotechnology)*, 15(5):412-428. [doi:10.1631/jzus.B1400077]

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

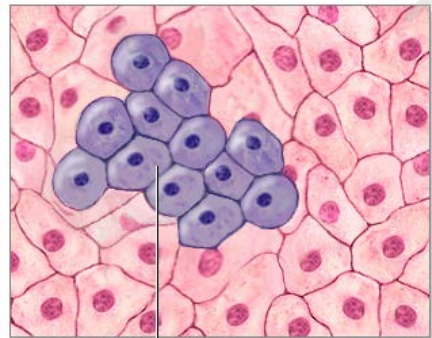
**Key words:** Polycomb repressive complexes (PRC), CBX proteins, Epigenetic regulation, Cancer

# Research Summary

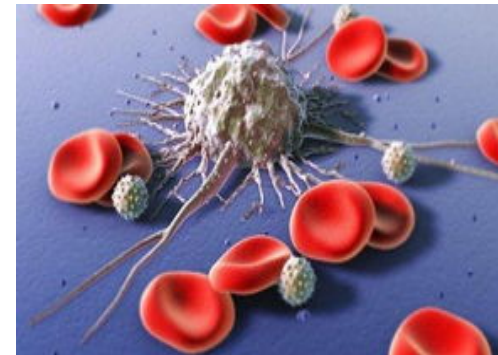
This review mainly focused on the core components of mammalian PRC1 complexes, CBX proteins, and summarized the key roles they played in the following aspects:



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



Proliferation of cancer cells



# 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 .

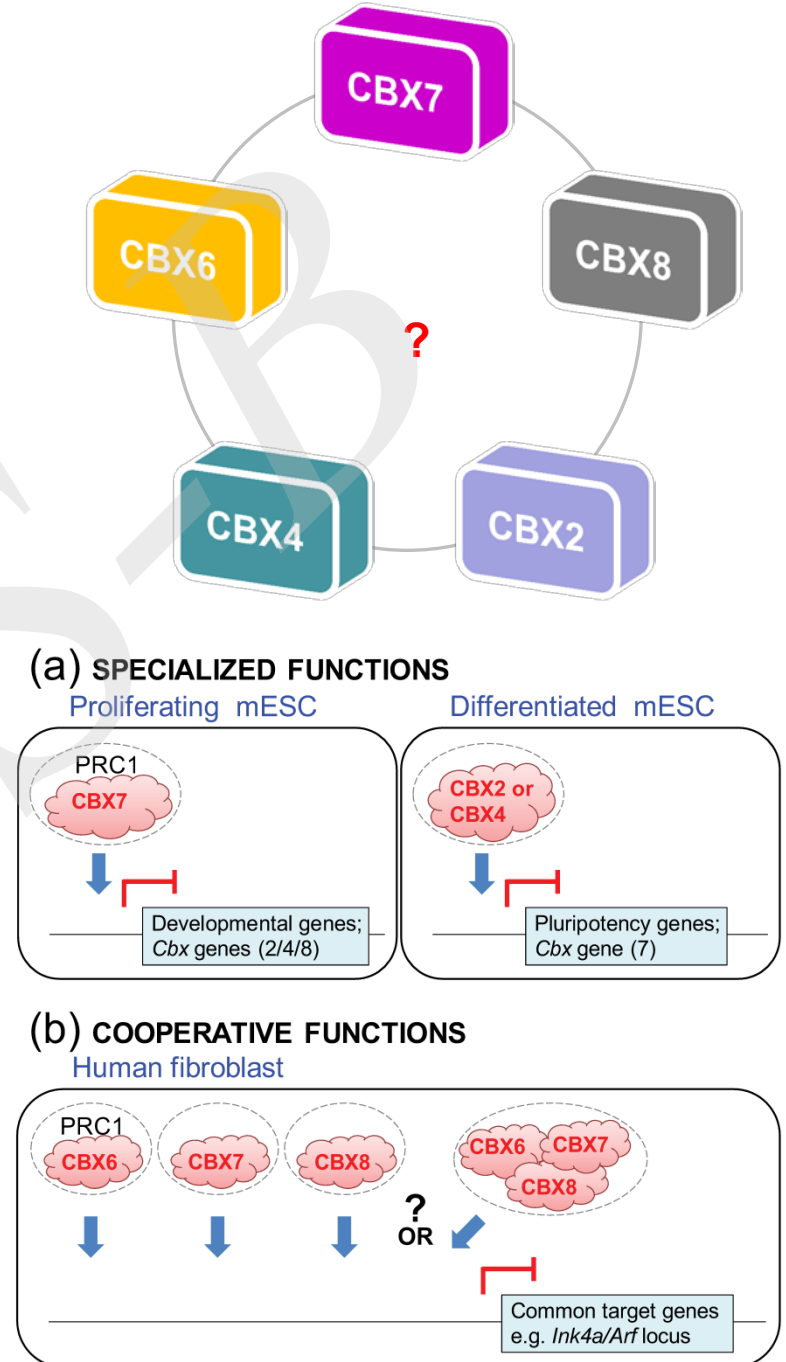


Figure 4

# ***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 | SUMOylation substrates of CBX4.**

**Table 4 | Post translational modification of CBX proteins.**

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