

〈教育セミナー〉

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生体の伸縮性を生み出す仕組み  
—弾性線維形成の分子機構—

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**Mechanisms for Elastic Fiber Assembly**

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**Abstract**

Elastic fibers are extracellular matrix components that confer resilience on tissues such as skin, lung, and arteries. Deterioration of elastic fibers by elastase secreted from macrophages or neutrophils induced by UV or smoking, together with aging directly causes loose skin, emphysema, and arteriosclerosis. The turnover rate of elastic fibers is very slow, and it has been believed to be difficult to regenerate elastic fibers. There are several steps required in elastogenesis: (1) formation of microfibril meshwork or bundles, (2) micro-aggregation of tropoelastin (elastin monomer), (3) deposition of elastin on microfibrils, and (4) cross-linking of elastins by lysyl oxidase. We have identified several secreted proteins, Fibulin-4, -5, and LTBP-2, -4 that are necessary for each step. Elucidating the function of these elastogenic proteins may lead to novel clinical application of elastic fiber regeneration.

**Key words:** elastic fiber, extracellular matrix, regeneration, aging.