

# Platelet-rich plasma stimulates osteoblastic differentiation in the presence of BMPs

Akihiro Tomoyasu <sup>a</sup>, Kanji Higashio <sup>a,b</sup>, Kazuhiro Kanomata <sup>a</sup>, Masaaki Goto <sup>a,c</sup>,  
Kunihiko Kodaira <sup>a,d</sup>, Hiroko Serizawa <sup>a</sup>, Tatsuo Suda <sup>a</sup>, Atsushi Nakamura <sup>a</sup>,  
Junya Nojima <sup>a</sup>, Toru Fukuda <sup>a</sup>, Takenobu Katagiri <sup>a,\*</sup>

<sup>a</sup> *Division of Pathophysiology, Research Center for Genomic Medicine, Saitama Medical University, 1397-1 Yamane, Hidaka-shi, Saitama 350-1241, Japan*

<sup>b</sup> *Metabolome Pharmaceuticals, Inc., 2-20-3 Nakamachi, Meguro-ku, Tokyo 153-0065, Japan*

<sup>c</sup> *Chugai Pharmaceutical Co., Ltd., Fuji Gotemba Research Laboratories, Genome Antibody Product Research Division, 1-135 Komakado, Gotemba, Shizuoka 412-8513, Japan*

<sup>d</sup> *Chugai Pharmaceutical Co., Ltd., Drug Engineering Division, 5-1, Ukima 5, Kita-ku, Tokyo 115-8543, Japan*

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## Abstract

Platelet-rich plasma (PRP) is clinically used as an autologous blood product to stimulate bone formation in vivo. In the present study, we examined the effects of PRP on proliferation and osteoblast differentiation in vitro in the presence of bone morphogenetic proteins (BMPs). PRP and its soluble fraction stimulated osteoblastic differentiation of myoblasts and osteoblastic cells in the presence of BMP-2, BMP-4, BMP-6 or BMP-7. The soluble PRP fraction stimulated osteoblastic differentiation in 3D cultures using scaffolds made of collagen or hydroxyapatite. Moreover, heparin-binding fractions obtained from serum also stimulated osteoblastic differentiation in the presence of BMP-4. These results suggested that platelets contain not only growth factors for proliferation but also novel potentiator(s) for BMP-dependent osteoblastic differentiation.

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