

Section of Orthopedic Surgery

1. Staffs and Students (April 2010)

Professor	Takeshi MUNETA	
Assistant Professor	Young-Jin JU	
Associate Professor	Ichiro SEKIYA (Section of Cartilage Regeneration)	
Assistant Professor	Hideyuki KOGA(Section of Cartilage Regeneration)	
Assistant Professor	Toshiyuki MORITO(Section of Cartilage Regeneration)	
Graduate Student	Toru TAKAHASHI,	Tomomasa NAKAMURA,
	Takashi MIYAMOTO,	Sigenori YAGI,
	Mika YAMAGA,	Siro Suzuki,
	Kazumasa MIYATAKE,	Daisuke HATSUSHIKA,
	Hiroki KATAGIRI,	Koji Otabe,
	Jun Yamada,	and Arata Yuki

2. Purpose of Education

We are operating at the “department of orthopaedic surgery of the medical university” in corporation with the section of orthopaedic surgery of the graduate school. As the preliminary resident program, students are given opportunity for basic education and acquire the comprehensive knowledge of the orthopaedic surgery and traumatology in the associated hospital. In concretely terms, students mainly take traumatology training as a basis for clinical medicine for 2 years. Training also includes anesthesiology, emergency medicine, rehabilitation, and neurology. Subsequently, students will take training of joint surgery and neurosurgery in the specialized hospital at least 2 years. After basic training of 6 years, students are required to be orthopaedic specialists which was certificated by Japan orthopaedic association. As for an admission to a graduate school, students will be allowed depending on the personal desire and individual achievements after 4 years' education.

We also accept extramural and international students, doctors, and veterinarians who interested in the research at our graduate school.

3. Research Subjects

Following studies have been extensively carried out in our laboratory with various biological and molecular biological techniques:

- Establishment of separation and proliferation of mesenchymal stem cells
- Elucidation of biological properties of mesenchymal stem cells
- Development of treatment of joint cartilage injury using mesenchymal stem cells
- Mechanism and treatment of joint pain
- Development of knee and hip arthroplasty which accommodates Japanese
- Promotion of anatomical knee anterior cruciate ligament reconstruction

4. Clinical Services

- Promotion of treatment about diseases of lower extremity from children to elderly people
- Development of program for early social recovery after total hip and knee arthroplasty patients
- Development and education of treatment which accommodates sports fields
- Regenerative medicine for cartilage disease

5. Publications

Original articles

1. Ichinose S, Muneta T, Koga H, Segawa Y, Tagami M, Tsuji K, Sekiya I. Morphological differences during in vitro chondrogenesis of bone marrow-, synovium-MSCs, and chondrocytes. *Lab Invest.* 90(2):210-21, 2010.
2. Ohno K, Noguchi Y, Kawashima Y, Yagishita K, Kitamura K. Secondary hyperbaric oxygen therapy for idiopathic sudden sensorineural hearing loss in the subacute and chronic phases. *J Med Dent Sci.* 57(2):1-6, 2010.
3. Koga H, Nakamae A, Shima Y, Iwasa J, Myklebust G, Engebretsen L, Bahr R, Krosshaug T. Mechanisms for Noncontact Anterior Cruciate Ligament Injuries: Knee Joint Kinematics in 10 Injury Situations From Female Team Handball and Basketball. *Am J Sports Med* 38(11):2218-2225, 2010

4. Shimaya M, Muneta T, Ichinose S, Tsuji K, I. Sekiya I. Magnesium enhances adherence and cartilage formation of synovial mesenchymal stem cells through integrins. *Osteoarthritis and cartilage* 18:1300-9, 2010
5. Shimizu S, Okuda N, Kato N, Rittling SR, Okawa A, Shinomiya K, Muneta T, Denhardt DT, Noda M, Tsuji K, Asou Y. Osteopontin Deficiency Impairs Wear Debris-Induced Osteolysis via Regulation of Cytokine Secretion From Murine Macrophages. *ARTHRITIS & RHEUMATISM* Vol. 62(5): 1329–1337, 2010
6. Sekiya I, Morito T, Hara K, Yamazaki J, Ju YJ, Yagishita K, Mochizuki T, Tsuji K, Muneta T. Ketoprofen absorption by muscle and tendon after topical or oral administration in patients undergoing anterior cruciate ligament reconstruction. *AAPS PharmSciTech*. 11(1):154-8, 2010
7. Stankovic, K.M., Adachi, O., Tsuji, K., Kristiansen, A.G., Adams, J.C., Rosen, V., and McKenna, M.J. Differences in gene expression between the otic capsule and other bones. *Hear Res* 265, 83-89, 2010
8. Tateishi T, Tsuchiya M, Motosugi N, Asahina S, Ikeda H, Cho S, Muneta T. Graft length change and radiographic assessment of femoral drill hole position for medial patellofemoral ligament reconstruction. *Knee Surg Sports Traumatol Arthrosc* (in press)
9. Tsuji, K., Cox, K., Gamer, L., Graf, D., Economides, A., and Rosen, V. Conditional deletion of BMP7 from the limb skeleton does not affect bone formation or fracture repair. *J Orthop Res* 28, 384-389, 2010
10. Hayashi M, Muneta T, Takahashi T, Ju YJ, Tsuji K, Sekiya I. Intra-articular injections of bone morphogenetic protein-7 retard progression of existing cartilage degeneration. *Journal of Orthopaedic Research*, 28: 1502–1506, 2010
11. Miyamoto T, Muneta T, Tabuchi T, Matsumoto K, Saito H, Tsuji K, Sekiya I. Intradiscal transplantation of synovial mesenchymal stem cells prevents intervertebral disc degeneration through suppression of matrix metalloproteinase-related genes in nucleus pulposus cells in rabbits. *Arthritis Res Ther.*, 12(6):R206, 2010.
12. Muneta T, Hara K, Ju YJ, Mochizuki T, Morito T, Yagishita K, Sekiya I. Revision anterior cruciate ligament reconstruction by double-bundle technique using multi-strand semitendinosus tendon. *Arthroscopy*. 26(6):769-81, 2010
13. Yamazaki J, Muneta T, Koga H, Sekiya I, Ju YJ, Morito T, Yagishita K. Radiographic description of femoral tunnel placement expressed as intercondylar clock time in double-bundle anterior cruciate ligament reconstruction. *Knee Surg Sports Traumatol Arthrosc*. (in press)
14. Yamazaki J, Muneta T, Ju YJ, Morito T, Okuwaki,T, Sekiya I. Hip Acetabular Dysplasia and Joint Laxity of Female Anterior Cruciate Ligament-Injured Patients. *Am J Sports Med*. (in press)
15. Xu H, Miki K, Ishibashi S, Inoue J, Sun L, Endo S, Sekiya I, Muneta T, Inazawa J, Dezawa M, Mizusawa H. Transplantation of neuronal cells induced from human mesenchymal stem cells improves neurological functions after stroke without cell fusion. *J Neurosci Res*. 88(16):3598-609, 2010
16. Nimura A, Nakagawa T, Wakabayashi Y, Sekiya I, Okawa A, Muneta T. Repair of olecranon fractures using fiberWire without metallic implants: report of two cases. *J Orthop Surg Res*. 2010 Oct 12;5:73.
17. Nimura A, Muneta T, Otabe K, Koga H, Ju YJ, Mochizuki T, Suzuki K, Sekiya I. Analysis of human synovial and bone marrow mesenchymal stem cells in relation to heat-inactivation of autologous and fetal bovine serums. *BMC Musculoskelet Disord*. 2010 Sep 14;11:208.
18. Kume H, Inoue Y, Mitsuoka A, Sugano N, Morito T, Muneta T. Doppler ultrasonography-aided early diagnosis of venous thromboembolism after total knee arthroplasty. *Eur J Vasc Endovasc Surg*. 2010 Nov;40(5):664-8.
19. Mitsuoka A, Inoue Y, Kume H, Sugano N, Morito T, Muneta T. Discrimination of types of venous emboli using Doppler ultrasound. *Ann Vasc Surg*. 2010 Aug;24(6):721-7.