

## ブレオマイシン肺線維症モデルマウスに対する幹細胞治療イメージング法の構築と効果検証

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Pulmonary fibrosis is a progressive disease caused by inflammation in the interstitium and fibrosis of the lung, leading to a decline in respiratory function. There are very few treatment options, including anti-fibrotic drugs and lung transplantation, but these have not been widely used due to problems with treatment efficacy and immune rejection. In recent years, regenerative medicine has become the focus of attention. In particular, stem cell therapy using somatic stem cells is expected to be applied to pulmonary fibrosis because of its low risk of tumorigenesis and high safety profile. However, the *in vivo* behaviour of transplanted stem cells and their therapeutic effects in pulmonary fibrosis remain largely unexplored. In this study, we investigated the *in vivo* behaviour and therapeutic effect of transplanted stem cells (ASCs) labeled with quantum dots (QDs), which have excellent fluorescence properties based on quantum nano-optics, in a mouse model of bleomycin pulmonary fibrosis.

**Keywords :** *Quantum dots ; Pulmonary fibrosis ; Adipose tissue-derived stem cells*

肺線維症は間質内で炎症が起こり、肺が線維化することで発症し、呼吸機能が低下していく進行性疾患である。治療法は極めて乏しく、抗線維化薬や肺移植を用いた治療があるが、治療効果、免疫拒絶等の問題があり広く普及していない。そのため、近年では再生医療に注目が集まっている。特に、体性幹細胞を用いた幹細胞治療は、腫瘍化リスクが低く安全性も高いため、肺線維症への応用が期待されている。しかし、肺線維症における移植幹細胞の生体内挙動、及び治療効果は未解明な部分が多い。そこで、本研究ではブレオマイシン肺線維症モデルマウスに量子ナノ光学に基づき優れた蛍光特性を有する量子ドット (QDs) を標識した脂肪組織由来幹細胞 (ASCs) を投与し、移植幹細胞の生体内挙動と治療効果を検証した。