

SALMAN KHAN PROMON

salman.promon@gmail.com | www.salmanpromon.com | (+880)1755032985

Mail: House 1/3, 5A, Block A, Road 1, Niketan, Dhaka 1212, Bangladesh

Personal statement

A science and technology enthusiast, looking for acquiring expertise required to solve real-life problems by working and collaborating with various local and global initiatives. I want to involve in the line of research where I can develop specific medical biotechnology based products more accessible.

Research Interests

Tissue engineering, 3D Bioprinting, Regenerative medicine, Cancer biology, Medical biotechnology, Diagnostics, Prostheses, Bio-implants, Industrial biotechnology.

Education**Master of Science in Biotechnology** (Spring 2018- Fall 2019)

School of Data and Sciences, Brac University, Dhaka, Bangladesh (Medium of instruction: English)

-Thesis concentration: Artificial Limb (3D printed low cost functional prosthetic arm)

Bachelor of Science in Biotechnology (Fall 2011- Summer 2015)

School of Data and Sciences, Brac University, Dhaka, Bangladesh (Medium of instruction: English)

-Thesis: Industrial biotechnology (Strain improvement and biomolecular study for bioethanol production)

Employments**Lecturer, Department of Life Sciences, Independent University, Bangladesh** (February, 2021 – present)

- Biotechnology and microbiology courses including genetics, cell & molecular biology, genetic engineering etc.
- Establishing IUB's life sciences lab, club and involving students into research and extra curricular activities.
- Help expanding IUB's outreach, research with national and international collaborations.

Lecturer, School of Data and Sciences, Brac University, Bangladesh (January, 2020 – January 2021)

- Taught biotechnology courses focused on GMO, molecular biology, genetic engineering etc.
- Involved students into research and extra curricular activities and supervised undergraduate level theses.
- Helped expanding research in Biomedical engineering, various national and international collaborations etc.
- Created job opportunities for BracU students and helped students in many of their start-ups.

Chief Operating Officer, Beyond Innovations & Technologies Limited, Bangladesh (October, 2018 – November 2019)

- Management of administration, HR, accounting/finance and other operations.
- Proposal and contracts, program management, organizational and business development etc.

Graduate Teaching Assistant, Life Sciences Programs, Brac University, Bangladesh (August, 2015 – October 2018)

- Conducted all the laboratory courses in the BracU life sciences program curriculum.
- Designed and established a 4000 sqft life sciences laboratory at Brac University.
- Won numbers of national and international awards and grants individually and with departmental involvement.
- Ideated, designed thesis projects for undergraduate and masters level students and trained them in the lab.

Academic Internship (Summer 2015)

- Centre for Diarrheal Disease Research (icddr), Focus: Immunology, Cell biology.
- Institute for Developing Science and Health Initiatives (ideSHi), Focus: Infection Biology, Genetic diseases.

Startups Founder (2019-)

- **MECHAMIND** (www.mechamind.io). Edu-Tech company focused on STEAM based education for kids.
- **STAR Labs BD** - The first Community Biolab in Bangladesh. Co working lab space available for rent.

Research Activities (Peer reviewed and only as First/Corresponding Author or PI/Co-PI)

Ongoing Research/Projects:

- Bioprinting: building 3D bio printer with locally resourced material.
- Development of experimental bioink and biomaterials using fungal cells.
- 3D printed low cost functional prosthetic arm (Mechanical, Voice command and EMG signal based).
- Validation of a SARS-CoV-2 RT-LAMP kit based POC test for airport Covid 19 testing in Bangladesh.
- Non invasive CPAP automatic resuscitator and low cost incubator for Covid 19 emergency program.

Journal Publications:

- **Promon, S.K.**, Kamal, W., Rahman, S.S., Hossain, M.M., Choudhury, N. (2018). Bioethanol production using vegetable peels medium and the effective role of cellulolytic bacterial (*Bacillus subtilis*) pre-treatment. *F1000Research*, 7:271 <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5968363/>
- Jamee, R., Araf, Y., Naser, I.B., **Promon, S.K.**^C (2021). The promising rise of bioprinting in revolutionizing medical science: Advances and possibilities. *Regenerative Therapy*, 18: 133-145. ISSN 2352-3204 <https://www.sciencedirect.com/science/article/pii/S2352320421000444>

Research/ Poster Presentations:

- Sarwar, F., **Promon, S.K.**, Jahan, N., Khan, T.T. (January 2018). Molecular detection of anticancer protein Azurin in native *Pseudomonas* isolates. The 10th AFOB Regional Symposium. Dhaka, Bangladesh.
- Momin, M., Mirza, N., **Promon, S.K.**, Hossain, M.M. (April 2017). Biochemical and molecular identification of lactic acid bacteria with antimicrobial properties isolated from fermented foods and analysis of associated proteins by SDS-PAGE. 30th Annual Conference organized by Bangladesh Society of Microbiologists (BSM). Dhaka, Bangladesh.
- **Promon, S.K.**, Shembil, S., Datta, D., Hossain, M.M. (February 2017). Isolation of *Lactobacillus spp* with antimicrobial properties. 1st International Congress organized by Global Circle for Scientific, Technological and Management Research (GCSTMR). Dhaka, Bangladesh.
- **Promon, S.K.**, Hossain, M.M., Choudhury, N. (January 2015) Isolation and characterization of *Saccharomyces cerevisiae* for the production of ethanol from organic sources. Conference of Biotechnology in Health and Agriculture (ICBHA) organized by Global Network of Bangladeshi Biotechnologists (GNOBB), Dhaka, Bangladesh.
- Comparative study of serum protein activity of blood against *Shigella flexneri* in urban and slum population of Bangladesh, Department of Mathematics & Natural Sciences, Brac University, Dhaka, Bangladesh (2017).

Manuscript/Under review (as corresponding author/ Co-PI):

- Bio implants classifications, applications, and prospects: a review.
- Circulating tumor DNA in cancer diagnosis, monitoring, and prognosis.
- Prospects of 3D Bioprinting as a Possible Treatment for Cancer Cachexia.
- Prospect of 3D Bioprinting over Cardiac Cell Therapy and Conventional Tissue Engineering in the Treatment of COVID-19 Patients with Myocardial Injury.

Conferences:

- The Darwin International Conference (December 2020). Somaiya Vidyavihar, Mumbai, India.
- Global Community Biosummit 4.0. (November 2020).Massachusetts Institute of Technology (MIT), MA, USA.
- The Darwin International Conference (November 2019). Somaiya Vidyavihar, Mumbai, India.
- The Digital Naturalism Conference-Dinacon (July 2018). Koh Lon, Thailand.
- 3rd Global Network of Bangladeshi Biotechnologists (GNOBB) Conference (December, 2017), Bangladesh.
- BAS-IAP-TWAS ROCASA Young Scientists Congress (October, 2016). Dhaka, Bangladesh.

Awards, Grants and Honours

- **Global Community Bio Fellowship** led by Abel Cano and Marshall Ganz from Harvard Kennedy School. Organized by Community Biotechnology Initiative, MIT Media Lab (2020).
- **Nick Sanders Kickstarter Award** by Masood Enterprise Centre (MEC), University of Manchester, UK (2020).
- **Design for Life award** for designing automated CPAP ventilator. EDGE Foundation, Dhaka, Bangladesh (2020).
- Honorable mention in the **“ACT COVID-19 Call for Nation Hackathon 2020”** for low cost open source SARS-CoV-2 detection kit development. ICT Division, Bangladesh Government. Dhaka, Bangladesh (2020).
- **Champion, MINDSPARKS 2020** for designing a low cost EMG signal and voice operated prosthetic arm. Organized by Ahsanullah University of Science and Technology in association with IIT, Roorkee, India (2020).
- **Monetary Grant** for prosthetic research. Dhaka University Microbiology Alumni Association (DUMAA) (2019).
- **1st Runner Up of ‘The Geneva Challenge 2018’**, Designed system for tackling the challenges of climate change. International Contest for Graduate Students- organized by the Graduate Institute, Geneva, Switzerland (2018).
- **Travel Awards** in Global Community Bio Summit 2017, 2018 & 2019 organized by MIT Media Lab, MA, USA.
- **‘Highest Distinction’** (BS in Biotechnology) in BRAC University convocation (2015).
- **Vice Chancellor’s & Dean’s Awards** for academic excellence, Department of MNS, Brac University (2012-2015).
- **‘Reading Competition Award’** by British Council in association with Brac University (2012).
- **Farm-Fresh National Intercollege Science Fair Award**, Rajuk Uttara Model School & College, Bangladesh (2011).
- **Farm-Fresh National Intercollege Science Fair Award**, Rajuk Uttara Model School & College, Bangladesh (2010).
- Bangladesh government **Scholarship for Academic Excellence**, Kapasia Pilot High school, Bangladesh (2006).

Invited Talks/ Seminars/ Podium Presentations/ Webinars (selected)

- "Alumni Experience Sharing: Road to Entrepreneurship", Office of Career Services and Alumni Relations- Brac University (July 2021).
- “Genetic Modifications - Safe or Unsafe?”, Somaiya Vidyavihar, Mumbai, India (December 2020).
- “Role of Community Biolabs in Promoting Open Science”, Somaiya Vidyavihar, Mumbai, India (December 2020).
- “Enabling technologies and skilled based education for the underprivileged communities”, First International Biotechnology Congress by Intersectoral Technical Commission of Biotechnology, Guatemala (November 2020).
- “Ideation and Design Thinking- How multidisciplinary engagement helps to translate idea into product”, HULT Prize at SUST, Sylhet, Bangladesh (October 2020).
- “Science and Science Fiction, How Dreams Become Reality”, Books with Nahiyen (August 2020).
- “At Crossroads with the 'Life' Scientists”, Department of MNS, Brac University, Dhaka, Bangladesh (July 2020).
- “The Future of Health Tech and its Implications”, BUP Global Affairs Council, Dhaka, Bangladesh (April 2020).
- Speaker at “Genomics & Bioinformatics Workshop”, Community of Biotechnology (December 2019).
- Lightning talks on “Innovations in BioTech”, Global Community Biosummit 3.0. Massachusetts Institute of Technology (MIT), Cambridge, MA, USA (October 2019).
- “STEAM based skill development education program for the underprivileged communities”, Global Community Biosummit 3.0. Massachusetts Institute of Technology (MIT), Cambridge, MA, USA (October 2019).
- “Integrated Sciences & Leaping Technologies” organized by Brac University Natural Sciences Club (July 2019).
- “1st National Biotechnology Summer School”, Network of Young Biotechnologists-Bangladesh (March 2019).
- “Saving Tomorrow” organized by Brac University Leadership Development Forum, Dhaka (November 2018).
- “Gamified Molecular Biology Activities for Kids”, Global Community Biosummit 1.0. Massachusetts Institute of Technology (MIT), Cambridge, MA, USA (September 2017).

Panels Organized (selected)

- “Sustainability and Feasibility of Biomaterials” at The Darwin International Conference 2.0. Somaiya Vidyavihar, Mumbai, India (December 2020).
- “Societal Empowerment through Science Education (Asia Pacific Panel)” Learning & Education section at Global Community Biosummit 4.0. Massachusetts Institute of Technology (MIT), Cambridge, MA, USA (October 2020).
- “Asia Regional Meet up/ Asian Bio Community” at Global Community Biosummit 4.0. Massachusetts Institute of Technology (MIT), Cambridge, MA, USA (October 2020).

Workshops/ Trainings (selected)**Trained/ Organized:**

- “Integrated Sciences for Space Biology”, Bangladesh Astronomy Research Collaboration (December 2020).
- “Basic of Genome Editing with CRISPR” BioBangla at STAR Labs BD, Dhaka, Bangladesh (March 2020).
- “CRISPR Winter Training”, Sahjalal University of Science & Technology, organized by CoB (February 2020).
- “CRISPR Training 2020”, Bangabandhu Sheikh Mujibur Rahman Science and Technology University, Gopalganj, Bangladesh (March 2020).
- “Bio Hacking Workshop for All: DIY Bio”, The Tech Academy, Dhaka, Bangladesh (February, 2017).
- “Bangladesh Climate Startup Workshop”, EMK Center, Dhaka, Bangladesh (February 2014).

Attended:

- “Kickstarter Workshop”, Masood Enterprise Centre (MEC), University of Manchester, UK (March 2020).
- “Bio Design: Development of BioBricks”, Somaiya Vidyavihar, Mumbai, India (November 2019).
- “Wearable technologies for healthcare”, MIT Media Lab, Cambridge, MA, USA (October 2019).
- “CRISPR Cas9/ Cas12a workshop”, MIT Department of Biology, Cambridge, MA, USA (October 2019).
- “Idea to Product: Business Development”, Graduate Institute, Geneva, Switzerland (November 2018).
- “CRISPR: A Genome Editing Technology”, Brac University, Dhaka, Bangladesh (November 2017).

Teaching Experience/ Theses Co-supervision**Undergraduate courses:**

- Core laboratory courses of Microbiology program and Biotechnology Program (2015-2018).
- Introduction to Biology, Introduction to Biotechnology and Genetic Engineering, GMOs & Biosafety (2020).
- Molecular Genetics, Cell Biology, Recombinant DNA Technology, Biotechnology and Genetic Engineering: Concepts and Applications, Student Symposium in Biochemistry, Microbial Genetics, Human Physiology, Student Symposium in Microbiology, Senior Project (2021-).

Theses/ Projects:**Brac University**

- Prospects of 3D bioprinting as a possible treatment for cancer cachexia (2021).
- Prospects of heart tissue bioprinting for COVID-19 recovered patients with irreversible heart damage (2021).
- Prospects of Lung Tissue Bioprinting for SARS-CoV-2 Recovered Patients with Irreversible Lung damage (2021).
- Molecular detection of anticancer protein *Azurin* in native *Pseudomonas* isolates (2018).
- Development of Lactic Acid Bacteria starter culture for probiotic yogurt (2018).
- Enteric pathogenicity of multidrug-resistant *Pseudomonas spp.* isolated from commercial UHT milk (2018).
- Antimicrobial activities of *Lactoferrin* extracted from commercially available milk samples (2017).
- Screening of Lactic Acid Bacteria with Antimicrobial Property Isolated from Fermented Foods (2017).

Independent University, Bangladesh

- Prospects of 3D bioprinting for bone tissue and cartilage restoration (2021-)

Organizations/ Entrepreneurial Activities

Founder, MECHAMIND www.mechamind.io

- Designed and built affordable functional prosthetic arm and other healthcare devices.
- Successfully trained specific biology techniques (microbial culture, microscopy, DNA isolation, gel electrophoresis etc.), 3D printing, and prosthetic arm assembly to kids as a part of MECHAMIND's education program in schools for underprivileged communities.
- Designed STEAM education kit for middle-school students in Bangladesh.

Founding Member at CCRTB (Cancer Care and Research Trust, Bangladesh) www.ccrtd.org

- Working on administration, outreach, fund raising, cancer awareness and cancer research.

Co-Founder, STAR Labs BD

- Biology, Engineering and Arts community lab space for rent. The first community biolab in Bangladesh.
- Developed DIY laboratory equipment practice and involved enthusiasts through open hardware projects.

Founding Member, Fab Lab Society, Dhaka, Bangladesh (open lab space for engineers, artists and more).

Founder, iGEM Bangladesh (Building the first iGEM team from Bangladesh to promote synthetic biology)

Co-Founder, Websytar www.websytar.com (Student support service IT company).

Affiliations

Memberships:

- **Member**, Community Biotechnology Initiative (MIT Media lab, Massachusetts, USA) www.biosummit.org
- **Member**, iGEM Human Practices Committee 2021 (Cambridge, MA, USA) [www.igem.org/Human Practices](http://www.igem.org/Human_Practices)
- **Rotarian** at Rotary Club Dhaka Mahanagar, Rotary International. www.rcdhakamahanagar.org
- **Executive Committee Member**, Education Section at Global Network of Bangladeshi Biotechnologists (GNOBB). www.gnobbb.org (Promoting Biotechnology, developing research proposal, organizing events, design, planning).
- **Member** at The Science Entrepreneur Club, UK, London. www.science-entrepreneur.com

Advisor:

- Community of Biotechnology (CoB), Bangladesh. www.cobt.org
- International Society of Computational Biology (ISCB-RSG-Bangladesh), Bangladesh.
- Media Lab Nepal (MLN), Nepal.

Judge/ Jury member:

- International Biotech Symposium 2021 organized by Community of Biotechnology.
 - 21 Ovation- Scientific poster competitions by Brac University Natural Sciences Club.
 - NYBB 5th National Young Biotechnologists Congress 2020.
 - University level Competitions Idea challenge, Scientific and Business competitions such as Hult Prize.
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Leadership and Volunteering Involvements (Selected)

- **Organizing Committee member**, "Global Community Biosummit 4.0", MIT Media lab (2020)
- **Organizing Head**, "The First Brac University Science Exhibition" (2018).
- **Organizer**, the 'World Climate Safety' awareness campaign powered by AVAAZ -avaaz.org (2014).
- **Vice President**, Natural Sciences Club, Brac University (July 2013- April 2014).
- **Director**, Adventure Club, Brac University (May 2012- April 2013).
- **Member**, at International Youth Council (IYC), New York, USA (2019-)

Courses as Selected Global Student:

- How to Grow (Almost) Anything, MIT Media Lab, <http://fab.cba.mit.edu/classes/S63.21> (Spring 2021).
- Supermind Design, MIT Centre for Collective Intelligence, <https://cci.mit.edu/> (Fall 2020).

Skills & Competencies

- **Research/Laboratory based:** DNA isolation and purification, Isolation of plasmid, PCR, Gel electrophoresis, Protein extraction and partial purification, SDS PAGE, Western Blotting, Preparation of competent cell, Transformation, ELISA technique, Size exclusion column chromatography, Cell culture, Microbiological techniques, Bioinformatics tools.
- **Language:** Bengali (native), English (CEFR C1), Hindi & Urdu (speaking and listening), Spanish (beginners)
- **Software:** Microsoft Office, Bioinformatics tools, Adobe Photoshop, Illustrator and Premier Pro, Blender 3D, CURA 3.0, Filmora 9, Audacity etc.
- **Interests:** Mixed Martial arts, SDGs, Artificial Intelligence, Filmmaking, Architecture, and Space travel.
- **Attributes:** Operations Management, Future Thinking, Turning idea into Service, Problem solving, Teaching, Leadership.

References

1. Dr. M. Mahboob Hossain

Professor, Microbiology Program, Department of Mathematics and Natural Sciences,
School of Data and Sciences, Brac University
Dhaka, Bangladesh
Phone: +8801715107660
Email: mmhossain@bracu.ac.bd, mahboob.hossain02@gmail.com

2. Prof. Dr. Shah M Faruque

Head of Department of Life Sciences,
Dean, School of Environment & Life Sciences, Independent University Bangladesh (IUB)
Dhaka, Bangladesh
Phone: +880 1713-093857
Email: shah.faruque@iub.edu.bd, shah.faruque@gmail.com

3. M H M Mubassir

Lecturer (on leave), Biotechnology Program, Department of Mathematics and Natural Sciences,
School of Data and Sciences, Brac University
Graduate Research Student, University of Georgia, Georgia, USA
Email: mubassirmhm@gmail.com