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## Developmental and extrahepatic physiological functions of SREBP pathway genes in mice

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### Highlights

- SREBPs are membrane-bound transcription factors that control lipid biosynthesis.
- Physiological functions of SREBP pathway genes have been extensively studied in mice.
- Scap sustains cell division in intestine and in T cells by driving lipid synthesis.
- SREBP-1, SREBP-2, and Scap play varied roles in innate and adaptive immunity.
- SREBPs provide cholesterol synthesis essential for brain development and function.

**Abstract:** Sterol regulatory element-binding proteins (SREBPs), master transcriptional regulators of cholesterol and fatty acid synthesis, have been found to contribute to a diverse array of cellular processes. In this review, we focus on genetically engineered mice in which the activities of six components of the SREBP gene pathway, namely SREBP-1, SREBP-2, Scap, Insig-1, Insig-2, or Site-1 protease have been altered through gene knockout or transgenic approaches. In addition to the expected impacts on lipid metabolism, manipulation of these genes in mice is found to affect a wide array of developmental and physiologic processes ranging from interferon signaling in macrophages to synaptic transmission in the brain. The findings reviewed herein provide a blueprint to guide future studies defining the complex interactions between lipid biology and the physiologic processes of many distinct organ systems.

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