Dr. Sattwikesh Paul DVM, MS, PhD (Australia)

Associate Professor

Department of Surgery & Radiology

Faculty of Veterinary Medicine and Animal Science (FVMAS)

Cell: +8801784262119 (Mobile); +8809612962498 (Office)

Email: paulsattwik@gmail.com; paulsattwik@gau.edu.bd

Website: www.gau.edu.bd/sattwikesh

Gazipur Agricultural University (GAU), Gazipur-1706, Bangladesh

Professional Summary

Passionate and experienced researcher with 5^{+} years in cell research, hydrogel development, and tissue regeneration focused on skin, cartilage, bone and soft tissue repair. Skilled in biomaterial synthesis, characterisation, and preclinical in vitro/in vivo models. Over 10 years of teaching experience in veterinary surgery and radiology at undergraduate and postgraduate levels, with active roles in curriculum design and research student supervision. Successfully secured seven university- and government-funded research projects as Principal Investigator and Associate Investigator. Presented research at international conferences and universities; delivered keynote talks at scientific and career-focused events, promoting knowledge exchange and inspiring emerging scholars. Committed to advancing personalized regenerative therapies for improved clinical outcomes and cost-effective care.

Academics

Doctor of Philosophy (PhD)
2019 - 2023

School of Mechanical, Medical, and Process Engineering
Faculty of Engineering, Queensland University of Technology (QUT), Australia
Thesis Title: Gelatin Methacryloyl-Chitosan (GelMA-Chitosan) Hydrogel: a Novel Orthopaedic Bioadhesive

- Developed a visible light cross-linkable, natural polymer-based bioadhesive hydrogel for cartilage repair applications.
- Performed physicochemical and mechanical characterization, including rheology, degradation, and tensile/compression testing.
- Established testing protocols for hydrogel application in skin and cartilage repair and mechanical testing.
- Developed and standardized an in vitro bioreactor model to evaluate the regenerative potential of hydrogel in cartilage constructs.
- Conducted cell viability, qRT-PCR, immunofluorescence staining and cryosectioning for histological and cellular imaging.
- Conducted DMMB assay, PicoGreen assay for quantifying GAGA and DNA in cell-laden hydrogel constructs.
- Performed qRT-PCR of cell-laden hydrogel samples to quantify the markers of collagen I, II and aggrecan.
- Gained expertise in mammalian cell culture and aseptic techniques.

- Presented research at international conferences and contributed to peer-reviewed publications.
- Supervised undergraduate and MS engineering students in biomedical and biomaterials research and tissue engineering.
- Maintained detailed laboratory records and ensured compliance with research protocols and safety standards.
- Conducted training on hydrogel preparation for final year and MS engineering students.
- Collaborated with interdisciplinary teams for technical support and knowledge exchange.

Master of Science in Surgery (MS in Surgery)
2013 - 2014
Department of Surgery & Obstetrics
Faculty of Veterinary Science (FVS), Bangladesh Agricultural University, Bangladesh
Result: Cumulative Grade Point Average 4.000 (Out of 4 Scale, First class 1st); **Recipient of University Gold Medal, 2016** for outstanding academic result.
Thesis Title: Ultrasound guided testicular fine needle aspiration in buck (*Capra hircus*) - An animal model

- Developed and standardized an ultrasound-guided testicular fine needle aspiration (TFNA) protocol in bucks.
- Conducted quantitative and qualitative analysis of testicular cell populations.
- Skilled in diagnostic ultrasonography and evaluated the testicular echo-structure using ultrasonography.
- Performed histological processing of samples and evaluation of spermatogenic cells.
- Published peer-reviewed scientific articles.
- Investigated PRP-mediated bone fracture and wound healing in an in vivo animal model.
- Conducted research on heat detection devices for oestrous cycle monitoring in cows.
- Experienced in orthopaedic fracture repair using bone plates, intramedullary pins, and orthopaedic wires.
- Conducted surgical operations in different domestic, farm, pet and wild animals at university's veterinary teaching hospital.
- Guided undergraduate veterinary students on surgical interventions in different animals.
- Volunteer at medical and free veterinary rural camps for providing support.

Doctor of Veterinary Medicine (DVM)
2008 - 2012
Faculty of Veterinary Science (FVS), Bangladesh Agricultural University, Bangladesh
Result: Cumulative Grade Point Average 3.714 (Out of 4 Scale, First class 5th)

- Gained comprehensive theoretical and practical knowledge in veterinary disciplines: anatomy, histology, physiology, microbiology, virology, pathology, pharmacology, parasitology, medicine, surgery and obstetrics, genetics and animal breeding, nutrition, and applied veterinary statistics.
- Developed foundational skills in molecular bacteriology and virology (PCR, RT-PCR, and Western blotting assays).

- Acquired in-depth understanding of immunodiagnostic and serological techniques (agglutination, precipitation, hemagglutination and hemagglutination-inhibition tests, passive hemagglutination, complement fixation test, immunohistochemistry, immunodiffusion, and ELISA).
- Acquired fundamental understanding of pharmacokinetics and pharmacodynamics of drugs.
- Attended 6 months “Internship Program” at different institutions of Bangladesh.
- Attended weeklong “Extension Field Trip” as a part of agricultural extension education program.

Higher Secondary Certificate (HSC)
2005 – 2007
Dhaka Residential Model College, Dhaka, Bangladesh
Result: Grade Point Average 5.00 (Out of 5 Scale)

- Major Subjects: Mathematics, Physics, Chemistry and Biology.

Secondary School Certificate (SSC)
2003 – 2005
Taragonj Pilot High School, Nalitabari, Bangladesh
Result: Grade Point Average 5.00 (Out of 5 Scale)

- Major Subjects: Mathematics, Higher Mathematics, Physics, Chemistry and Biology.

Professional Experience

Associate Professor
17 December 2023 – To Date
Department of Surgery & Radiology, Faculty of Veterinary Medicine & Animal Science (FVMAS), Gazipur Agricultural University (GAU), Bangladesh.

- Actively engaged in teaching and mentoring undergraduate and graduate students in veterinary surgery through structured lesson plans, practical training, and seminar-based learning.
- Guided students in research design, scientific writing, presentation, and career development.
- Contributed to academic assessment by evaluation of exams, assignments, and practical skills.
- Performed surgical procedures on domestic, pet and wild animals with various complications.
- Served as an external examiner for clinical veterinary medicine examinations of undergraduate course.
- Prepared and submitted research project proposals for competitive grant applications.
- Reviewed graduate research theses and scientific journal manuscripts.
- Participated as a committee member for graduate research students.
- Supervised undergraduate and graduate research, guiding study design, protocol development, data collection, analysis and presentation.
- Guided and supervised research students in competitive research grant applications.
- Passionately committed to student growth, academic excellence, and upholding the university’s academic standards with professionalism and dedication.

Sessional Academic
27 February 2023 – 24 June 2023
EGH438 – Biomaterials (Appointment reference: SES-230220120)
School of Mechanical, Medical and Process Engineering, Faculty of Engineering, Queensland University of Technology (QUT), Brisbane, Australia

- Delivered practical instruction to 25^{+} engineering students, utilizing appropriate laboratory resources and facilities to support hands-on learning.
- Supervised, guided, and evaluated student performance during practical sessions, ensuring comprehension of experimental procedures.
- Addressed student queries and offering guidance on proper documentation and report writing.

Sessional Academic
28 February 2022 – 25 June 2022
EGH438 – Biomaterials (Appointment reference: SES-220214020-01)
School of Mechanical, Medical and Process Engineering, Faculty of Engineering, Queensland University of Technology (QUT), Brisbane, Australia

- Conducted practical sessions for over 25 engineering students, utilizing appropriate laboratory resources and instructional tools to facilitate hands-on learning.
- Supervised and guided students during experimental tasks, ensuring accurate execution and conceptual understanding of practical procedures.
- Provided individualized support by addressing student queries and offering structured feedback on laboratory notebooks and documentation.

Assistant Professor
22 February 2017 – 16 December 2023
Department of Surgery & Radiology, Faculty of Veterinary Medicine & Animal Science (FVMAS), Gazipur Agricultural University (GAU), Bangladesh.

- Actively taught and mentored veterinary surgery undergraduates through structured lessons and practical training.
- Delivered lectures on anesthesiology, radiology, diagnostic imaging, wildlife, zoo, and aquatic animal surgery, as well as on advanced surgical techniques for diverse clinical animal cases.
- Guided students in research methods, including study design and data presentation.
- Evaluated exams, assignments, and practical skills.
- Performed surgical procedures on domestic, pet and wild animals with various conditions.
- Applied research proposal for competitive grant applications.
- Fostered student development and academic excellence while maintaining high professional and ethical standards.

Lecturer
22 February 2015 – 21 February 2017
Department of Surgery & Radiology, Faculty of Veterinary Medicine & Animal Science (FVMAS), Gazipur Agricultural University (GAU), Bangladesh.

- Engaged in teaching and mentoring veterinary surgery undergraduates via structured lessons, and practical training.
- Delivered lectures on anesthesiology, diagnostic imaging, wildlife, zoo, and aquatic animal surgery and surgical techniques for diverse clinical cases of animals.
- Taught research methods including study design and data presentation.
- Assessed exams, assignments, and practical skills.
- Performed surgical procedures on domestic, pet and wild animals with various conditions.
- Promoted student growth and upheld academic and professional standards.

Administrative Experience

Head of the Department
27 May 2024 – 26 May 2026
Department of Surgery & Radiology, Faculty of Veterinary Medicine and Animal Science, Gazipur Agricultural University (GAU), Bangladesh.

- Provided strategic leadership in teaching, research, and extension activities within the department.
- Oversaw the design, development, and implementation of academic programs in veterinary surgery and radiology.
- Managed faculty performance, mentoring, and professional development initiatives.
- Administered departmental budget, resources, and facilities to ensure operational efficiency.
- Promoted research activities, grant acquisition, and high-impact scholarly publications.
- Ensured quality education, address student concerns, and support academic and clinical progression.
- Uphold academic standards, accreditation requirements, and compliance with institutional policies.
- Fostered interdisciplinary collaboration and external partnerships with academia and industry.
- Led departmental meetings, reporting, and policy implementation.
- Supervised clinical services to maintain excellence in surgical practice and diagnostic radiology.

Assistant Provost
10 January 2024 – 14 August 2024
New Student Hall (Male), Gazipur Agricultural University (GAU), Bangladesh.

- Assisted in managing the overall administration of the student hall.
- Supported student welfare, discipline, and residential life.
- Coordinated hall activities, events, and programs.
- Facilitated communication between students and university administration.
- Supervised hall staff and maintenance operations.
- Ensured compliance with university policies and safety regulations.
- Addressed student concerns and resolved conflicts.
- Maintained records and prepared reports on hall affairs.

Veterinarian
09 November 2015 – 24 February 2019
GAU Livestock & Poultry Farm, Gazipur Agricultural University (GAU), Bangladesh.

- Provided veterinary care and health management for animals and poultry.
- Monitored and controlled diseases through regular health checks and vaccination programs.
- Advised on nutrition, breeding, and welfare practices to optimize animal productivity.
- Conducted clinical treatments and emergency interventions as needed.
- Maintained farm health records and prepared reports on animal health status.
- Ensured compliance with biosecurity and animal welfare regulations.
- Collaborated with faculty and students on research and practical training activities.

Awards, Fellowships, Scholarships and Grants

- **Write Up Scholarship, 2023**, Faculty of Engineering, Queensland University of Technology, Brisbane, Australia.
- **Australasian Society for Biomaterials and Tissue Engineering (ASBTE) Conference Travel Award, 2022**, Melbourne, Victoria, Australia.
- **Australian Government Research Training Program (RTP) Stipend (International) and RTP Fees Offset (International), 2019,** Australia.
- **Bangladesh-Sweden Trust Fund Travel Grant, 2019**, Economic Relations Division, Ministry of Finance, Bangladesh.
- **National Science and Technology Fellowship, 2013-2014**, Ministry of Science and Technology, Bangladesh.
- **University Gold Medal, 2016**, Bangladesh Agricultural University, Mymensingh-2202, Bangladesh.
- **Primary Scholarship (Talent-pool), 1999**, Nalitabari Government Primary School, Nalitabari, Bangladesh.

Research Interests

- Biomedical engineering
- Regenerative medicine
- Stem cell research
- Functional biomaterials
- 3D cell culture systems
- Bioadhesives
- Osteoarthritis
- Cartilage and bone regeneration
- Fracture and wound healing
- Veterinary surgery
- Orthopaedic and reconstructive surgery

Research Experience

Ongoing Research Projects

Principal Investigator
01 July 2024 – To date
Research project: Hydrogel for Osteochondral Defects Repair: an In Vitro Analysis, funded by Research Management Wing (RMW), GAU, Gazipur-1706. **Co-PI:** Prof.

Dr. Md. Ataur Rahman, Department of Surgery and Radiology, and Prof. Dr. Ziban Chandra Das, Department of Gynecology, Obstetrics & Reproductive Health, FVMAS, GAU, Gazipur-1706.

- Designed and developed the research protocol and experimental framework.
- Ensured compliance with ethical standards and institutional regulations.
- Supervising in vitro studies, including material characterization and biological assessments.
- Managing project resources, timelines, budget and reporting requirement.
- Guiding research assistants and collaborators in data collection and analysis.
- Preparing progress reports and manuscripts for publication and dissemination.

Completed Research Project

Principal Investigator

01 July 2025 – 30 June 2026

Research project: Curcumin-Loaded Bioadhesive Hydrogel: Advancing Suture-free External Wound Closure, funded by Ministry of Science and Technology (MoST), Bangladesh. **Co-PI:** Md. Tuhinur Rahman, Department of Surgery and Radiology, FVMAS, GAU, Gazipur-1706.

- Synthesis of photo-cross-linkable GelMA–chitosan–curcumin (GelMA–Chi–Cur) bioadhesive hydrogel.
- Evaluation of antimicrobial, biodegradation, and material release kinetic properties.
- Assessing synergistic wound healing effects of chitosan and curcumin.
- In vivo and histological analyses for tissue regeneration and scar formation.
- Designing a user-friendly application protocol for external wound management.
- Data generation for future pre-clinical studies.

Co-Principal Investigator

01 July 2025 – 30 June 2026

Research project: Impact of Incision Number and Anaesthesia Techniques on Castration Outcomes in Male Rabbits, funded by GAU Innovation Fund, GAU, Gazipur-1706. **PI:** DR. Mousumi Saha, Assistant Professor, Department of Surgery and Radiology, FVMAS, GAU, Gazipur-1706.

- Design and execute surgical trials to assess the physiological impact of different incision numbers during castration.
- Evaluate the effect of local anaesthesia in minimizing surgical stress and pain response.
- Collect and analyse physiological and behavioural data to quantify outcomes.
- Ensure ethical compliance, animal welfare, and precise documentation.
- Contribute to data interpretation, report preparation, and publication development.

Principal Investigator

01 July 2024 – 30 June 2025

Research project: Photo-cross-linkable GelMA-Glycol Chitosan Hydrogel: an Approach to Enhanced Wound Healing, funded by Ministry of Science and

Technology (MoST), Bangladesh. **Co-PI:** Prof. Dr. Md. Ataur Rahman, Department of Surgery and Radiology, FVMAS, GAU, Gazipur-1706.

- Designed and developed experimental protocols, ensuring scientific rigor and ethical compliance.
- Oversaw project implementation, data collection, and analysis.
- Coordinated procurement of materials and managed project budget.
- Supervising research team members, including students and technical staff.
- Ensuring timely progress reporting and communication with funding ministry.
- Contributing to dissemination of research findings through workshops.

Associate Investigator
01 July 2017 – 30 June 2018

Research project: Establishment, characterization and cryopreservation of bovine fibroblast cell line, funded by Ministry of Science and Technology (MoST), Bangladesh. **PI:** Prof. Dr. Ziban Chandra Das, Department of Gynecology, Obstetrics & Reproductive Health, FVMAS, GAU, Gazipur-1706.

- Assisted in designing and executing the research plan.
- Participated in data interpretation, documentation, and reporting of experimental outcomes.
- Supported preparation of progress reports and presentations.

Principal Investigator
01 July 2016 – 30 June 2017

Research project: Efficacy of Marigold (*Calendula officinalis*) and Turmeric (*Curcuma longa*) Paste in Wound Healing: a Comparative Approach, funded by Research Management Committee (RMC), GAU, Gazipur-1706. **Co-PI:** Prof. Dr. A N M Aminoor Rahman, Department of Gynecology, Obstetrics & Reproductive Health, FVMAS, GAU, Gazipur-1706.

- Developed research protocols, objectives, and methodologies for comparative analysis.
- Secured ethical approvals and ensured compliance with institutional research guidelines.
- Performed data collection, analysis, and interpretation of experimental results.
- Managed project budget, procurement, and resource allocation.
- Prepared progress reports, manuscripts, and final project documentation for dissemination.
- Published research article in peer-reviewed journal.

Associate Investigator
01 July 2016 - 30 June 2017

Research project: Efficacy of different estrus and ovulation synchronization protocols for timed artificial insemination in Black Bengal goats, funded by Ministry of Science and Technology (MoST), Bangladesh. **PI:** Associate Prof. Dr. Md. Nazmul Hoque, Department of Gynecology, Obstetrics & Reproductive Health, FVMAS, GAU, Gazipur-1706.

- Assisted in designing the research framework and experimental protocols.
- Participated in the preparation and submission of the research proposal.
- Oversaw field implementation of synchronization protocols and AI procedures.
- Monitored data collection, ensured protocol compliance, and maintained research records.
- Assisted in data analysis and interpretation.
- Contributed to progress reporting and dissemination of research findings.

Publications

1. **Paul, S.,** Schrobback, K., Tran, P. A., Meinert, C., Weekes, A., Davern, J. W. Klein, T. J. (2025). Photo-Curable GelMA-Chitosan Bioadhesive Hydrogel: An Evaluation of Mechanical and Adhesive Properties. Regenerative Medicine and Dentistry, 2(3), 15. doi: 10.53941/rmd.2025.100015.
2. Labib, M. T. R., Sadi, R. S., Saha, M., Rahman, M. T., **Paul, S.**, Mahmud, M. A. A. M., Das, Z. C., Rahman, A. N. M. A., & Rahman, M. A. (2025). Parenteral administration of medroxyprogesterone acetate in cats: A morphological and histopathological evaluation of ovaries. *J Adv Biotechnol Exp Ther.* 8(3): 420-432. doi: 10.5455/jabet.2025.34.
3. Hasan, M. M., Labib, M. T. R., Das, A. B., Sadi, R. S., Saha, M., Rahman, M. T., **Paul, S.**, Islam, M. T., & Rahman, M. A. (2024). Zoonotic parasites in cats: regional prevalence and antiparasitic treatment outcomes. *Ecol. J.* 6 (2) : 193-203. doi: 10.59619/ej.6.2.8.
4. **Paul, S.**, Schrobback, K., Tran, P. A., Meinert, C., Davern, J. W., Weekes, A., Nedunchezhiyan, U., & Klein, T. J. (2023). GelMA-glycol chitosan hydrogels for cartilage regeneration: The role of uniaxial mechanical stimulation in enhancing mechanical, adhesive, and biochemical properties. *APL Bioeng.* 7(3):036114. doi: 10.1063/5.0160472. PMID: 37692373; PMCID: PMC10492648.
5. **Paul, S.**, Schrobback, K., Tran, P. A., Meinert, C., Davern, J. W., Weekes, A., & Klein, T. J. (2023). Photo-Cross-Linkable, Injectable, and Highly Adhesive GelMA-Glycol Chitosan Hydrogels for Cartilage Repair. *Adv. Healthcare Mater.* 2302078. https://doi.org/10.1002/adhm.202302078.
6. Mou, S. J., Juyena, N. S., Hashim, M. A., Ferdousi, R. N., Sultana, N. N., & **Paul, S.** (2019). Management of Congenital Urinary Obstruction in Newborn Calves. *American Journal of Agricultural Science, Engineering, and Technology*, 3(1), 39–56. Doi: 10.54536/ajaset.v3i1.35.
7. **Paul, S.**, Rahman, A. N. M. A., Mahmud, M. A. A., Uzzal, A. R., & Das, Z. C. (2017). Wound healing by marigold (Calendula officinalis) and turmeric (Curcuma longa) Paste: A comparative approach. *Journal of Advanced Veterinary and Animal Research*, 4(4), 333-342. http://doi.org/10.5455/javar.2017.d229.
8. Malakar, S., Juyena, N. S., **Paul, S.**, Hasan, M. M., Bhattacharjee, J., Mollah, H. R., & Islam, M. R. (2017). Monitoring vaginal electrical impedance in crossbred

cows during post-partum period. *Asian Journal of Medical & Biological Research*, 3 (2), 221-225. Doi: 10.3329/ajmbr.v3i2.33573.

9. **Paul, S.**, Juyena, N. S., Das, S. K., Ferdousy, R. N., Sarker, R. D., & Mou, S. J. (2017). Ultrasound guided testicular fine needle aspiration in buck (Capra hircus) — An animal Model. *Asian Pacific Journal of Reproduction*, 6(1), 23-28. doi: 10.12980/apjr.6.20170105.
10. Ferdousy, R. N., Tarif, A. M. M., **Paul, S.**, Juyena, N. S., & Rahman, M. M. (2014). Role of Platelet Rich Plasma Gel in Bone Healing of Black Bengal Goats. *International Journal of Innovation and Applied Studies*, 5(1), 54–61. URL: https://ijias.issr-journals.org/abstract.php?article=IJIAS-13-283-01.
11. Alam, M. M., Juyena, N. S., Alam, M. M., Ferdousy, R. N., & **Paul, S.** (2014). Use of Wire Suture for the Management of Fractures in Calves. *IOSR Journal of Agriculture and Veterinary Science (IOSR-JAVS)*, 7(1) III, 90-96. doi: 10.9790/2380-07139096.
12. Ferdousy, R. N., Rahman, M. M., **Paul, S.**, & Khan, M. A. H. N. A. (2013). Role of platelet rich plasma gel in the wound healing of black Bengal goat. *IOSR Journal of Agriculture and Veterinary Science (IOSR-JAVS)*, 6(5), 14-21. doi: 10.9790/2380-0651421.
13. Noman, A. S. M., Juyena, N. S., Alam, M. M., Ferdousy, R. N., **Paul, S.**, & Haq, M. M. (2013). Prevalence of surgical affections of cattle in aarong dairy area of Pabna. *Progressive Agriculture*, 24(1 & 2), 85-92. doi: 10.3329/pa.v24i1-2.19104.
14. Juyena, N. S., Tapon, M. A. H., Ferdousy, R. N., **Paul, S.**, & Alam, M. M. (2013). A retrospective study on occurrence of myiasis in ruminants. *Progressive Agriculture*, 24(1 & 2), 101-106. doi: 10.3329/pa.v24i1-2.19110.

Case Report

1. Ferdousy, R. N., Haq, M. M., **Paul, S.**, Mou, S. J., & Tarif, A. M. M. (2013). Surgical management of subcutaneous cyst on the forelimb of a Royal Bengal Tiger. The Bangladesh Veterinarian, 30(2), 78-80.

Conference: Oral Presentation/Poster Presentation

Oral Presentations:

1. **Paul, S.**, Schrobback, K., Tran, P., Meinert, C., Davern, J., Weekes, A., Nedunchezhiyan, U., & Klein, T. (2024, August). Bioadhesives For Cartilage Repair And Regeneration. In TISSUE ENGINEERING PART A (Vol. 30, No. 15-16, pp. S261-S261). 140 HUGUENOT STREET, 3RD FL, NEW ROCHELLE, NY 10801 USA: MARY ANN LIEBERT, INC.
2. **Paul, S.**, Schrobback, K., Tran, P. A., Klein, T. J., Effects of Chitosan and Photo-initiators on Bioadhesive Properties of GelMA-Chitosan Hydrogels, Australasian Society of Biomaterials and Tissue Engineering (ASBTE) Virtual Research Showcase, 14.05.2021.
3. **Paul, S.**, Schrobback, K., Tran, P. A., Klein, T. J., Developing GelMA-chitosan Bioadhesive Hydrogels for Cartilage Repair: Effects of Chitosan and Photo-

initiators on Mechanical Properties, Centre for Biomedical Technologies (CBT) Conference, Queensland, Australia, 11.11.2021.

4. **Paul, S.**, Schrobback, K., Tran, P. A., Klein, T. J., Photo-cross-linkable, injectable, and highly adhesive GelMA-glycol chitosan (GelMA-GC) hydrogels for cartilage repair, Australasian Society of Biomaterials and Tissue Engineering (ASBTE) Conference, Melbourne, Australia, 21.04.2022.

Poster Presentation:

1. **Paul, S.**, Schrobback, K., Tran, P. A., Meinert, C., Weekes, A., Davern, J. W., Klein. T. J. Gelatin Methacryloyl (GelMA)-Chitosan Hydrogel: a Bioadhesive for Cartilage Repair, The 31st Bangladesh Society for Veterinary Education and Research (BSVER) Annual Scientific Conference (BSVER ASConXXXI), BAU, Mymensingh, Bangladesh, 01-02 February, 2025 (Poster: P-115).

Invited Speaker and Volunteer Work

1. Served as **Panellist** in the session '**Innovation & Technology for Everyone**' at the "**Impact Challenge**" program
   Organizer: IT Society Gazipur Agricultural University.
   Date: 04.05.2026; Venue: Old Auditorium, GAU, Gazipur-1706, Bangladesh.
2. **Program Judge** at the innovative idea-based competition " **Impact Challenge**"
   Organizer: IT Society Gazipur Agricultural University.
   Date: 04.05.2026; Venue: Old Auditorium, GAU, Gazipur-1706, Bangladesh.
3. Invited Session Speaker on **"The Undergraduate Research Pathways: a Framework for Publication", Organizer:** Gazipur Agricultural University Science Club, Gazipur Agricultural University (GAU), Bangladesh.
   Date: 19.04.2026; Venue: Old Auditorium, Time: 5 pm, GAU, Gazipur-1706, Bangladesh.
4. Served as a delegate **team member** for the successful coordination and conduct of the nationwide **Agricultural Cluster Admission Test** at Bangladesh Agricultural University (BAU), organized by Gazipur Agricultural University (GAU), Date 03.01.2026.
5. Served as a member of the Scientific Committee for the **International Conference on Regenerative Agriculture for Sustainable Food Security**, held on 12–13 December at Gazipur Agricultural University (GAU), Bangladesh.
6. Served as a **Rapporteur** for the oral presentation sessions under the thematic area Healthy Livestock for a Resilient Food System at the **International Conference on Regenerative Agriculture for Sustainable Food Security**, held on 12 December at Gazipur Agricultural University (GAU), Bangladesh.
7. Invited Speaker on **"Understanding & Preventing Assignment Plagiarism"**
   Organizer: Digital Empowerment Bootcamp 2025–Session 3, IT Society - Gazipur Agricultural University (GAU), Bangladesh.
   Date: 19.09.2025; Online platform, Time: 7:00 pm.

8. Served as **Technical Team Leader** for organizing the **International Society for Applied Ethology 6th workshop, titled "All Animals Deserve a Good Life: Understanding Animal Behaviour as a Pathway to Enhanced Animal Welfare**," held at Gazipur Agricultural University (GAU), Bangladesh, supported by the Open Philanthropy Project.
   Date: 21.05.2025; Venue: Old Auditorium, GAU, Gazipur-1706, Bangladesh.
9. **Program Judge** at "**Voice the Vision**" Final Presentation and Award Ceremony
   Organizer: International Association of Students in Agricultural and Related Sciences (IAAS) Bangladesh, GAU.
   Date: 29.04.2025; Venue: Old Auditorium, GAU, Gazipur-1706, Bangladesh.
10. Keynote speaker on **"Research, Publication and Higher Education"**
    Organizer: AgroTrends and Krishi Hospital supported by Gazipur Agricultural University (GAU), Bangladesh.
    Date: 26.04.2025; Venue: Old Auditorium, GAU, Gazipur-1706, Bangladesh.
11. Guest speaker on **"How to prepare an outstanding SOP"** at Curriculum Vitae and Statement of Purpose writing session
    Organizer: Gazipur Agricultural University Career Club (GAUCC), Bangladesh.
    Date: 22.01.2025; Venue: Old Auditorium, GAU, Gazipur-1706, Bangladesh.
12. Project presenter on **'Hydrogel on Osteochondral Defects Repair: an *In Vitro* Analysis'** at Long Term Research Planning Workshop 2024-2027
    Organizer: Research Management Wing, Gazipur Agricultural University (GAU), Gazipur-1706.
    Date: 28.12.2024; Venue: Old Auditorium, GAU, Gazipur-1706, Bangladesh.
13. Keynote speaker **"Innovating Healthcare with Bioadhesive Hydrogels: a Pathway to Advanced Cartilage Regeneration"** at **"ChemBridge: Advancing Science Together"**
    Organizer: American Chemical Society (ACS) student chapter Bangladesh University of Engineering and Technology (BUET) and supported by ACS global innovation grant (GIG), Bangladesh.
    Date: 21.12.2024; Venue: ECE Building, 10th Floor, Department of Biomedical Engineering (BME), West Palashi Campus, BUET, Bangladesh.
14. Invited speaker on **"Gelatin-methacryloyl-chitosan (GelMA-CS) hydrogel: a novel orthopaedic bioadhesive"**.
    Organizer: Outreach Program, Gazipur Agricultural University (GAU), Gazipur-1706, Bangladesh.
    Date: 15.01.2024; Venue: Old Auditorium, GAU, Gazipur-1706, Bangladesh.
15. Volunteered at medical and free veterinary rural camps organized under various national and international programs.

News in Electronic Media

1. Chris Patrick; **Bioadhesive sticks to cartilage for improved repair**. Scilight 8 September 2023; 2023 (36): 361106. https://doi.org/10.1063/10.0021000

2. National and local newspapers reported on the seminar, **"Gelatin-Methacryloyl-Chitosan (GelMA-CS) Hydrogel: A Novel Orthopedic Bioadhesive",** organized by the Outreach Program at Gazipur Agricultural University (GAU), Gazipur-1706.
3. Featured in the local newspaper The Daily Ajker Provat (dated 05 May 2016) for **active participation and performing surgical sterilization of male dogs** using the **Non-Scalpel Vasectomy (NSV)** technique as part of a **Rabies Control Program** implemented by the Gazipur City Corporation and the Department of Livestock Services, Bangladesh.

Training and Other Experiences

1. **09 February 2025**
   Attended in a workshop entitled **"Preparation for Accreditation: Documentation and Evidence"**, organized by Institutional Quality Assurance Cell (IQAC), GAU, Gazipur-1706.
2. **07 January 2025**
   Attended in a workshop entitled **"Sub-Project Proposal Writing under the Academic Transformation Fund (ATF) of the Heat Project"**, organized by Institutional Quality Assurance Cell (IQAC), GAU, Gazipur-1706.
3. **05 December 2024**
   Attended in a workshop entitled **"The Art of Teaching and Creative Pedagogy for Higher Education"**, organized by Institutional Quality Assurance Cell (IQAC), GAU, Gazipur-1706.
4. **11 November 2024**
   Attended in a training workshop entitled **"Implementation of D-Nothi System at BSMRAU"**, organized by Institutional Quality Assurance Cell (IQAC), GAU, Gazipur-1706.
5. **23 January 2024**
   Attended in a training entitled "**Training on Outcome Based Education (OBE)**", organized by Institutional Quality Assurance Cell (IQAC), GAU, Gazipur-1706.
6. **23 November 2023**
   Attended a day-long training program on "**Crafting Research Proposal: Result Framework Development and Input-output Matrix**", organized by Institutional Quality Assurance Cell (IQAC), GAU, Gazipur-1706.
7. **27 November 2017**
   Attended in a training-workshop entitled "**Course Credit System of GAU for Junior Teachers**", organized by Institutional Quality Assurance Cell (IQAC), GAU, Gazipur-1706.
8. **30 December 2015 – 02 January 2016**
   Attended in a training entitled "**Strengthening Pedagogical Skills of Young Teachers**", organized by Gazipur Agricultural University (GAU), Gazipur-1706.

9. **13 March 2013 – 25 April 2013**
   Attended a 42-day long training course on "**Communicative English**", organized by Department of Languages, Bangladesh Agricultural University (BAU), Mymensigh-2202.
10. **08 July 2012 – 08 November 2012**
    Attended 6 months "**Internship Program**" at Bangladesh Agricultural University Veterinary Teaching Hospital, Central Veterinary Hospital, Central Disease Investigation Laboratory, Livestock Research Institute, Milk Vita, Dhaka Zoo, Savar Central Cattle Breeding & Dairy Farm, Gazipur Poultry Farm and Several Veterinary Hospitals.
11. **15 April 2012 – 26 April 2012**
    Attended a 12-day long training on "**Basics of MS Office**" organized by Graduate Training Institute (GTI), Bangladesh Agricultural University, Mymensingh-2202.
12. **25 October 2011 – 30 October 2011**
    Attended a weeklong "**Extension Field Trip**" at Bakshiganj Upazila of Jamalpur district, organized by the Department of Agricultural Extension Education, Bangladesh Agricultural University, Mymensingh-2202.

Courses Taught

Undergraduate Program

- Third Year: General Surgery
- Fourth Year: Anesthesiology, Radiology & Imaging, Farm Animal Surgery, Wildlife, Zoo, Aquatic & Companion Animal Surgery
- Fifth Year: Surgery (Clinics)

Graduate Program

- Radiology and Diagnostic Imaging
- Equine and Ruminant Surgery
- Wildlife, Zoo and Pet Animal Surgery
- Urological Surgery
- Clinical Surgery
- Advanced Anaesthesiology
- Seminar Course

Student Supervision

- MS Student: 01
- MS Student Committee Member: 03

Advisory Committee Member

- Gazipur Agricultural University (GAU) Language and Professional Development Club, Bangladesh
- Gazipur Agricultural University (GAU) Cultural Club

Major Field of Specialization

- Biomedical engineering
- Stem cell research
- Biomaterials characterization
- Regenerative medicine
- Wound and fracture healing
- Hydrogel synthesis and 3D cell culture
- Cartilage damage repair and regeneration
- Bioadhesive hydrogel formulation and research
- Orthopaedic and reconstructive surgery
- Diagnostic imaging
- Veterinary anaesthesiology and surgery

Technological and Lab Skills

- **Software:** Proficient in Microsoft Office (Word, Excel, PowerPoint), Graphpad Prism for statistical analysis, Image J and Photoshop for image processing and analysis.
- **Lab Skills:** Experienced in cell culture techniques, cell viability assays, DMMB assay, PicoGreen assay, biomaterial synthesis, mechanical characterization of biomaterials, qRT-PCR for gene expression analysis, immunofluorescence staining for cellular imaging, cryosectioning for tissue sample preparation, and rheology of biomaterial.
- **Inductions and Training**
  - Biosafety Training (Online) – Office of Research Ethics and Integrity, Queensland University of Technology (QUT), Australia.
  - Rheometer Operation Training – Central Analytical Research Facility (CARF), QUT, Australia.
  - Basic Introduction to Materials Testing: Static (eLearning) – Instron Training Center.
  - Scientific Writing Masterclass: “From Frustration to Success” – Conducted by Dr. Ximena Alvira, Elsevier (90-minute session).

Strength and Languages

- Proven ability to handle responsibilities in fast-paced environment through strong interpersonal analytical skills.
- Professional leadership to foster collaborative and productive academic and research environment.
- Good communication skills both in Bengali and English, verbally and written.

Hobies and Interests

- Gardening
- Reading and writing
- Photography
- Playing cricket, football
- Travelling
- Cycling

Professional Memberships

General Member

- Krishibid Institution Bangladesh (KIB)

Life-Member

- Bangladesh Veterinary Council (BVC)
- Bangladesh Veterinary Association (BVA)
- One Health Bangladesh
- Bangladesh Society for Safe Food (BSSF)
- Bangladesh Association for the Advancement of Sciences (BASS)

- **Veterinary Practitioner Registration No.: 4062**

Online Platform

: www.gau.edu.bd/sattwikesh
: www.linkedin.com/in/sattwikesh/
: https://orcid.org/0000-0002-1659-8305
: https://www.researchgate.net/profile/Sattwikesh-Paul
: https://scholar.google.com/citations?user=t9GrcDIAAAAJ&hl=en
: https://www.instagram.com/sattwikesh/
: https://www.facebook.com/paul.sattwikesh

Referees

Prof. Dr. Travis Jacob Klein
Leader, Cartilage Regeneration Laboratory (CRL)
School of Mechanical, Medical, and Process Engineering, Faculty of Engineering
Queensland University of Technology (QUT),vAustralia
Email: t2.klein@qut.edu.au
Mobile: +61 7 3138 6142

Dr. Angus Weekes, PhD
Postdoctoral Research Fellow
Max Planck Queensland Centre
Centre for Biomedical Technologies
Faculty of Engineering
Queensland University of Technology (QUT), Australia
Email: a.weekes@qut.edu.au
Mobile: +61 0474 735 908
Website: staff.qut.edu.au/staff/a.weekes