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## Induction of neural stem cell-like cells (NSCLCs) from mouse astrocytes by Bmi1

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### Abstract

Recently, Bmi1 was shown to control the proliferation and self-renewal of neural stem cells (NSCs). In this study, we demonstrated the induction of NSC-like cells (NSCLCs) from mouse astrocytes by Bmi1 under NSC culture conditions. These NSCLCs exhibited the morphology and growth properties of NSCs, and expressed NSC marker genes, including nestin, CD133, and Sox2. *In vitro* differentiation of NSCLCs resulted in differentiated cell populations containing astrocytes, neurons, and

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oligodendrocytes. Following treatment with histone deacetylase inhibitors (trichostatin A and valproic acid), the potential of NSCLCs for proliferation, dedifferentiation, and self-renewal was significantly inhibited. Our data indicate that multipotent NSCLCs can be generated directly from astrocytes by the addition of Bmi1.

**Keywords:** Neural stem cells; Astrocytes; Dedifferentiation; Neural stem cell-like cells

## Article Outline

[Materials and methods](#)

[Results](#)

- [Bmi1 stimulates the growth of mouse astrocyte by suppressing p16<sup>Ink4a</sup> and p19<sup>Arf</sup> pathways](#)
- [Bmi1 induces the dedifferentiation of astrocytes into neural stem cell-like cells under neural stem cell culture conditions](#)
- [NSCLCs differentiate into three neural lineages \*in vitro\*](#)

[Discussion](#)

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