

# Clinical Anatomy

Professor : Keiichi AKITA

Associate Professor : Akimoto NIMURA (Department of Functional Joint Anatomy)

Junior Associate Professor : Kumiko YAMAGUCHI (Department of Professional Development in Health Science)

Assistant Professor : Masayo HARADA, Hisayo NASU, Shirou SUZUKI (Department of Functional Joint Anatomy)

Parttime Lecturer : Kenji IBUKURO, Itsuko OKUDA, Sachi-yuki TSUKADA, Masataka NAKAZAWA, Kaoru KITSUKAWA

Graduate Student : Kazuhito SEKIZAWA, Eiichirou KAGAWA, Kohtaro EGUCHI, Saya HORIUCHI, Kentaro AMAHA, Yusuke UEDA, Yasunori TATARA, Shota HOSHIKA, Phichaya BARAMEE, Atsuhiko OCHI, Souichi HATTORI, Koh MIWA, Satoru MURO, Suriyut JANARUK, Syuusaku HOSONO, Haruka EISHI, Masahiro TSUTSUMI, Wachirawit SIRIRAT, Shouko MOUE(April~), Ming Yan HE(April~), Areeya JIAMSUNYASIRI(Sept~),

Pawaree NONTHASAEN(~March), Natnicha KAMPAN(~March), Motoki TANAKA(~March)

Research Student : Mamiko SUZUKI

## ( 1 ) Outline

Department of Clinical Anatomy supports clinical medicine through formulation of human anatomical and developmental biological bases of diagnoses and surgical procedures. We handle the whole body in human anatomical researches. We think it is classic but important to represent human morphology for exactly what they are based on meticulous observations of human body structures regardless of diagnostic technics and surgical procedures. Our researches are aimed to share languages among all clinicians based on clinical anatomy by describing the results of observations in an accessible way for clinicians. In addition, we perform analyses using experimental embryological approaches and developmental biological approaches, because we think it is important to consider how human structures are constructed.

## ( 2 ) Research

- 1) Clinical anatomic study of the shoulder joint and rotator cuff.
- 2) Clinical anatomic study of the anal region for the rectoanal surgery.
- 3) Cadaveric study of the female pelvis for the gynecologic oncology and colposcopy.
- 4) Analyses of the lamination in the masticatory muscles with special reference of nerve supply.
- 5) Embryological study of the differentiation of cloaca and surrounding muscles.

## ( 3 ) Education

Clinical anatomy is generally considered as the practical application of anatomical knowledge to diagnosis and treatment, however we think that this course is a part of pure anatomical science based on the findings of the morphological observations of the human bodies. Main objective of Clinical anatomy in the graduate course is to make detailed anatomical data to answer the questions developed from clinical fields especially by surgeons and radiologists. We collaborate with many clinicians: ENT, orthopedics, gynecology, thoracic surgery, radiology and so on, and our projects have been broad areas. Students are expected to get fine dissection techniques of human bodies and also learn techniques of histology and embryological experiments. By using these techniques,

we study the spatial relationships of organs, vessels nerves, and also try to examine their developmental processes in various projects.

#### (4) Lectures & Courses

Theories and hypotheses of morphogenesis derived from descriptive anatomy and descriptive biology have been confirmed and modified by experimental biology. Furthermore, progresses of developmental biology identified molecules and signaling pathways involved in the morphogenesis. Progresses in the developmental biology also verified morphological hypotheses, and added revisions to the morphological models. The postulates of the morphological models which are currently investigated were built and completed by Anatomy. However, we find Anatomy is still not completed and has many obscure issues through careful dissection of human body. It might be thought that everything was done and there could be no new finding in the human anatomical field anymore because the anatomy employs the classic procedures such as the gross anatomy. However, there are still a lot of unclear anatomical topics, because they had not been focused and not investigated with their clinical significances.

#### (5) Publications

##### [Original Articles]

1. Hiroyuki Ogawa, Seiichirou Hasegawa, Sachi-yuki Tsukada, Masaaki Matsubara. A Pilot Study of Augmented Reality Technology Applied to the Acetabular Cup Placement During Total Hip Arthroplasty. *J Arthroplasty*. 2018.01; 33(6); 1833-1837
2. Yano T, Akita K, Yamaguchi K, Sawaizumi M. A Cadaver Study to Assess the Feasibility of a Cross-Nerve Transfer of the Infraorbital Nerve for Patients With Peripheral Infraorbital Nerve Injury. *Annals of plastic surgery*. 2018.02; 80(2); 141-144
3. A Sakata, K Abe, K Mizukoshi, T Gomi, I Okuda. Relationship between the retinacula cutis and sagging facial skin. *Skin Res Technol*. 2018.02; 24(1); 93-98
4. Nakajima Y, Tokairin Y, Nakajima Y, Kawada K, Nagai K, Yamaguchi K, Akita K, Kawano T. Anatomical study of the left superior mediastinal lymphatics for tracheal branches of left recurrent laryngeal nerve-preserving mediastinoscope-assisted surgery in esophageal cancer. *Surgery today*. 2018.03; 48(3); 333-337
5. Motoki Tanaka, Akimoto Nimura, Norimasa Takahashi, Tomoyuki Mochizuki, Ryuichi Kato, Hiroyuki Sugaya, Keiichi Akita. Location and thickness of delaminated rotator cuff tears: cross-sectional analysis with surgery record review. *JSES Open Access*. 2018.03; 2(1); 84-90
6. Sachi-yuki Tsukada, Sadao Niga, Tadahiro Nihei, Shoichiro Imamura, Masayoshi Saito, Jindo Hatanaka. Iliopsoas Disorder in Athletes with Groin Pain: Prevalence in 638 Consecutive Patients Assessed with MRI and Clinical Results in 134 Patients with Signal Intensity Changes in the Iliopsoas. *JB JS Open Access*. 2018.03; 3(1); e0049
7. Sachi-yuki Tsukada, Motohiro Wakui. Continuing versus discontinuing antiplatelet drugs, vasodilators, and/or cerebral ameliorators on perioperative total blood loss in total knee arthroplasty without pneumatic tourniquet. *Arthroplast Today*. 2018.03; 4(1); 89-93
8. Yugo Miura, Koji Fujita, Akimoto Nimura, Takashi Miyamoto, Yoshiaki Wakabayashi, Atsushi Okawa. Successful Reconstruction of a Traumatic Complete Femoral Nerve Rupture with a Sural Nerve Cable Graft: A Case Report. *JBJS Case Connect*. 2018.04; 8(2); e24
9. Okada R, Muro S, Eguchi K, Yagi K, Nasu H, Yamaguchi K, Miwa K, Akita K. The extended bundle of the tensor veli palatini: Anatomic consideration of the dilating mechanism of the Eustachian tube. *Auris, nasus, larynx*. 2018.04; 45(2); 265-272
10. Kotaro Yoshida, Osamu Matsui, Shiro Miyayama, Kenji Ibukuro, Norihide Yoneda, Dai Inoue, Kazuto Kozaka, Tetsuya Minami, Wataru Koda, Toshifumi Gabata. Isolated Arteries Originating from the Intrahepatic Arteries: Anatomy, Function, and Importance in Intervention. *J Vasc Interv Radiol*. 2018.04; 29(4); 531-537.e1

11. Nonthasaen P, Nasu H, Kagawa E, Akita K. A morphological comparison of the extraforaminal ligament between the cervical and thoracic regions. *Surgical and radiologic anatomy : SRA.* 2018.05; 40(5); 571-580
12. Kohtaro Eguchi, Masami Suzuki, Shota Ida, Keita Mori, Hisao Imai, Shigehiro Kudo, Ken Ando, Keiko Higuchi, Takeshi Ebara. Association Between Laryngopharyngeal Reflux and Radiation-induced Mucositis in Head and Neck Cancer. *Anticancer Res.* 2018.06; 38(1); 477-480
13. Haruhiko Shimura, Akimoto Nimura, Koji Fujita, Takashi Miyamoto. Mid-Term Functional Outcome after Volar Locking Plate Fixation of Distal Radius Fractures in Elderly Patients. *J Hand Surg Asian Pac Vol.* 2018.06; 23(2); 238-242
14. Momma D, Nimura A, Muro S, Fujishiro H, Miyamoto T, Funakoshi T, Mochizuki T, Iwasaki N, Akita K. Anatomic analysis of the whole articular capsule of the shoulder joint, with reference to the capsular attachment and thickness. *Journal of experimental orthopaedics.* 2018.06; 5(1); 16
15. Tokairin Y, Nakajima Y, Kawada K, Hoshino A, Okada T, Ryotokuji T, Okuda M, Kume Y, Kawamura Y, Yamaguchi K, Nagai K, Akita K, Kinugasa Y. Histological study of the thin membranous structure made of dense connective tissue around the esophagus in the upper mediastinum. *Esophagus : official journal of the Japan Esophageal Society.* 2018.06; 15(4); 272-280
16. Kampan N, Tsutsumi M, Okuda I, Nasu H, Hur MS, Yamaguchi K, Akita K. The malaris muscle: its morphological significance for sustaining the intraorbital structures. *Anatomical science international.* 2018.06; 93(3); 364-371
17. Tetsuya Sato, Akimoto Nimura, Reiko Yamaguchi, Koji Fujita, Atsushi Okawa, Keiichi Akita. Intramuscular Tendon of the Adductor Pollicis and Underlying Capsule of the Metacarpophalangeal Joint: An Anatomical Study With Possible Implications for the Stener Lesion. *J Hand Surg Am.* 2018.07; 43(7); 682.e1-682.e8
18. Yamaguchi R, Nimura A, Amaha K, Yamaguchi K, Segawa Y, Okawa A, Akita K. Anatomy of the Tarsal Canal and Sinus in Relation to the Subtalar Joint Capsule. *Foot & ankle international.* 2018.07; 39(11); 1360-1369
19. Higashino T, Okazaki M, Mori H, Yamaguchi K, Akita K. Microanatomy of Sensory Nerves in the Upper Eyelid: A Cadaveric Anatomical Study. *Plastic and reconstructive surgery.* 2018.08; 142(2); 345-353
20. Yoshinori Sato, Hiroyasu Tsukaguchi, Hiroyuki Morita, Koichiro Higasa, Mai Thi Nhu Tran, Michito Hamada, Toshiaki Usui, Naoki Morito, Shoichiro Horita, Takao Hayashi, Junko Takagi, Izumi Yamaguchi, Huan Thanh Nguyen, Masayo Harada, Kiyoko Inui, Yuichi Maruta, Yoshihiko Inoue, Fumihiko Koiwa, Hiroshi Sato, Fumihiko Matsuda, Shinya Ayabe, Seiya Mizuno, Fumihiko Sugiyama, Satoru Takahashi, Ashio Yoshimura. A mutation in transcription factor MAFB causes Focal Segmental Glomerulosclerosis with Duane Retraction Syndrome. *Kidney Int.* 2018.08; 94(2); 396-407
21. Naoyuki Hirasawa, Kenji Kurosaka, Masahiro Nishino, Tsutomu Nakayama, Masaaki Matsubara, Sachi-yuki Tsukada. No Clinically Important Difference in Pain Scores After THA Between Periarticular Analgesic Injection and Placebo: A Randomized Trial. *Clin. Orthop. Relat. Res.* 2018.09; 476(9); 1837-1845
22. Keiichi Akita, Tomomi Sakaguchi-Kuma, Keiko Fukino, Takashi Ono. Masticatory Muscles and Branches of Mandibular Nerve: Positional Relationships between Various Muscle Bundles and Their Innervating Branches. *Anat Rec (Hoboken).* 2018.10; 302(4); 609-619
23. Sachi-yuki Tsukada, Kenji Kurosaka, Masahiro Nishino, Naoyuki Hirasawa. Cutaneous Hypesthesia and Kneeling Ability After Total Knee Arthroplasty: A Randomized Controlled Trial Comparing Anterolateral and Anteromedial Skin Incision. *J Arthroplasty.* 2018.10; 33(10); 3174-3180
24. Takuya Iseki, Sachi-yuki Tsukada, Motohiro Wakui, Shinichi Yoshiya. Intravenous tranexamic acid only versus combined intravenous and intra-articular tranexamic acid for perioperative blood loss in patients undergoing total knee arthroplasty. *Eur J Orthop Surg Traumatol.* 2018.10; 28(7); 1397-1402
25. Muro S, Tsukada Y, Harada M, Ito M, Akita K. Spatial distribution of smooth muscle tissue in the male pelvic floor with special reference to the lateral extent of the rectourethralis muscle: Application to prostatectomy. *Clinical anatomy (New York, N.Y.).* 2018.11; 31(8); 1167-1176

26. Fukino K, Tsutsumi M, Sanudo J, Ono T, Akita K. Anatomical Significance of the Spatial Distribution of the Palatopharyngeus With Regard to Velopharyngeal Closure. *The Cleft palate-craniofacial journal : official publication of the American Cleft Palate-Craniofacial Association.* 2018.11; 1055665618813082
27. Tomoyuki Kuroiwa, Koji Fujita, Akimoto Nimura, Takashi Miyamoto, Toru Sasaki, Atsushi Okawa. A new method of measuring the thumb pronation and palmar abduction angles during opposition movement using a three-axis gyroscope. *J Orthop Surg Res.* 2018.11; 13(1); 288
28. H Fujiwara, J Kanamori, Y Nakajima, T Kawano, A Miura, T Fujita, K Akita, H Daiko. An anatomical hypothesis: a "concentric-structured model" for the theoretical understanding of the surgical anatomy in the upper mediastinum required for esophagectomy with radical mediastinal lymph node dissection. *Dis. Esophagus.* 2018.12; in press

### **[Conference Activities & Talks]**

1. Akimoto Nimura, Shota Hoshika, Rerika Yamaguchi, Hiroyuki Sugaya, Keiichi Akita. Reconsideration of the anatomy regarding the ulnar collateral ligament of the elbow in terms of the tendinous fascia. The 2018 Annual Meeting of the American Academy of Orthopaedic Surgeons 2018.03.07 New Orleans, USA
2. Hisayo Nasu, Akimoto Nimura, Sara Sugiura, Hitomi Fujishiro, Hideyuki Koga, Keiichi Akita. An anatomic study on the attachment of the joint capsule to the tibia in the lateral side of the knee. 18th European Society of Sports Traumatology and Arthroscopy Congress 2018.05.09 Glasgow, UK
3. Soichi Hattori. The effectiveness and reproducibility of ultrasound in evaluation of the calcaneofibular ligament. 18th European Society of Sports Traumatology and Arthroscopy Congress 2018.05.09 Glasgow, UK
4. Kenji Ibukuro. The Hepatic Capsular Arteries: Anatomical and Clinical significance. The Japanese Society of Interventional Radiology 2018 2018.05.31 Tokyo, Japan
5. Kenji Ibukuro, Gou Ogasawara, Hozumi Fukuda, Kimiko Tobe, Mitsuhiro Kishino. The relationship between the location of the portal vein thrombus, the patency of the portal veins, and the coexisting disease. ESGAR2018 2018.06.04 Dublin, Ireland
6. Masayo Harada, Keiichi Akita. The N143T mutation in mouse Fibroblast growth factor 9 leads to wider long bones. Joint Annual Meeting of JSDB 51st and JSCB 70th 2018 2018.06.08 Tokyo, Japan
7. Mochizuki Tomoyuki, Akita Keiichi. ACL anatomy and tunnel placement (ACL anatomy and tunnel placement Anatomic and histologic analysis of the mid-substance and fan-like extension fibres of the anterior cruciate ligament during knee motion, with special reference to the femoral attachment). 10th JOSKAS 2018.06.15 Fukuoka, Japan
8. Tomonori Yabuuchi, Satoru Muro, Keiichi Akita. Origins of the levator ani with special reference to the tendinous arch. 35th Annual meeting of American Association of Clinical Anatomy 2018.07.10 Atlanta, USA
9. Satoru Muro, Yuichiro Tsukada, Masayo Harada, Masaaki Ito, Keiichi Akita. Muscle layer structure in anterior wall of anorectal canal in females. 35th Annual meeting of American Association of Clinical Anatomy 2018.07.10 Atlanta, USA
10. Masahiro Tsutsumi, Akimoto Nimura, Keiichi Akita. Morphological analysis of gluteus medius tendon and its insertion sites. 35th Annual meeting of American Association of Clinical Anatomy 2018.07.11 Atlanta, USA
11. Shoko Nakata, Koichi Ogawa, Osamu Shimomura, Yusuke Ohara, Kazuhiro Takahashi, Yoshimasa Akashi, Katsuji Hisakura, Tsuyoshi Enomoto, Masanao Kurata, Tatsuya Oda, Nobuhiro Ohkohchi. To increase female surgeons. The 73rd General Meeting of the Japanese Society of Gastroenterological Surgery 2018.07.13 Kagoshima, Japan
12. Yusuke Ueda, Akimoto Nimura, Hiroyuki Sugaya, Norimasa Takahashi, Keisuke Matsuki, Morihito Tokai, Shouta Hoshika, Hiroshige Hamada. Difference in the Site of Rotator Cuff lesions between Shoulders with Recurrent Anterior Instability and Throwing Injuries. The 44th Annual Meeting of the Japanese Orthopaedic Society for Sports Medicine. 2018.09.08 Tokushima, Japan

13. Baramée Phichaya, Satoru Muro, Masahiro Tsutsumi, Keiichi Akita. Composition of the anterior wall of the external anal sphincter in female: Supporting system by two muscle slings. 10th Meeting of International Symposium of Clinical and Applied Anatomy 2018.09.14 Moscow, Russia
14. Keiko Fukino, Masahiro Tsutsumi, Jose Sanudo, Takashi Ono, Keiichi Akita. Anatomical significance of the spatial distribution of the palatopharyngeus with regard to closure of the nasopharynx. 10th Meeting of International Symposium of Clinical and Applied Anatomy 2018.09.15 Moscow, Russia
15. Suriyut Janyaruk, Satoru Muro, Masahiro Tsutsumi, Keiichi Akita. An anatomical interpretation of outer and inner muscle bundle groups in male pelvic floor muscles. 10th Meeting of International Symposium of Clinical and Applied Anatomy 2018.09.15 Moscow, Russia
16. Kaoru Kitsukawa, Yusuke Kimura, Yasuo Nakajima, Koji Kawakami, Hisateru Niki. MRI evaluation of cervical neural foraminal stenosis using 3D T2TFE sequence. The 33rd Annual Research Meeting of the Japanese Orthopaedic Association 2018.10.11 Nara, Japan
17. Nimura Akimoto, Akita Keiichi. Anatomy based on the common pathologies around the elbow joint. 4th Asian Association of Clinical Anatomists 2018.10.28 Busan, Korea
18. Masahiro Tsutsumi, Akimoto Nimura, Keiichi Akita. Morphological significance of the thickness distribution in the gluteus medius tendon with regard to the gluteus medius tendon tears. 8th Asia Pacific International Congress of Anatomists 2018.10.29 Busan, Korea
19. Satoru Muro, Yuichiro Tsukada, Masayo Harada, Masaaki Ito, Keiichi Akita. Anatomy of the smooth muscle structure in the female anorectal anterior wall. Annual joint academic meetings (surgical research society meeting) of Royal Australasian college of surgeons 2018.11.09 Sydney, Australia