

Graduate Schools

Department of Clinical Anatomy

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Masataka NAKAZAWA, Tomoyuki YANO, Shota HOSHIKA, Motoki TANAKA,
Shigeru OKUHARA, Izumi SUGIHARA, Chie MORIMOTO

Graduate Student : Syuusaku HOSONO(~ March), Yuzuki SUGIYAMA(~ March), Nina HIRANO(~ March),
Isabella Georgina DJAMEH(~ September), Tong LIU, Jennifer Edinam DANYO, Weiyi WANG

Research student : Takahiro KASHIYAMA, Xuefei WU, Ryota SUGIMURA,
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(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 anatomy topics, because they had not been focused and not investigated with their clinical significances.

(5) Publications

[Original Articles]

1. Sara Sugiura, Akimoto Nimura, Jun Hishiyama, Hitomi Fujishiro, Toru Sasaki, Satoru Muro, Toshitaka Yoshii, Keiichi Akita. The Trapezius Aponeurosis Insertion on the Acromion: An Anatomical Study with a Possible Implication for Dynamic Stabilization of the Acromioclavicular Joint. *J Bone Joint Surg Am.* 2025.12;
2. Satoru Muro, Kumiko Yamaguchi, Naoko Inoshita, Yasuo Nakajima, Danyo Jennifer Edinam, Akimoto Nimura, Keiichi Akita. New anatomical insight into the muscular structure of the anal canal: revealing Treitz muscle as a directional shift of the internal anal sphincter. *Ann Coloproctol.* 2025.12; 41(6); 501-509
3. Atsuhiko Ochi, Satoru Muro, Sho Mitsumaru, Akimoto Nimura, Keiichi Akita. Anatomy of Adipose Compartments and Fascial Structures in the Posterolateral Region of the Kidney With Special Focus on the Thin Adipose Compartment. *Int J Urol.* 2025.11;
4. Masahiro Tsutsumi, Akimoto Nimura, Hajime Utsunomiya, Takuya Ibara, Shintarou Kudo, Keiichi Akita. Significance of fiber orientation in the interosseous sacroiliac ligament: An anatomical and histological study of the implications of its mechanical adaptation. *J Anat.* 2025.11;
5. Tsukamoto K, Fujita K, Kuroiwa T, Norose M, Yoshii T, Nimura A. Thumb rotation patterns during pinch in patients with trapeziometacarpal osteoarthritis. *The Journal of hand surgery, European volume.* 2025.11; 17531934251383073
6. Jun Hishiyama, Akimoto Nimura, Satoru Muro, Hitomi Fujishiro, Toshitaka Yoshii, Keiichi Akita. Anatomical study of the radial side of thumb metacarpophalangeal joint: the joint capsule and flexor pollicis brevis muscle. *J Hand Surg Eur Vol.* 2025.10; 17531934251384475
7. Kenro Chikazawa, Satoru Muro, Ken Imai, Tomoyuki Kuwata, Keiichi Akita. Reevaluating the vesicouterine pouch: histological evidence for optimal dissection planes in oncologic surgery. *J Gynecol Oncol.* 2025.08;
8. Satoru Muro, Sunao Shoji, Meiko Aoki, Suthasinee Tharnmanularp, Akimoto Nimura, Keiichi Akita. Novel Anatomical Findings in Robot-Assisted Prostatectomy and Optimal Dissection Layer Selection for Preserving Urethral Support Structures. *Prostate.* 2025.08;
9. Keiichi Akita, Satoru Muro, Tong Liu. Commentary on "Three-dimensional Analysis of the Distribution of Smooth and Skeletal Muscle Tissue Around the Female Urethra". *Int Urogynecol J.* 2025.08;
10. Satoru Muro, Liu Chang, Suthasinee Tharnmanularp, Akimoto Nimura, Hiroshi Churei, Keiichi Akita. Presence of smooth muscle continuous with the rectal and vaginal walls in the deep perineal space prompts reconsideration of the deep transverse perineal muscle. *Sci Rep.* 2025.07; 15(1); 23730

11. Machida, S; Tsutsumi, M; Utsunomiya, H; Ibara, T; Kudo, S. Characteristics of gait pelvic jerk in individuals with femoroacetabular impingement syndrome JOURNAL OF EXPERIMENTAL ORTHOPAEDICS. 2025.07; 12(3); e70373
12. Nozaki T, Tsujioka Y, Sugimoto H, Yamada Y, Yamada M, Yokoyama Y, Fujishiro H, Nimura A, Tsuzaki J, Hase M, Okada M, Kaneko Y, Jinzaki M. Pearls and pitfalls in imaging of axial spondyloarthritis for rheumatologists. *Modern rheumatology*. 2025.07; 35(4); 612-625
13. Satoru Muro, Keisuke Miyosawa, Kumiko Yamaguchi, Kentaro Okamoto, Shota Okamoto, Tomoki Itamiya, Keiichi Akita. Evaluation of glasses-free 3D anatomy learning materials through a randomized control study with a puzzle-like method. *Anat Sci Educ*. 2025.06;
14. Okuda I, Yoshioka N, Akita K, Jinzaki M. Detection of Age-Related Pelvic Floor Fragility in Female Patients Using Magnetic Resonance Imaging. *International urogynecology journal*. 2025.06;
15. Fukino K, Obata M, Fujiwara H, Kitagawa N, Akita K, Iwanaga J. Anatomical examination of the relationship between the temporomandibular joint capsule and lateral ligament: a cadaveric study. *International journal of oral and maxillofacial surgery*. 2025.05;
16. Ken Sasaki, Toru Sasaki, Akiko Yamamoto, Teruhiko Sekiguchi, Yoshiaki Wakabayashi. Functional Recovery of Posterior Interosseous Nerve Injury Treated With a Nerve Conduit: A Case Report. *Cureus*. 2025.05; 17(5); e83303
17. Satoru Muro, Suthasinee Tharnmanularp, Yuichiro Tsukada, Masaaki Ito, Akimoto Nimura, Keiichi Akita. Three-dimensional heterogeneity of smooth muscle fiber density anterior to the rectum in males: quantitative analysis with implications for transanal total mesorectal excision. *Int J Colorectal Dis*. 2025.04; 40(1); 95
18. Tomohiko Waki, Yukina Sato, Kazuya Tsukamoto, Eriku Yamada, Akiko Yamamoto, Takuya Ibara, Toru Sasaki, Tomoyuki Kuroiwa, Akimoto Nimura, Yuta Sugiura, Koji Fujita, Toshitaka Yoshii. Effectiveness of Comprehensive Video Datasets: Toward the Development of an Artificial Intelligence Model for Ultrasonography-Based Severity Diagnosis of Carpal Tunnel Syndrome. *J Ultrasound Med*. 2025.03; 44(3); 557-566
19. Masahiro Tsutsumi, Akimoto Nimura, Hajime Utsunomiya, Masahiro Ikezu, Yasuhiko Iizuka, Shintarou Kudo, Keiichi Akita. Anatomic Study of Hip Pericapsular Muscle Arrangement on the Joint Capsule. *JB JS Open Access*. 2025.03; 10(1); e24.00153.
20. Satoru Muro, Takuya Ibara, Akimoto Nimura, Keiichi Akita. Seg and Ref: A Newly Developed Toolset for Artificial Intelligence-Powered Segmentation and Interactive Refinement for Labor-Saving Three-Dimensional Reconstruction. *Microscopy (Oxf)*. 2025.03;
21. Kubo T, Sugiura K, Tokita Y, Takano H, Takamisawa I, Takayama M, Doi YL, Minami Y, Shirotani S, Ebato M, Tsujiuchi M, Nabeta T, Inomata T, Kato T, Okamoto R, Dohi K, Takei Y, Chikamori T, Watanabe E, Furugen A, Doi H, Akita K, Maekawa Y, Ogimoto A, Tada N, Yokota T, Ikeda S, Yamaguchi O, Izumiya Y, Shibata A, Takashio S, Tsujita K, Maejima Y, Fujino N, Nomura A, Akasaki Y, Higuchi K, Fujita S, Hoshiga M, Shiraiishi Y, Ieda M, Miyamoto Y, Kitaoka H. Contemporary clinical characteristics and management patterns in hypertrophic cardiomyopathy: insights from baseline enrolment data in a nationwide prospective Japanese registry. *Heart (British Cardiac Society)*. 2025.03; 111(18); 885-892
22. Iwanaga J, Kim HJ, Akita K, Logan BM, Hutchings RT, Ottone N, Nonaka Y, Anand M, Burns D, Singh V, Peris-Celda M, Martinez-Soriano F, Apaydin N, Hanna A, Yoshioka N, Fernandez-Miranda J, Hur MS, Shoja MM, Saremi F, Reina F, Tabira Y, Carrera A, Spratt JD, Ho SY, Mori S, Komune N, Watanabe K, Prats-Galino A, De Andrés J, Reina MA, Abrahams PH, Anderson RH, Ibaragi S, Loukas M, Tubbs RS. Ethical Use of Cadaveric Images in Anatomical Textbooks, Atlases, and Journals: A Consensus Response From Authors and Editors. *Clinical anatomy (New York, N.Y.)*. 2025.03; 38(2); 222-225
23. Muro S, Ibara T, Sugiyama Y, Nimura A, Akita K. Evaluating accuracy in artificial intelligence-powered serial segmentation for sectional images applied to morphological studies with three-dimensional reconstruction. *Microscopy (Oxford, England)*. 2025.02;
24. Tsukamoto K, Kuroiwa T, Ibara T, Fujita K. Pronation angle changes with progression of trapeziometacarpal joint osteoarthritis. *The Journal of hand surgery, European volume*. 2025.02; 17531934251321330

25. Hirano N, Muro S, Tsuchiya J, Akita K. Visualization and prediction of the pleura and thoracic duct: elucidation of changes due to respiration using arterial landmarks and CT images. *Surgical and radiologic anatomy : SRA*. 2025.02; 47(1); 75
26. Rintaro Yamamoto, Akimoto Nimura, Satoru Muro, Shota Hoshika, Keiichi Akita. Anatomy of the distal tendinous structure of the triceps brachii: implications for the role of the triceps brachii to resist valgus elbow forces during baseball pitching. *Journal of Shoulder and Elbow Surgery*. 2025.01; 34(8); e672-e682
27. Liu T, Muro S, Tharnmanularp S, Akita K. Three-dimensional Analysis of the Distribution of Smooth and Skeletal Muscle Tissue Around the Female Urethra. *International urogynecology journal*. 2025.01; 36(3); 647-654
28. Georgina Djameh, Masayo Harada, Keiichi Akita. Cervical vertebrae fusion in elbow knee synostosis (Eks)-mutant mice with fibroblast growth factor 9 N143T mutation. *Congenit Anom (Kyoto)*. 2025; 65(1); e70016

[Conference Activities & Talks]

1. Keiichi Akita. Driving collaboration to the Future of Cancer Treatment Policies.. Joint conference Siriraj Cancer Center and Institute of Science Tokyo 2025.11.14 Bangkok, Thailand
2. Akimoto Nimura. Functional anatomy of the lateral collateral ligament of the elbow. Japan Sports Orthopaedic Association (JSOA) 2025 2025.09.13 Minato-ku, Tokyo
3. Hitomi Fujishiro, Rintaro Yamamoto, Akimoto Nimura, Keiichi Akita. Anatomical and ultrasonographic study on the posterior elbow joint capsule and its surrounding structures. International Congress of Clinical Anatomy 2025 2025.06.27 Rouen, France
4. Akimoto Nimura, Jun Hishiyama, Keiichi Akita. Anatomical study on the radial side of thumb metacarpophalangeal joint: Relationship between the joint capsule and flexor pollicis brevis. International Congress of Clinical Anatomy 2025 2025.06.27 Rouen, France
5. Yuzuki Sugiyama, Satoru Muro, Daisuke Ban, Keiichi Akita. Morphological Analysis of the Ligament of Treitz: Relationship with the Superior Mesenteric Artery Plexus. The 130th Annual Meeting of the Japanese Association of Anatomists/The 102nd Annual Meeting of the Physiological Society of Japan/The 98th Annual Meeting of the Japanese Pharmacological Society Joint Conference 2025.03.18 Chiba, Chiba
6. Rintaro Yamamoto, Akimoto Nimura, Keiichi Akita. An anatomical study regarding the posterior elbow capsule and musculotendinous structures at the olecranon. The 130th Annual Meeting of the Japanese Association of Anatomists/The 102nd Annual Meeting of the Physiological Society of Japan/The 98th Annual Meeting of the Japanese Pharmacological Society Joint Conference 2025.03.18 Chiba, Chiba
7. Satoru Muro, Edinam Danyo, Keiichi Akita. The Treitz's muscle which runs longitudinally beneath the anal mucosa is formed by directional change of the internal anal sphincter. The 130th Annual Meeting of the Japanese Association of Anatomists/The 102nd Annual Meeting of the Physiological Society of Japan/The 98th Annual Meeting of the Japanese Pharmacological Society Joint Conference 2025.03.18 Chiba, Chiba
8. Danyo Jennifer Edinam, Satoru Muro, Naoko Inoshita, Yasuo Nakajima, Keiichi Akita. Distribution of Anal Glands in the Muscle Layers of the Anal Canal. The 130th Annual Meeting of the Japanese Association of Anatomists/The 102nd Annual Meeting of the Physiological Society of Japan/The 98th Annual Meeting of the Japanese Pharmacological Society Joint Conference 2025.03.18 Chiba, Chiba
9. Masayo Harada, Georgina Djameh, Tomoko Kitabata, Keiichi Akita. Wolffian duct differentiation in male mice. The 130th Annual Meeting of the Japanese Association of Anatomists/The 102nd Annual Meeting of the Physiological Society of Japan/The 98th Annual Meeting of the Japanese Pharmacological Society Joint Conference 2025.03.17 Chiba, Chiba
10. Weiyi Wang, Masayo Harada, Keiichi Akita. Embryological analysis of the anus position: Development of cloacal membrane and morphological analysis of the internal space of the cloaca. The 130th Annual Meeting of the Japanese Association of Anatomists/The 102nd Annual Meeting of the Physiological Society of Japan/The 98th Annual Meeting of the Japanese Pharmacological Society Joint Conference 2025.03.17 Chiba, Chiba

11. Georgina Djameh, Masayo Harada, Keiichi Akita. Cervical fusion in elbow knee synostosis (Eks) mice carrying the N143T mutation in fibroblast growth factor 9. The 130th Annual Meeting of the Japanese Association of Anatomists/The 102nd Annual Meeting of the Physiological Society of Japan/The 98th Annual Meeting of the Japanese Pharmacological Society Joint Conference 2025.03.17 Chiba, Chiba
12. Akimoto Nimura. Clinically related elbow anatomy. The 8th Korea University Elbow Symposium (KUES) 2025.02.15 Seoul, Korea

[Awards & Honors]

1. Yuzuki Sugiyama. The 130th Annual Meeting of the Japanese Association of Anatomists/The 102nd Annual Meeting of the Physiological Society of Japan/The 98th Annual Meeting of the Japanese Pharmacological Society Joint Conference Graduate Student Presentation Award, 2025.03
2. Satoru Muro. The 130th Annual Meeting of the Japanese Association of Anatomists/The 102nd Annual Meeting of the Physiological Society of Japan/The 98th Annual Meeting of the Japanese Pharmacological Society Joint Conference Travel Grant Award, 2025.03
3. Satoru Muro. The 130th Annual Meeting of the Japanese Association of Anatomists/The 102nd Annual Meeting of the Physiological Society of Japan/The 98th Annual Meeting of the Japanese Pharmacological Society Joint Conference Young Investigator Award, 2025.03
4. Georgina Djameh. The 130th Annual Meeting of the Japanese Association of Anatomists/The 102nd Annual Meeting of the Physiological Society of Japan/The 98th Annual Meeting of the Japanese Pharmacological Society Joint Conference Young Investigator Award, 2025.03
5. Satoru Muro, Keiichi Akita. Top Viewed Article: Twisted orientation of the muscle bundles in the levator ani functional parts in women: Implications for pelvic floor support mechanism, 2025.04
6. Satoru Muro. The 67th Annual Meeting of the Japan Society of Smooth Muscle Research Young Investigator Award, 2025.08
7. Rintaro Yamamoto. Encouragement Award, Institute Science Tokyo TC college, 2025.10