

Section of Orthopedic Surgery

1. Staffs and Students (April 2009)

Professor	Takeshi MUNETA	
Associate Professor	Ichiro SEKIYA (Section of Cartilage Regeneration)	
Assistant Professor	Young-Jin JU	
Assistant Professor	Toshiyuki MORITO (Section of Cartilage Regeneration)	
Graduate Student	Masayuki SHIMAYA,	Toru TAKAHASHI,
	Tomomasa NAKAMURA,	Takashi MIYAMOTO,
	Shigenori YAGI,	Mika YAMAGA,
	Shiro Suzuki,	Kazumasa MIYATAKE,
	Daisuke HATSUSHIKA,	Hiroki KATAGIRI,
	Koji Otabe	

2. Purpose of Education

We are operating at the “department of orthopaedic surgery in the medical university” in corporation with section of orthopaedic surgery in the graduate school. After postgraduate training, 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. Hayashi M, Muneta T, Ju YJ, Mochizuki T, Sekiya I. Weekly intra-articular injections of bone morphogenetic protein-7 inhibits osteoarthritis progression. *Arthritis Res Ther.* 2008;10(5):R118. Epub 2008 Sep 30.
2. Kawai T, Yamada T, Yasukawa A, Koyama Y, Muneta T, Takakuda K. Biological fixation of fibrous materials to bone using chitin/chitosan as a bone formation accelerator. *J Biomed Mater Res B Appl Biomater.* 2009 Jan;88(1):264-70.
3. Segawa Y, Muneta T, Makino H, Nimura A, Mochizuki T, Ju YJ, Ezura Y, Umezawa A, Sekiya I. Mesenchymal stem cells derived from synovium, meniscus, anterior cruciate ligament, and articular chondrocytes share similar gene expression profiles. *J Orthop Res.* 2009 Apr;27(4):435-441.

4. Mochizuki T, Sugaya H, Uomizu M, Maeda K, Matsuki K, Sekiya I, Muneta T, Akita K. Humeral insertion of the supraspinatus and infraspinatus. New anatomical findings regarding the footprint of the rotator cuff. Surgical technique. *J Bone Joint Surg Am.* 2009 Mar 1;91 Suppl 2 Pt 1:1-7.
5. Sekiya I, Tang T, Hayashi M, Morito T, Ju YJ, Mochizuki T, Muneta T. Periodic knee injections of BMP-7 delay cartilage degeneration induced by excessive running in rats. *J Orthop Res.* 2009 Aug;27(8):1088-92.
6. Seko Y, Azuma N, Takahashi Y, Makino H, Morito T, Muneta T, Matsumoto K, Saito H, Sekiya I, Umezawa A. Human sclera maintains common characteristics with cartilage throughout evolution. *PLoS ONE.* 2008;3(11):e3709. Epub 2008 Nov 12.
7. Asano H, Muneta T, Sekiya I. Soft tissue tension in extension in total knee arthroplasty affects postoperative knee extension and stability. *Knee Surg Sports Traumatol Arthrosc.* 2008 Nov;16(11):999-1003. Epub 2008 Aug 30.
8. Mochizuki T, Sugaya H, Uomizu M, Maeda K, Matsuki K, Sekiya I, Muneta T, Akita K. Humeral insertion of the supraspinatus and infraspinatus. New anatomical findings regarding the footprint of the rotator cuff. Surgical technique. *J Bone Joint Surg Am.* 2009 May 1;91 suppl 2 Pt 1: 1-7.
9. Koga H, Engebretsen L, Brinchmann JE, Muneta T, Sekiya I. Mesenchymal stem cell-based therapy for cartilage repair: a review. *Knee Surg Sports Traumatol Arthrosc.* 2009 May 31.
10. Horie M, Sekiya I, Muneta T, Ichinose S, Matsumoto K, Saito H, Murakami T, Kobayashi E. Intra-articular Injected synovial stem cells differentiate into meniscal cells directly and promote meniscal regeneration without mobilization to distant organs in rat massive meniscal defect. *Stem Cells.* 2009 Apr;27(4):878-87.
11. Ezura Y, Sekiya I, Koga H, Muneta T, Noda M. Methylation status of CpG islands in the promoter regions of signature genes during chondrogenesis of human synovium-derived mesenchymal stem cells. *Arthritis Rheum.* 2009 May;60(5):1416-26.
12. Horie M, Sekiya I, Nakamura T, Tanaka H, Maekawa K, Nakanishi M, Muneta T, Kobayashi E. In vivo pharmacokinetics of ketoprofen after patch application in the Mexican hairless pig. *Biopharm Drug Dispos* 2009 May; 30(4): 204-8.
13. Yamazaki J, Muneta T, Ju YJ, Sekiya I. Differences in kinematics of single leg squatting between anterior cruciate ligament-injured patients and healthy controls. *Knee Surg Sports Traumatol Arthrosc.* 2009 Aug 20.
14. Tohyama H, Yasuda K, Minami A, Majima T, Iwasaki N, Muneta T, Sekiya I, Yagishita K, Takahashi S, Kurokouchi K, Uchio Y, Iwasa J, Deie M, Adachi N, Sugawara K, Ochi M. Atelocollagen-associated autologous chondrocyte implantation for the repair of chondral defects of the knee: a prospective multicenter clinical trial in Japan. *J Orthop Sci.* 2009 Sep;14(5):579-88. Epub 2009 Oct 3.
15. Watanabe T, Muneta T, Ishizuki M. Is a minimally invasive approach superior to a conventional approach for total knee arthroplasty? Early outcome and 2- to 4-year follow-up. *J Orthop Sci.* 2009 Sep;14(5):589-95. Epub 2009 Oct 3.
16. Tsuji K, Cox K, Gamer L, Graf D, Economides A, Rosen V. Conditional deletion of BMP7 from the limb skeleton does not affect bone formation or fracture repair. *J Orthop Res.* 2009 Sep 24. [Epub ahead of print]
17. Kawai T, Yamada T, Yasukawa A, Koyama Y, Muneta T, Takakuda K. Anterior Cruciate Ligament Reconstruction Using Chitin-coated Fabrics in a Rabbit Model. *Artif Organs.* 2009 Oct 11. [Epub ahead of print]
18. Muneta T, Hara K, Ju YJ, Mochizuki T, Morito T, Yagishita K, Sekiya I. Revision Anterior Cruciate Ligament Reconstruction By Double-Bundle Technique Using A Multi-Strand Hamstring Tendon. *Arthroscopy* 25 (in press)2009
19. Shizuko Ichinose, Takeshi Muneta, Hideyuki Koga, Yuko Segawa, Motoki Tagami, Kunikazu Tsuji, Ichiro Sekiya. Morphological differences during in vitro chondrogenesis of bone marrow-, synovium-MSCs, and chondrocytes. Laboratory Investigation (in press)
20. Sekiya I, Morito T, Hara K, Yamazaki J, Ju YJ, Yagishita K, Mochizuki T, Muneta T. Ketoprofen absorption by muscle and tendon after topical or oral administration in patients undergoing anterior cruciate ligament reconstruction. *AAPS PharmSciTech.* 2009 in press

Book

1. Stephen Howell, Takeshi Muneta: Avoid roof and PCL impingement in double-bundle ACL reconstruction. CURRENT CONCEPTS in ISAKOS newsletter WINTER 2009 Vol. 13, Issue 1.