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**摘要示例：**

**BMPs drive evolutionary expansion of the mammalian cortex**

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The seat of human intelligence is the human cerebral cortex, which is responsible for our higher cognitive abilities. Identifying principles that lead to the development of the large-sized human cerebral cortex will shed light on what makes the human brain and species so special. The remarkable increase in human cortical pyramidal neurons and the size of the human cerebral cortex is mainly because human cortical radial glial cells, primary neural stem cells in the cortex, generate cortical pyramidal neurons for more than30 days, whereas the same process takes only about 7 days in mice. The molecular mechanisms underlying this difference are largely unknown. Here, we found that BMP7 is expressed by increasing numbers of cortical radial glial cells during mammalian evolution (mouse, ferret, monkey, man). BMP7 expression in cortical radial glial cells promotes neurogenesis, inhibits gliogenesis, and thereby increases the length of neurogenic period, whereas SHH signaling promotes cortical gliogenesis. We demonstrate that BMP7 signaling and SHH signaling mutually inhibit each other through regulation of GLI3 repressor formation. We propose that BMP7 drives the evolutionary expansion of the mammalian cerebral cortex.

**Keywords:** BMP7; SHH; cortical evolution; cortical gliogenesis; cortical neurogenesis; radial glia.

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