



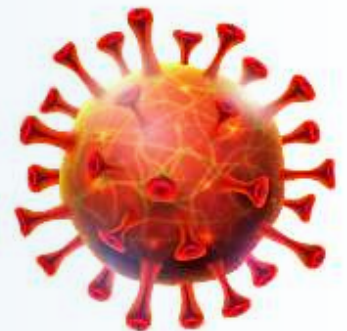
Bangladesh Society for
Microbiology, Immunology,
and Advanced Biotechnology
(BSMIAB)



Community of
Biotechnology (COB)

www.bsmiab.org/conference-2020

**BSMIAB-COB INTERNATIONAL
CONFERENCE 2020**
FULLY VIRTUAL CONFERENCE
NOVEMBER 6-8



The 1st BSMIAB-COB
International Conference on COVID-19 Pandemic

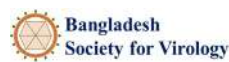
November 6 (Fri)- 8 (Sun), 2020

CONFERENCE BOOK

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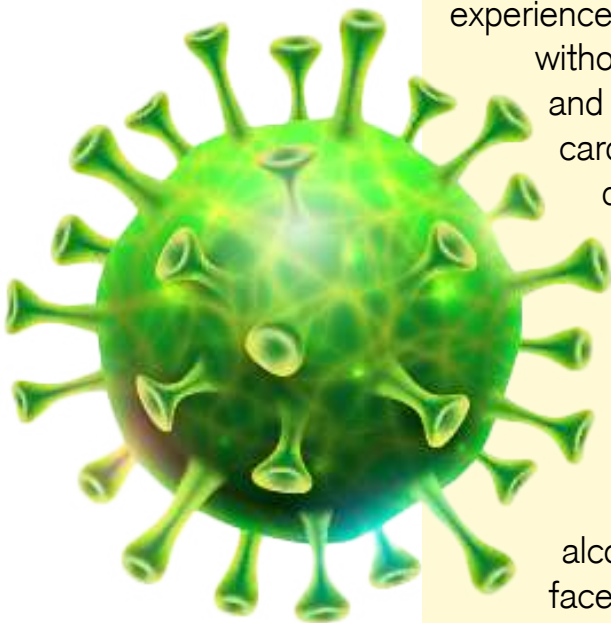
From December 2019 near in Wuhan City, Hubei Province, China whole world fighting with **CoronaVirus**

Coronavirus disease (COVID-19) is an infectious disease caused by the newly discovered "SARS-CoV-2" after named coronavirus .

Most people infected with the SARS-CoV-2 virus will experience mild to moderate respiratory illness and recover without requiring special treatment. Older people, and those with underlying medical problems like cardiovascular disease, diabetes, chronic respiratory disease, and cancer are more likely to develop serious illness.

The best way to prevent and slow down transmission is to be well informed about the SARS-CoV-2 virus, the disease it causes and how it spreads. Protect yourself and others from infection by washing your hands or using an alcohol based rub frequently and not touching your face.

The virus spreads primarily through droplets of saliva or discharge from the nose when an infected person coughs or sneezes, so it's important that you also practice respiratory etiquette (for example, by coughing into a flexed elbow).



COVID-19



COVID-19 is still imposing a global threat on overall livelihood and economy. In order to overcome this, scientists all over the world are sacrificing their time in deciphering the COVID-19. In addition, many biologists in Bangladesh are putting strenuous efforts to contribute to the research that would benefit the current global crisis.

The “1st BSMIAB-COB International Conference on COVID-19 Pandemic”, a fully virtual conference hosted by Bangladesh Society for Microbiology, Immunology and Advanced Biotechnology (BSMIAB) and Community of Biotechnology (COB) brings together the global basic translation as well as applied researchers in order to showcase their findings regarding the SARS- CoV2 infection, its epidemiology, pathogenesis, vaccines and so on. The conference is a three-day virtual event from November 6 (Fri) to November 8(Sun) 2020, comprising 5 oral sessions, a poster session, and a quiz session on COVID-19 research.

The conference aims to achieve the following::

- Shed light on selected research/review papers that would be presented orally by the researcher themselves.
- Enlighten participants with a quiz on COVID-19 and related diseases.
- Promote research conducted by the native scientists
- Create the opportunity for research interaction with investigators across the world.

Welcome Message

Dear All,

As the world battles the army of viruses and tries to restore peace, I hope this message finds you and your loved ones in the best of health during these trying times.

I would like to heartily welcome all the participants and attendees to the 1st BSMIAB-COB International Conference. It is the first of its kind ever held which has been possible by the generosity of our sponsors and fellow organizers. Under the theme, "COVID-19", we hope to share and spread the recent findings and discoveries made by researchers throughout the world. The fully virtual conference would be loaded with 5 sessions on xx,cc,vv,bb and ww.

More than 70 participants with engaging and renowned professionals from across the country would be present in high-quality discussions. We firmly believe that this conference would be invaluable in deepening your knowledge and extending your professional network.

Once again, it is with great pleasure I welcome you all to the virtual event. Please share your valuable expertise with us all and we hope you will be able to takeaway some learning from the sessions arranged. Thank you.

Sincerely yours,

With the coronavirus pandemic still raging and posing a global threat, we hope everyone reading this is safe and in good health. COVID-19 is causing extensive illness and mortality, crashing down people's livelihood and economy. With an astonishing/mounting death toll of 1.21M and 47.3M confirmed cases till 3rd November, 2020, the number is still not expected to decline anytime soon.

To combat this global crisis, this pandemic calls for urgent help from scientists all over the world. In the light of this plea for help, Community of Biotechnology (COB) and Bangladesh Society for Microbiology, Immunology and Advanced Biotechnology (BSMIAB) is hosting the 1st BSMIAB-COB International Conference on COVID-19 Pandemic. This conference aims to highlight research and review papers regarding COVID-19 as well as holding a quiz session on COVID-19. Due to unavoidable circumstances, the conference will be virtual, comprising of 5 scientific sessions and a quiz session from 6th to 8th November 2020. This international conference will assemble applied researchers and honorable speakers to discuss their findings on COVID-19 and provide opportunities for research interaction with global investigators.

We take great pride in welcoming everyone to the 1st BSMIAB-COB International Conference on COVID-19 Pandemic and look forward to your participation. We are dedicated to bringing genuine and reliable contributions to the scientific community. Your presence and participation will help contribute to a fruitful conference.

Sincerely yours,

Mohammad Rafiqul Islam, PhD

President,
1st BSMIAB-COB International
Conference on COVID-19 Pandemic



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Md Jamal Uddin, PhD

General Secretary,
1st BSMIAB-COB International
Conference on COVID-19 Pandemic



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Organizer Details

Bangladesh Society for Microbiology, Immunology, and Advanced Biotechnology (BSMIAB)

Bangladesh Society for Microbiology, Immunology, and Advanced Biotechnology (BSMIAB) is a non-profit organization. Biotechnologists, microbiologists, and immunologists are working to improve agriculture, health, environment, medicine, pharmaceuticals, welfare, and food safety. BSMIAB was established for enhancing communication within the biotechnology and immunology professionals, to promote the exchange of information and material for the study between individuals and organizations in human, plant, and animal, to encourage research in this field and to establish and maintain liaison with the general public, regulatory bodies other bodies with related interests. It is a global association for Bangladeshi biotechnology, microbiology, and immunology professionals. It is run by an elected Executive team every two years. Its members come from Bangladeshi who are living all around the world and are in academia, research, government, industry, and practice.

BSMIAB has started its operation in 2013 in Bangladesh and Bangladeshi Scientist Dr. Md Jamal Uddin (Hasan), currently working as Research Professor at Department of Pharmaceutical Sciences, Ewha Woman's University, Korea was the founder of the association.

Since inception in 2013, BSMIAB has tried to build bridges between researchers/academicians & stakeholders by providing information on the latest technologies in biotechnology, microbiology, and immunology sector wherever achieved around the World's and brought forward the updated knowledge at the doorstep of Bangladeshi scientists.

Community of Biotechnology (COB)

Community of Biotechnology (COB) is a national non-profit organization in Bangladesh, founded in May 2017. The organization works with students and researchers, enhancing their expertise and future scopes in their respective fields of biology. Additionally, the community involves the assessment of individuals from both public and private universities of the country and offers hands-on training sessions. Researchers and students from various biological fields - biotechnology, molecular-biology, microbiology, genetic engineering, medicine, pharmacy, biostatistics, bioinformatics, pure sciences and many more, have numerous opportunities to learn, alongside working with COB. Within a span of 3 years, it has created countless opportunities for students in such fields, to establish a strong base of their major and, easily communicate and share ideas with their mentors from different fields. COB offers various training sessions including bioinformatics, oncology, CRISPR-cas9 etc., which involve mostly practical and remote modules for the national students. Moreover, they have also proposed innumerable research competitions and projects within the students of the community. COB conducts frequent workshops and webinars with top-most scientists from around the world. Furthermore, we have collaborated with the Executive Director of Addgene, Dr. Joanne Kamens, who is also an advisor of COB. Dr.Kamens has founded the current Boston chapter of the Association for Women in Science and was also the Director of the Healthcare Businesswomen's Association Mentoring Program for 3 years. Community of Biotechnology, also collaborated with Kate Adamala, a Synthetic Biologist and Professor of Genetics, Cell Biology and Development at the University of Minnesota, USA. Our future endeavors also include - working with David Andrew Sinclair, who is a Professor of Genetics and Co-Director of the Paul F. Glenn Center for the Biology of Aging at Harvard Medical School. COB has also planned on working with Sophien Kamoun, a Tunisian biologist, a Senior Scientist at the Sainsbury Laboratory and a Professor of Biology at the University of East Anglia. On the list of collaborations, we also have Mr. Rino Rappuoli, the Chief Scientist & Head of External Research and Development (R&D) at GlaxoSmithKline (GSK) Vaccines. These national and international collaborations will enable us to open the gates of more accessible R&D index, as well as a surging internship scope for the students of Bangladesh. Our mission and vision involve outstretching the possibilities of STEM in this country and to assist the underprivileged students of this community in both fields of study and research. We guide and counsel researchers, faculties and students for their career paths and emphasize on their abilities for future research. Till now, students working under the Community of Biotechnology have published more than 20 research papers in multiple reputed journals. Our plan is to make the best out of all the future scientists of Bangladesh and provide the opportunity for this country to serve a huge role in the scientific fields of the world.

**PROGRAM BOOK
CONTENTS**

OVERVIEW

Title	1st BSMIAB-COB International Conference on COVID-19 Pandemic
Date	6,7 and 8 November, 2020
Hosted by	Bangladesh Society for Microbiology, Immunology and Advanced Biotechnology (BSMIAB) and Community of Biotechnology (COB)
Official Language	English, Bengali
Program	Oral Session, E-poster, Quiz Competition, Invited Lecture Sessions, Virtual Exhibition

Email: bsmiab.cob.covidconference@gmail.com
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Phone: +8801774594574 or +8801716350628

Bangladesh Society for Microbiology, Immunology and Advanced Biotechnology (BSMIAB)

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Phone: +8801716350628

Community of Biotechnology (COB)

Email: cbiotechbd@gmail.com
Website: www.cobiotech.org
Phone: +8801712-983992

Organizing Committee



President

Mohammad Rafiqul Islam, PhD

President of Bangladesh Society for Microbiology, Immunology, and Advanced Biotechnology
Principal Scientific Officer of Bangladesh Agricultural Research Council, Dhaka, Bangladesh.



General Secretary

Md Jamal Uddin, PhD

Department of Pharmaceutical Sciences,
Ewha Womans University, South Korea.



Treasurer

Dr. Md Golzar Hossain

Associate Professor Laboratory of Virology
Department of Microbiology and Hygiene
Bangladesh Agricultural University Mymensingh,
Bangladesh.



Executive Member

Yusha Araf

Chief Executive Officer (CEO) & Founder at
Community of Biotechnology.
Genetic Engineering and Biotechnology, Shahjalal
University of Science and Technology (SUST).



Executive Member

MD. Hasanur Rahman

Chief Creative and Branding Officer at Community
of Biotechnology.
Biotechnology and Genetic Engineering,
Bangabandhu Sheikh Mujibur Rahman Science &
Technology University (BSMRSTU).

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Biotechnology & Genetic Engineering, Jahangirnagar
University



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Nafisa Ahmed

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Sciences, Brac University



Tanjim Ishraq Rahaman

Assistant Director of Visual Arts, Community of
Biotechnology
Department of Biotechnology and Genetic Engineering
Bangabandhu Sheikh Mujibur Rahman Science and
Technology University.



Nusrat Afrin Anamika

Department of Pharmacy, Chittagong University
Deputy Director of Public Relationship at COB



Program at a glance

Date	Session	Session Name
6th Nov	Session-1	Viral structure, genomic variation, and distribution
6th Nov	Session-2	Treatment/Alternative Medicine
7th Nov	Session-3	Pathogenesis/ Immunopathology
7th Nov	Session-4	Development of Diagnostics Kits and Vaccines
8th Nov	Session-5	Evolutionary Origin/Host Range/Zoonosis

November 6, Friday

	Time	Program
	10:00-10:05 AM	Inauguration Speech
Session-1	10:06 - 10:15 AM	Speech by session chair Professor Dr. Md. Anwar Hossain
	10:20 – 10:40 AM	Speech by invited speaker Dr Mohammad Jakir Hosen
	10:40 - 11:00 AM	Oral Presentation
	11:00 - 03:00 PM	Intermission
Session-2	03:00 - 03:10 PM	Speech by session chair Dr. Md. Tofazzal Islam
	03:15 - 03:35 PM	Speech by invited speaker Mohammad Nazrul Islam, PhD
	03:35 - 03:55 PM	Speech by invited speaker Md Nabiul Islam, PhD
	03:55 - 04:15 PM	Oral Presentation
	04:15 - 04:35 PM	Poster Exhibition
	04:35 - 04:40 PM	Program Day Ending Speech



November 7, Saturday

	Time	Program	
Oral Presentation	10:00 - 10:05 AM	Inauguration Speech	
	Session-3	10:06 - 10:15 AM	Speech by session chair Dr. Samir Kumar Saha
		10:20 - 10:40 AM	Speech by invited speaker Dr. Md Ataur Rahman
10:45 - 11:05 AM		Speech by invited speaker Rashedul Islam Rony	
	11:05 - 11:20 AM	Oral Presentation	
Poster Presentation	Session-4	11:20 - 11:40 AM	Intermission
		11:40 - 11:50 AM	Speech by session chair Dr. Firoz Ahmed
		11:55 - 12:15 AM	Speech by invited speaker Dr. Nazrul Islam
		12:15 - 12:35 PM	Speech by invited speaker Dr. Shahriar Rozen
		12:35 - 12:50 PM	Oral Presentation
		12:55 - 01:15 PM	Quiz Round-1 & Poster Exhibition
		01:15 - 01:20 PM	Program Day Ending Speech

November 8, Sunday

	Time	Program
Covid-19 Quiz Competition	10:00 - 10:05 AM	Inauguration Speech
	10:06 - 10:20 AM	Speech by session chair Dr. Abu Saleh Mahfuzul Bari



Session-5

10:25 – 10:45 AM	Speech by invited speaker Professor Dr. Md. Masudur Rahman
10:50 - 11:10 AM	Speech by invited speaker Dr. Md Golzar Hossain
11:15 - 11:35 AM	Quiz Round-2
11:40 - 12:00 PM	Prize Giving Ceremony
12:00 - 12:10 PM	Conference Ending Speech

****Note:** With due respect to all Chairs, Speakers and Participants from all over the globe, the time schedules is based on Dhaka, Bangladesh local time which is 6 hours ahead from Coordinated Universal Time (UTC+06:00). Please find your local time and attend the conference timely!



The 1st BSMIAB-COB
International Conference on COVID-19 Pandemic

November 6 (Fri)- 8 (Sun), 2020



Selected E-Poster and Oral Presentation list

Role/ Abstract Code	Name/Title	Affiliation/Presenting Author
Viral Structure and Genomics (Session-1) (10:00 - 11:00 AM)		
Chair	Professor Dr. Md. Anwar Hossain	Vice Chancellor, Jashore University of Science and Technology
Invited Speaker	Dr Mohammad Jakir Hosen Invited Talk: COVID-19 outbreak in Bangladesh: what lessons can be learnt for imminent pandemics?	Professor Department of Genetic Engineering and Biotechnology, Shahajalal University of Science and Technology
VSG-101	Molecular docking and dynamics study of natural compound for potential inhibition of main protease of SARS-CoV-2	Ariful Islam Department of Biotechnology and Genetic Engineering University of Rajshahi, Rajshahi, Bangladesh
VSG-102	Assessment of ACE2, CXCL10 and Their co-expressed Genes: An In-silico Approach to Evaluate the Susceptibility and Fatality of Lung Cancer Patients towards COVID-19 Infection	Tousif Bin Mahmood Noakhali Science and Technology University, Noakhali-3814, Bangladesh
VSG-103	Virtual screening, molecular dynamics and structure–activity relationship studies to identify potent approved drugs for Covid-19 treatment	Sourav Biswas Red Green Research Center, Chittagong Division/ University of Chittagong
Treatment / Alternative medicine (Session-2) (03:00 - 04:45 PM)		
Chair	Dr. Md. Tofazzal Islam	Professor, Bangabandhu Sheikh Mujibur Rahman Agricultural University (BSMRAU), Gazipur
Invited Speaker	Mohammad Nazrul Islam, PhD Invited Talk: Pharmacological potentials of Nigella sativa seed and its bioactive constituents to combat COVID-19 pandemic	Department of Biotechnology, Sher- e-Bangla Agricultural University, Dhaka, Bangladesh
Invited Speaker	Md Nabiul Islam, PhD Invited Talk: Self-confidence as an immune-modifying psychotherapeutic intervention for COVID-19 patients and understanding of its connection to CNS-endocrine-immune axis	Yamaguchi University Graduate School of Medicine
TAM-201	Honey: A prospective therapy to fight against COVID-19	Khandkar Shaharina Hossain ABEx Bio-Research Center, East Azampur, Dhaka-1230, Bangladesh
TAM-203	Targeting vitamin C as a potential therapeutic regime for alleviating the complications associated with COVID-19	Mithila Farjana Biotechnology and Genetic Engineering Discipline, Khulna University
TAM-205	Repurposable Drug Candidates are Potential Therapeutic Target against Global SARS-CoV-2 Crisis	Fahmida Begum Mina Department of Genetic Engineering and Biotechnology, University of Rajshahi, Rajshahi-6205, Bangladesh



Role/ Abstract Code	Name/Title	Affiliation/Presenting Author
Pathogenesis / Immunotherapy (Session-3) (10:00 - 11:05 AM)		
Chair	Dr. Samir Kumar Saha	Executive Director, Child Health Research Foundation
Invited Speaker	Dr. Md Ataur Rahman Invited Talk: Prospects of intermittent fasting against SARS-CoV-2 infection: Crosstalk among calorie restriction, autophagy and immune response	Center for Neuroscience, Korea Institute of Science and Technology(KIST), 5 Hwarang-ro 14-gil, Seongbuk-gu, Seoul 02792, Republic of Korea
Invited Speaker	Rashedul Islam Rony Invited Talk: Challenges in de novo assembly of SARS-CoV-2 genome	PhD Candidate, University of British Columbia - Vancouver, Vancouver (UBC)
PIM-302	Women's knowledge, attitude and perceptions towards COVID-19 in lowermiddle-income countries: a representative cross-sectional study in Bangladesh	Riyan Al Islam Reshad Shahjalal University of Science and Technology, Sylhet-3114
PIM-303	Current knowledge on mechanisms involved in SARS-CoV-2 infection and kidney diseases	Md. Sarwar Zahan Bangabandhu Sheikh Mujibur Rahman Science And Technology University,Gopalganj
Developments of diagnostics kits and vaccines (Session-4) (11:40 - 01:20 PM)		
Chair	Dr. Firoz Ahmed	Professor,Department of Microbiology, Faculty of Science, Noakhali Science and Technology University
Invited Speaker	Dr. Nazrul Islam Invited Talk: Research Methodology in Health Research with special emphasis on COVID-19 pandemic.	Research Fellow, Medical Statistics, University of Oxford
Speaker	Dr. Shahriar Rozen Invited Talk: Evidence-based decision making to control COVID-19 in Bangladesh	Senior Policy Lead Health and Wellness Promotion, Alberta Ministry of Health, Canada
DKV-401	COVID-19 LAB: A Whistle stop Journey at a Tertiary Health Care Centre.	Soumyashree Mohapatra Veer Surendra Sai Institute of Medical Sciences And Research
DKV-402	Epitope-based immunoinformatics approaches on COVID-19 vaccines designing	Masuma Afrin Taniya Department of Microbiology, School of Life Sciences, Independent University, Dhaka, Bangladesh



Role/ Abstract Code	Name/Title	Affiliation/Presenting Author
Evolutionary origin / Host range / Zoonosis (Session-5) (10:00 - 12:10 PM)		
Chair	Dr. Abu Saleh Mahfuzul Bari	Professor, Department of Pathology, Faculty of Veterinary Science, Bangladesh Agricultural University
Invited Speaker	Professor Dr. Md. Masudur Rahman Invited Talk: A review on the severe acute respiratory syndrome coronavirus-2 (SARS-CoV-2) in light of past human Coronavirus outbreaks	Professor at Department of Pathology, Faculty of Veterinary and Animal Science, Sylhet Agricultural University, Sylhet 3100, Bangladesh.
Invited Speaker	Dr. Md. Golzar Hossain Invited Talk: SARS-CoV-2 host diversity: An update of natural infections and experimental evidence	Associate Professor Laboratory of Virology Department of Microbiology and Hygiene Bangladesh Agricultural University Mymensingh, Bangladesh



**The 1st BSMIAB-COB
International Conference on COVID-19 Pandemic**

November 6 (Fri)- 8 (Sun), 2020



Our Sponsor

Abroad-Bangladesh Exclusives (ABEx) BioCare, a privately held non-profit company of Bio-Research and Health where people can get various exclusive, original and quality services/items obtained from abroad (mainly from Korea, London, and Malaysia) and Bangladesh. Moreover, it is an initiative of the online marketing system for promoting the online business of daily health essences, and research support services/items. In August 2017, ABEx BioCare has started its journey with the name of AB Exclusives with the promotion of healthcare items. In order to efficiently improve the health and research support for animal, plant, and human in Bangladesh, ABEx BioCare is being governed by a group of professionals and experts who are experienced in molecular and cellular biology, immunology, and advanced biotechnology for more than 15 years in South Korea, USA, and Bangladesh.

Our Mission

To provide exclusive, original and quality services/items to our country people at a reasonable cost/low hazard is our primary interest. The company also dreams and hopes for the long-term goals such as creating employment with ethics, reducing replicated products, opening specialized areas of product-based research support entitled "ABEx Bio-Research Center". Specifically, the missions are segregated into two categories as below:

- To create and enlarge markets among the public, grow trusts for online markets, and meet basic needs for employment, health, and research.
- To create employment among hard-working youth and motivate youth for developments of lab based-research and education with ethics.

Our Vision

- To provide the best service considering the services available in developed countries to facilitate quality human health care, livestock health care, and research support services/ items.

Our Services

- Providing original and quality human health care, livestock health care, and research support services/ items.

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Address : House No. 77, Azampur, [Imam Bukhari (RA) Lane], Muktijoddha Saroni Road, Dakshinkhan, Uttara, Dhaka-1230, Bangladesh

Our Sponsor



X-Genomics is an initiative that provides support for genomics and bioinformatics to the broader research community. We aim to collaborate with genomic research projects and develop a new bioinformatics platform to advance the research and clinical diagnosis using sequencing technologies. Our professional services include Genomic data analysis, Assembly, RNA-sequencing, Mutation calling, Epigenomics, Microarray, Statistical analysis of data, Bioinformatics consulting etc.

Under our “Open Science Collaboration Initiative for Advancing Communities”, we have collaborated with different advancing communities and countries to provide specialized free training sessions in Bioinformatics, from which selected participants were given the opportunity to join us for relevant research work and publication. We are looking forward to keep rolling the wheel of potential research collaboration, skill exchange with different continents. X-Genomics has been working on making science training more accessible and open to developing communities. Bioinformatics enthusiasts benefitted from our FREE Training Program during this pandemic situation. X-Genomics provides series of free online training sessions on special topics in Genomics in both Bangla and English languages. Our workshops are uploaded to the YouTube channel.

This pandemic shows that our future healthcare, agro-economy, pharma and few others concerned sectors need genomic research more than ever. But we need to support to build skilled researchers out of students, life science enthusiasts or relevant concerned communities. X-Genomics has taken steps to support that community by our research and services.

Looking forward to support more enthusiasts by this initiative in our country and whoever wants to be a part of this.

Website: www.x-genomics.com

E-mail: xgenomics.bd@gmail.com

Phone: +8801755-032985

Dhaka, Bangladesh



Session Chairs Details

Professor Md. Anwar Hossain, the current Vice Chancellor of Jashore University of Science and Technology (JUST) and an outstanding figure in the field of molecular microbial genetics, bioinformatics and vaccine development, has already established himself as an eminent scientist in home and abroad. He has been awarded BAS-National Professor Dr M Innas Ali Memorial Gold Medal Award 2017 and University Grants Commission (UGC) best researcher award 2011. He is one of the most profile researchers on Genomics and bioinformatics with over 88 referred publications, 3 chapters in books, over 50 conference presentations, proceedings and abstracts in various countries of Asia, Europe and USA.



Professor Dr. Md. Anwar Hossain

Vice Chancellor of Jashore University of Science and Technology

Dr. Samir Kumar Saha is an eminent Bangladeshi microbiologist and public health expert. He is the professor, senior consultant and head of the department of Diagnostic Division of Microbiology at the Dhaka Shishu Hospital for children and also the executive director of The Child Health Research Foundation (CHRF) at the Bangladesh Institute of Child Health. Saha is known for his research on pediatric infectious diseases specializing in pneumonia, meningitis and enteric fever. He is focused on finding the true burden of these diseases, their causative organisms, drug resistance patterns and serotype distributions. In 2017, Saha was the first scientist from a developing country to receive the American Society for Microbiology (ASM) award for his outstanding research in Clinical Microbiology. Following which he has been elected to Fellowship in the American Academy of Microbiology. The same year Saha received the UNESCO Carlos J. Finlay Prize in Microbiology, along with Shahida Hasnain, also a renowned Pakistani microbiologist for research and work in the field of microbiology.



Dr. Samir Kumar Saha

Executive Director, Child Health Research Foundation

The November 2017 edition of National Geographic Magazine published “Here’s Why Vaccines Are So Crucial”, an article revolving around the need and impact of vaccines in society and vividly highlighted the lifelong dedication of Saha’s fight to beating pneumonia and other pneumococcal infections in Bangladesh. After the publication of the article Saha was invited to attend a panel discussion on the various aspects of pneumococcal vaccines and vaccines in general, hosted and broadcast by National Geographic, and the Bill and Melinda Gates Foundation at the International Vaccine Access Center, the Johns Hopkins Bloomberg School of Public Health, Baltimore, USA. Saha played a key role in implementing vaccines against two bacteria that cause meningitis and pneumonia in Bangladesh. It had a direct positive impact on the health of children in the country. As a leading researcher in pediatrics, he has been performing surveillance on invasive childhood diseases in Bangladesh for more than a decade. He has also led research into the resistance to treatment of some pneumococcal diseases. Saha along with his team designed and set up four sentinel hospital surveillance network in Bangladesh. The “community adjusted hospital-based surveillance” is a model of surveillance that records data of the burden of diseases at a population level. The surveillance data is generated on invasive childhood diseases caused by *Streptococcus pneumoniae*, *Haemophilus influenzae*, *Salmonella typhi/paratyphi*, etc. Saha has published more than 150 papers in peer-reviewed journals, mostly exploring the topics of childhood pneumonia and meningitis. A member of Pneumococcal Awareness Council of Experts (PACE), he also heads the steering committee of the Coalition Against Typhoid (CaT) of the Sabin Vaccine Institute. He is an associate of the Department of International Health of Johns Hopkins University, Maryland and adjunct scientist of International Centre for Diarrhoeal Disease Research, Bangladesh (ICDDR,B). He is also a member of the National Committee for Immunization Policies of the Government of Bangladesh.



Dr. Firoz Ahmed is currently a professor and chairman at the Department of Microbiology, Noakhali Science and Technology University (NSTU), and a former Associate Supervisor at ICDDR, B.

Dr. Firoz Ahmed attained his MS in Microbiology from the University of Dhaka in 1997. From 2003 till 2008, he worked as a research fellow in many internationally renowned institutions namely, Institut Pasteur (Paris, France), CDC (Atlanta, USA), Yamaguchi Medical University (Japan), John Hopkins University (USA), and Heidelberg University and also companies such as, MP Biomedicals (Singapore), SD Bioline (South Korea), where he worked at important positions during his time at ICDDR, B (2014-2017).

Dr. Firoz has more than 30 publications in peer-reviewed journals. He has been playing significant roles in various research projects which include basic microbial research and serving for COVID-19 RT-PCR testing in Noakhali and Laxmipur. Lately he has shown the first detection of SARS-CoV-2 genetic material in the vicinity of COVID-19 isolation centers through wastewater surveillance in Bangladesh. He is also involved in growing COVID-19 antigen and antibody assays in collaboration with Gonoshasthaya Kendra. He has also completed a pilot study on low-cost service for bad cholesterol calculation and a project on low-cost quality control serum for essential blood tests in Bangladesh. At the moment he is working on the development of several rapid diagnostics via grants awarded by the Honorable Prime Minister of Bangladesh.



Dr. Firoz Ahmed

Professor, Department of Microbiology,
Faculty of Science, Noakhali Science
and Technology University

Dr. A S Mahfuzul Bari is a professor at the Department of Pathology, Faculty of Veterinary Science in Bangladesh Agricultural University (BAU) and former Vice-Chancellor of Chattogram Veterinary and Animal Sciences University (CVASU). He started his journey as a lecturer in 1982.

In 1989, Dr. Bari earned his doctoral degree in Pathology from the University of Liverpool in the United Kingdom following which he completed his post-doctoral studies at Nottingham Trent University. Later in 2004, he worked as a research fellow for two years at the National Institute of Animal Health situated in Japan. He has also served as a visiting professor at the University

of Tokyo in 2007. A year later, he had joined the Avian Influenza Technical Unit at FAO as the National Consultant from Bangladesh and continued his term for about a year.

Dr. Bari has 53 national and international scientific papers under his belt. He has been awarded a number of prestigious titles during his career. A few are the Commonwealth Award UK, (1986); Best Research Award; Bangladesh Academy of Science (1991); National Agricultural Research Organization (NARO) Award, Japan (2001).



Dr. Abu Saleh Mahfuzul Bari

Professor, Department of Pathology,
Faculty of Veterinary Science,
Bangladesh Agricultural University.

Former Vice-chancellor,
Chattogram Veterinary and Animal
Sciences University



Dr. Md. Tofazzal Islam is a Professor of the Department of Biotechnology of Bangabandhu Sheikh Mujibur Rahman Agricultural University (BSMRAU), Bangladesh. He obtained B Sc Ag (Hon) and M Sc (Ag) in Agricultural Chemistry from the Bangladesh Agricultural University (BAU), securing First Position in the First Class in both the cases in order of merit. He went to Japan as a Japanese government scholar and did MS (1999) and PhD (2002) at Hokkaido University with distinction. He joined Bangladesh Open University as a lecturer in 1994 and became an Assistant Professor (1997), Associate Professor (2004) and Professor (2010). On July 1, 2010 he joined BSMRAU as a Professor in the Department of Biotechnology. He led the Department of Biotechnology as Head, launched MS and Ph D programs and established laboratories with state-of-art facilities from externally funded projects. He also served the BSMRAU as Director (International Affairs) and Director (Outreach).



Dr. Md. Tofazzal Islam

Professor, Bangabandhu Sheikh Mujibur Rahman Agricultural University (BSMRAU), Gazipur.

Prof. Islam is an internationally reputed microbial chemical ecologist. He has made outstanding contributions to understanding chemotaxis and subsequent differentiation of phytopathogenic oomycete zoospores by host metabolites, the roles of novel secondary metabolites from non-host plants and environmental bacteria in defense against zoosporic phytopathogens and biological control of oomycete phytopathogens by plant-associated bacteria. He discovered the activity and mode of actions of more than 60 novel secondary metabolites (new antibiotics) that inhibit the motility of zoospores with potential for controlling oomycete phytopathogens. His contributions to understanding molecular cross-talks between plants and oomycete phytopathogens and their biological control have been published in many international journals (>175 peer-reviewed articles, h index = 23). He secured more than a million dollars funding from World Bank, USDA, British Council (UK) and others and established laboratories equipped with cutting-edge research in the field of biotechnology. Major foci of Prof. Islam's laboratory include (i) molecular biological studies on wheat blast fungus (BMC Biology 2016, 14:84) and mitigation of the fearsome wheat blast disease by development of blast-resistant wheat varieties; (ii) discovery of plant probiotic bacteria (more than 600) and studies on their usage as biofertilizers and biopesticides (Islam et al. 2016, Frontiers Microbiol., 7:851); (iii) discovery of novel bioactive secondary metabolites against oomycetes (Mondol et al. 2017, J. Nat. Prod. 80:347-355; Dame et al., 2016, FEMS Microbiol. Lett., 16: 363; Mondol et al., 2015, J. Agric. Food Chem. 63:8777-86; Tareq et al., 2015, Bioorg Med Chem Lett., 25:3325-9; Talontsi et al., 2012 Phytochemistry 83:87-94); (iv) elucidation of involvement of protein kinase C and enhanced ATPase activity in mitochondria in zoosporogenesis and motility of zoospores (Islam et al., 2011, Mol. Plant-Microbe Interact. 24:38-947; Islam et al. 2016, Front. Microbiol. 7:1824); (v) roles of dynamic rearrangement of F-actin and G protein-coupled receptor in chemotaxis and differentiation of zoospores by host-specific signals (Islam et al., 2003, Plant Soil, 101:131-142; Islam, 2008, Cell Mot. Cytoskel., 65:553-562); (vi) biological control of zoosporic oomycetes (Islam, 2008 Biol. Contr., 46: 312-321); (vii) development of sustainable strawberry production in Bangladesh. In addition, he has been collaborating with Prof. Yusuke Yamauchi and Dr. Shariar Hossain of Wollongong University in Australia to utilize nanotechnology for production of high valued products from jute fiber, development of nanopesticide and preparation of agriculturally and environmentally valuable mesoporous nanomaterials.

In February 2016, a devastating plant disease spotted for the first time in Bangladesh, which destroyed more than 15,000 hectares of wheat with yield loss up to 100%. Due to fear of that wheat killer, Ministry of Agriculture instructed to clear the infected wheat field by burning the standing crops. Responding to that national crisis, Prof. Islam in collaboration with his British friend, Professor Sophien Kamoun of The Sainsbury Laboratory, coordinated and led more than 31 scientists from 7 countries of 4 continents and rapidly determined the genetic identity and origin of the wheat blast pathogen in Bangladesh by applying novel field pathogenomics and open data sharing approaches (www.wheatblast.net). Discovery and leadership of Prof. Islam was news in more than 500 media across the globe including weekly Nature, Science, Science Daily and also in top national dailies and electronic media. Within 3 months of relentless work with world top-ranked researchers, Prof. Islam published their discoveries in a world famous flagship biology journal, BMC Biology (Islam et al., 2016, BMC Biology 14: 84). It was an unprecedented history in science that without spending any money from home country, a big



puzzle in biology is resolved through the application of new genomics and open data sharing approaches. Open data sharing was previously practiced only once in USA for tackling Zika virus. Recently, the deadly wheat blast is emerged in India (West Bengal) and reasonably the Indian researchers sought help from Prof. Islam. In recognition of his extraordinary leadership in the global scientific community and to mitigate the wheat disease in Bangladesh, South America, India and beyond, recently, Prof. Islam and his British collaborators. They have started research on the development of durable blast resistant wheat by using world latest CRISPR/Cas9 genome editing technology. He recently visited Kobe University and had a discussion meeting with a group of experts in blast research led by Prof. Yukio TOSA.

Dr. Islam was awarded many prizes and medals for his outstanding academic and research accomplishments in the field of biotechnology. His notable awards include Bangladesh Academy of Science Gold Medal & Award 2011 in Biological Sciences (Senior Group), Food & Agriculture Award 2011 from Oxfam, CSRL and GROW, University Grants Commission (UGC) Awards in 2004 and 2008, the Best Young Scientist Award 2003 from the Japan Society for Bioscience, Biotechnology and Agrochemistry (JSBBA), Chancellor's Prize in 1995 and a Gold Medal in 2003 from BAU. He presented research findings and chaired sessions in many international conferences/symposia in the USA, the UK, Germany, Japan, Italy, Netherlands, Hong Kong, Norway, Malaysia, China, South Korea, Fiji, and Jamaica. He served as an international consultant in many organizations including Secretariat of the Pacific Community (SPC) in Pacific Countries & Territories.

Dr. Islam worked as an Alexander von Humboldt fellow (2007-2009) at Georg-August-Universitaet Goettingen, Germany with Prof. Dr. Andreas von Tiedemann in the Division of Plant Pathology and Plant Protection. He has been awarded the Commonwealth Academic Staff Fellowship (March to May 2013) to work with Prof. Michele L. Clarke at the University of Nottingham, UK. He worked with Prof. Shinya Oba of Gifu University, Japan as a JSPS Invitation Fellow (June-July 2015). He is one of the most cited researchers (Researchgate score: 36.89 on October 29, 2017) in Bangladesh. Mitigation of wheat blast through international collaboration and application of advanced molecular biology and biotechnology is his major research mission in Bangladesh. Prof. Islam is the Chief Editor of a Springer book series Bacillus and Agrobiotechnology.

Invited Speakers Details

Dr. Nazrul Islam is a physician-epidemiologist and medical statistician. Following his medical training (MBBS), he was trained for a Masters in Epidemiology at Harvard University, and a PhD in Epidemiology and Biostatistics from the University of British Columbia.

Before joining Oxford, he was working as a quantitative research associate at the MRC Epidemiology Unit at the University of Cambridge. His works involved research methodology and quantitative data analysis of randomised controlled trials and large observational databases.

Dr. Islam is a research fellow in medical statistics. Based at the Big Data Institute at the University of Oxford, his work involves a combination of research methodology, medical statistics, and machine learning to examine cardiovascular disease burden using integrated electronic health records and large prospective health studies. He is also a visiting researcher at the University of Cambridge.

Research Fellow: University of Oxford Full-time; Dates Employed: Oct 2019 – Present; Location Oxford, United Kingdom

Research Editor: BMJ

Statistical Consultant: BC Children's Hospital, Vancouver Part-time; Dates Employed Feb 2016 – Oct 2020; Vancouver, British Columbia, Canada

Quantitative Research Associate: University of Cambridge Full-time Dates-Nov 2017 – Oct 2019; Cambridge, United Kingdom

Postdoctoral Research Fellow: The University of British Columbia Dates Employed Jul 2017 – Sep 2017; Vancouver, Canada Area

Doctoral Researcher and Research Associate: BC Centre for Disease Control; Dates Employed Sep 2014 – Sep 2017; Graduate Teaching Assistant; Vancouver, Canada Area;

Dr. Mohammad Jakir Hosen is a Geneticist and Biotechnologist, with a Ph.D. in Medical Genetics from Ghent University, Belgium. Currently, he is working as a Professor of the Dept. of Genetic Engineering and Biotechnology, Shahjalal University of Science and Technology, Bangladesh. At Ghent University, his work led to a significant understanding of the pathomechanism of pseudoxanthoma elasticum, a genetic disease that causes ectopic mineralization of elastic fibers in some specific tissues. At Shahjalal University, Dr. Hosen and his lab collaborate with several other in-house, national, and international groups to illustrate and understand the genetic, molecular, and physiological factors responsible for rare and common genetic disorders present in Bangladesh. He also studies the public health and epidemiological backgrounds of some infectious diseases including chikungunya, dengue, and COVID-19. His lab facilitates a semi-automated zebrafish facility for toxicological assessment of heavy metals during early embryonic development. As of 2020, Dr. Hosen has authored



Dr. Nazrul Islam MBBS, MSc, MPH, PhD
Research Fellow, Medical Statistics,
University of Oxford



Dr Mohammad Jakir Hosen
Professor, Department of Genetic
Engineering and Biotechnology,
Shahjalal University of Science and
Technology

over 30 peer-reviewed research articles, many expert reviews, and a book chapter. Dr. Hosen is currently working to develop an efficient, dynamic, and cheap model for genetic testing and counseling implementation in the context of low and lower-middle-income countries, like Bangladesh. He also completed European Masters of Science in Nematology with great distinction and Erasmus Mundus scholarship from Ghent University, Belgium. Earlier, he did B.Sc in Biotechnology and Genetic Engineering from Khulna University, Bangladesh. He is the recipient of the BAS-TWAS Young Scientist Award-2018. He is a founding member of the National Young Academy of Bangladesh.

Skills and Expertise: Physiology, Pathogens, Mineralization, Skin, Medical Genetics, Dermatology, Zebrafish, Disease, Connective Tissue, Pathophysiology, ABC transporters, Transport Proteins, Pseudoxanthoma Elasticum.

Active Research Project: Beta-thalassemia, Autism, Peripheral Arterial Disease, Diabetes, Cystic Fibrosis, Teratogen

Dr. Shahriar Rozen is a public health professional and senior policy analyst with expertise in the areas of leadership, policy research, strategic planning and community development. He is currently working as a Senior Policy Lead for the Ministry of Health in a Canadian province. He serves as a board member for the Emerging Health Leaders Edmonton Node and the Canadian College of Health Leaders Northern Alberta Chapter.

He was Former Community Wellness Manager at Bigstone Health Commission, Worked at Government of Alberta, Ministry of Health, Former Graduate Research Assistant and Teaching Assistant at University of Alberta, Former Research Fellow at ICDDR,B also was Graduate Research Assistant at University of Alberta from Sep 2013 – Dec 2014



Dr. Shahriar Rozen

Senior Policy Analyst, Alberta Ministry of Health, Canada

Dr. Md. Masudur Rahman currently working as a Professor of Pathology at the Faculty of Veterinary, Animal and Biomedical Sciences, Sylhet Agricultural University, Sylhet, Bangladesh and Senior Research Scientist at Veterinary Research Institute, Hudcova 70, Brno 621 00, Czech Republic.

I received my doctoral degree (PhD) from College of Veterinary Medicine, Chonbuk National University, Jeonju, Republic of Korea. I worked as a Senior Research Scientist (2013-2015) at Veterinary Research Institute, Brno, Czech Republic under the project “Empowering the team for host pathogen interactions study by new postdoctoral fellows” where proteomics (mass spectrometry) and genomics were targeted at the identification and quantification of proteins expressed in the cells of chicken immune system after the infection with *Salmonella enterica* and comparison of immune response of naïve and vaccinated chickens. I did my post-doctoral study (2011-2012) at College of Veterinary Medicine, Chonbuk National University, Jeonju, Republic of Korea with the project “Meta-immunobiological study and therapeutic implication of CD4+CD25+Foxp3+ regulatory T cells expanded by acute infection with zoonotic flaviviruses.



Professor Dr. Md. Masudur Rahman

Professor at Department of Pathology, Faculty of Veterinary and Animal Science, Sylhet Agricultural University, Sylhet 3100, Bangladesh.

Skills and Expertise: Infection, Immunity, Vaccine, Chicken, Farm Animals

Dr. Md. Ataur Rahman completed his B.Sc. and M.Sc. degree in Biotechnology & Genetic Engineering from Islamic University, Bangladesh. He also obtained M.S and Ph.D. degrees in Medical Science (Pharmacology) from Hallym University, Republic of Korea.

His research interest includes neurodegenerative diseases and autophagy. He has 55 publications in total. Now he is a post-doctoral researcher in the Neuroscience Center, Brain Science Institute, Korea Institute of Science and Technology (KIST), South Korea. He is also working under this Korea Research Fellowship (KRF) Program from July, 2016 to February, 2021.



Dr. Md Ataur Rahman

Center for Neuroscience, Korea Institute of Science and Technology(KIST), 5 Hwarang-ro 14-gil, Seongbuk-gu, Seoul 02792, Republic of Korea

Dr. Md Golzar Hossain completed his bachelor degree, Doctor of Veterinary Medicine (DVM) (2010) and Master of Science (MS) in Microbiology (2012) from the Bangladesh Agricultural University, Bangladesh. He started to conduct virus related research during his MS study. However, he conducted research on Newcastle disease virus (NDV) isolation, characterization and vaccine strain development in the contest of Bangladesh. He joined as a Lecturer in the department of Microbiology and Hygiene, Bangladesh Agricultural University at January, 2012.

He has been selected as a MEXT scholar by the Japanese government for his PhD degree at 2013. He came to Osaka University Graduate School of Medicine, Japan at October 2013 as a research student under the supervision of Professor Dr. Keiji Ueda (Division Virology, Department of Microbiology and Immunology).

Then he completed his PhD (Virology) at March, 2018 from same lab and the mentor was Professor Dr. Ueda. Currently, he is working as a postdoctoral researcher at Professor Dr. Ueda' Lab. His research interests are genetic variations, pathobiology, antigenicity, immunogenicity and host-pathogen interaction of important pathogenic viruses such as HBV, KSHV and NDV etc. He published 17 scientific articles (Research/Review) in reputed national/international peer-reviewed journals during his research career and participated in many international scientific conferences/symposiums. He is an active member of many professional organizations.



Dr. Md Golzar Hossain

Associate Professor Laboratory of Virology Department of Microbiology and Hygiene Bangladesh Agricultural University Mymensingh, Bangladesh.

Dr. Mohammad Nazrul Islam, associated professor of the department of Biotechnology of Sher-e-Bangla Agricultural University. He completed his bachelor of science (BSc) in Fisheries and Master of Science in Biotechnology from Bangladesh Agricultural University. He received his PhD in Marine Biotechnology from University of Science and Technology (KIOST School), South Korea.

He has a great interest in molecular cell biology, gene expression & regulation, cloning & sequencing, genomics, and other biotechnological approaches. He is expert at immunoprecipitation, immunocytochemistry, Site-directed mutagenesis, Microsatellite Genotyping, DNA marker technology and so on. He published 30 research articles. He would like to contribute to the field of molecular life sciences.



Mohammad Nazrul Islam, PhD

Associate Professor of Biotechnology,
Sher-e-Bangla Agricultural University

Dr. Md Nabiul Islam is currently working as an Assistant Professor in the Division of Neuroanatomy, Department of Neuroscience, Graduate School of Medicine, Yamaguchi University, Japan. His background is in neurodegenerative disease research, including neuroanatomy. He completed his Doctorate and a Post-doc in Neuroscience (Yamaguchi University, Japan). Currently, He is trying to characterize Hap1-immunoreactive neurons in central nervous system and to elucidate its possible functions, with special emphasis on its protective effects against neurodegeneration. He has been using neuroanatomical, immunohistochemical, molecular biological, electrophysiological and rodent behavioral techniques. He also teaches Human Anatomy, Histology and Neuroanatomy to undergraduate medical students.



Md. Nabiul Islam, PhD

Yamaguchi University · Division of
Neuroanatomy

A researcher since his undergrad days in Shahjalal University of Science and Technology (SUST), **Rashedul Islam** has been dedicated to field of bioinformatics for the past 10 years and is currently pursuing his PhD in University of British Columbia. For his research he is investigating the epigenetic dysregulation in human lymphoid leukemia alongside interpreting epigenomic data collected from cancer tissues.

Bioinformatics is his area of expertise; he also focuses on epigenomics, cancer genomics, sequence data analysis etc. He has worked on countless projects and even aided in the Jute Genome Project as a bioinformatician for over a year, alongside the late Prof. Maqsoodul Alam in 2012. He was awarded The Bioinformatics Training Program Award from the Canadian Institutes of Health and Research (CIHR).

Rashedul Islam will be gracing us with his presence and share his insights and knowledge about bioinformatics by being the Honorable Advisor, here, at Community of Biotechnology. We are super excited to have him on board and are eagerly waiting for his input in our future endeavors.



Rashedul Islam Rony

PhD Candidate, University of British
Columbia - Vancouver, Vancouver (UBC)



Selected Abstracts

Abstract Code: VSG-101

Type: Research article

Published Journal: Journal of Biomolecular Structure and Dynamics

Title: Molecular docking and dynamics study of natural compound for potential inhibition of main protease of SARS-CoV-2

Authors: Shafi Mahmud^a, Mohammad Abu Raihan Uddin^b, Meemtaheena Zaman^b, Khaled Mahmud Sujon^a, Md. Ekhtiar Rahman^a, Mobasshir Noor Shehab^a, Ariful Islam^a, Md. Wasim Alom^a, Al Amin^c, Al Shahriar Akash^d and Md. Abu Saleh^a

^aDepartment of Genetic Engineering and Biotechnology, University of Rajshahi, Rajshahi, Bangladesh; ^bDepartment of Biochemistry and Biotechnology, University of Science and Technology (USTC), Chittagong, Bangladesh; ^cInstitute of Biological Science, University of Rajshahi, Rajshahi, Bangladesh; ^dDepartment of Genetic Engineering and Biotechnology, University of Chittagong, Chittagong, Bangladesh.

Corresponding author: Md. Abu Saleh, Department of Genetic Engineering and Biotechnology, University of Rajshahi, Rajshahi, Bangladesh. Saleh@ru.ac.bd

Abstract: Recent outbreak of newly emerged novel coronavirus SARS-CoV-2 has caused pandemic situation across the world along with a huge number of undesired fatality and spread panic about co-morbidities among people. The situation became worst as there is no prominent remedy in addition to prolonged vaccine clinical trial. Hence, in this study, we made a library of plant-derived natural compounds through an intense literature mining. Then we applied combinatorial bioinformatics approaches and considered their binding mechanism with the main protease of SARS-CoV-2. We shortlisted 14 compounds from the library where Carinol, Albanin, Myricetin were had better binding profile than the rest of the compounds with having binding energy of -8.476 , -8.036 , -8.439 kcal/mol, respectively. Moreover, we considered MM-GBSA calculations in this screening process for backing up the docking studies. Alongside, we performed 100 ns molecular dynamics simulation that endorsed the rigid nature, less conformational variation and binding stiffness of the complex. This study provides a perfect model for SARS-CoV-2 main protease inhibition through bioinformatics study those results can pave the way in drug discovery although it has to be further validated by in-vitro and in-vivo investigations.

Keywords: Protease inhibitors; phytochemicals; virtual screening; binding modes; MD simulation

Publication details (DOI, links, proof of acceptance or preprint DOI): <https://doi.org/10.1080/07391102.2020.1796808>



Abstract Code: VSG-102

Type: Research article

Published Journal: bioRxiv (Preprint)

Title: Assessment of ACE2, CXCL10 and Their co-expressed Genes: An In-silico Approach to Evaluate the Susceptibility and Fatality of Lung Cancer Patients towards COVID-19 Infection

Authors: Tousif Bin Mahmood^a, Afrin Sultana Chowdhury^a, Mehedee Hasan^a, Md. Mezbah-Ul-Islam Aakil^a, Mohammad Imran Hossan^a

^aDepartment of Biotechnology and Genetic Engineering, Noakhali Science and Technology University, Noakhali-3814, Bangladesh

Corresponding author: Tousif Bin Mahmood, Department of Biotechnology and Genetic Engineering, Noakhali Science and Technology University, Noakhali-3814, Bangladesh. tousifmahmood02@gmail.com

Abstract: Coronavirus disease-2019 (COVID-19) is a recent pandemic that is caused by a newly discovered viral strain namely, Severe Acute Respiratory Syndrome Coronavirus-2 (SARS CoV-2). Cancer patients are reported to be more susceptible to COVID-19 infection, particularly lung cancer patients. To evaluate the probable reasons behind the excessive susceptibility and fatality of lung cancer patients to COVID-19 infection, we targeted the two most crucial genes namely, Angiotensin-converting enzyme 2 (ACE2) and C-X-C motif 10 (CXCL10). ACE2 is a receptor protein that plays a vital role in the entry of SARS-CoV-2 into the host cell and CXCL10 is a cytokine mainly responsible for the lung cell damage involving in a cytokine storm. By using the UALCAN and GEPIA2 databases, we observed that ACE2 and CXCL10 are mostly overexpressed in lung adenocarcinoma (LUAD) and lung squamous cell carcinoma (LUSC). We also identified the functional significance of ACE2 and CXCL10 in lung cancer development by determining the genetic alteration frequency in their amino acid sequences using the cBioPortal web portal. Lastly, we did the pathological assessment of the targeted genes using the PANTHER database. Here, we found that ACE2 and CXCL10 along with their commonly co-expressed genes are involved in the binding activity and immune responses in case of lung cancer and COVID-19 infection. Finally, based on this systemic analysis, we concluded that ACE2 and CXCL10 are two possible biomarkers responsible for the higher susceptibility and fatality of lung cancer patients towards the COVID-19.

Keywords: Protease inhibitors; phytochemicals; virtual screening; binding modes; MD simulation

Publication details (DOI, links, proof of acceptance or preprint DOI): <https://doi.org/10.1101/2020.05.27.119610>



Abstract Code: VSG-103

Type: Research article

Published Journal: Journal of Biomolecular Structure and Dynamics

Title: Virtual screening, molecular dynamics and structure–activity relationship studies to identify potent approved drugs for Covid-19 treatment

Authors: Md. Mahbubur Rahman^a, Titon Saha^a, Kazi Jahidul Islam^a, Rasel Hosen Suman^a, Sourav Biswas^a, Emon UddinRahat^a, Md. Rubel Hossen^a, Rajib Islam^a, Md Nayeem Hossain^a, Abdulla Al Mamun^b, Maksud Khan^a, Md AckasAliaan^d Mohammad A. Halim^{ac},

^aDivision of Infectious Diseases and Division of Computer-Aided Drug Design, The Red-Green Research Centre, BICCB, Tejgaon, Dhaka, Bangladesh; ^bKey Laboratory of Soft Chemistry and Functional Materials of MOE, Department of Chemical Engineering, Nanjing University of Science and Technology, Nanjing, China; ^cDepartment of Physical Sciences, University of Arkansas-Fort Smith, Fort Smith, AR, USA

Corresponding author: Mohammad A. Halim, Department of Physical Sciences, University of Arkansas-Fort Smith, Fort Smith, AR, USA. Email: ahalim134@gmail.com

Abstract: Computer-aided drug screening by molecular docking, molecular dynamics (MD) and structural–activity relationship (SAR) can offer an efficient approach to identify promising drug repurposing candidates for COVID-19 treatment. In this study, computational screening is performed by molecular docking of 1615 Food and Drug Administration (FDA) approved drugs against the main protease (Mpro) of SARS-CoV-2. Several promising approved drugs, including Simeprevir, Ergotamine, Bromocriptine and Tadalafil, stand out as the best candidates based on their binding energy, fitting score and noncovalent interactions at the binding sites of the receptor. All selected drugs interact with the key active site residues, including His41 and Cys145. Various noncovalent interactions including hydrogen bonding, hydrophobic interactions, pi–sulfur and pi–pi interactions appear to be dominant in drug–Mpro complexes. MD simulations are applied for the most promising drugs. Structural stability and compactness are observed for the drug–Mpro complexes. The protein shows low flexibility in both apo and holo form during MD simulations. The MM/PBSA binding free energies are also measured for the selected drugs. For pattern recognition, structural similarity and binding energy prediction, multiple linear regression (MLR) models are used for the quantitative structural–activity relationship. The binding energy predicted by MLR model shows an 82% accuracy with the binding energy determined by molecular docking. Our details results can facilitate rational drug design targeting the SARS-CoV-2 main protease.

Keywords: COVID-19; SARS-CoV-2; FDA approved drug; structural–activity relationship; molecular docking; molecular dynamics; principal component analysis

Publication details (DOI, links, proof of acceptance or preprint DOI): <https://doi.org/10.1080/07391102.2020.1794974>



Abstract Code: TAM-201

Type: Review Article

Published Journal: OSF Preprints

Title: Prospects of honey in fighting against COVID-19: pharmacological insights and therapeutic promises

Authors: Khandkar Shaharina Hossain^{1,2}, Md. Golzar Hossain^{3,4}, Akhi Moni¹, Md. Mahbubur Rahman^{1,5}, Umma Habiba Rahman¹, Mohaimanul Alam¹, Sushmita Kundu^{1,2}, Md. Masudur Rahman⁶, Md. Abdul Hannan^{1,7,8}, Md Jamal Uddin^{1,9*}

¹ABEx Bio-Research Center, East Azampur, Dhaka-1230, Bangladesh; ²Biotechnology and Genetic Engineering Discipline, Khulna University, Khulna 9208, Bangladesh; ³Division of Virology, Department of Microbiology and Immunology, Graduate School of Medicine, Osaka University, Osaka 565-0871, Japan; ⁴Department of Microbiology and Hygiene, Bangladesh Agricultural University, Mymensingh-2202, Bangladesh; ⁵KNOTUS Co., Ltd., Research Center, Yeouns-Gu, Incheon, Republic of Korea; ⁶Department of Pathology, Faculty of Veterinary, Animal and Biomedical Sciences, Sylhet Agricultural University, Sylhet 3100, Bangladesh; ⁷Department of Biochemistry and Molecular Biology, Bangladesh Agricultural University, Mymensingh-2202, Bangladesh; ⁸Department of Anatomy, Dongguk University College of Medicine, Gyeongju 38066, Korea; ⁹Graduate School of Pharmaceutical Sciences, College of Pharmacy, Ewha Womans University, Seoul 03760, Republic of Korea.

Corresponding author: Md Jamal Uddin, PhD. CEO, ABEx Bio-Research Center, East Azampur, Dhaka-1230, Bangladesh. Email: hasan800920@gmail.com.

Abstract: Honey; type of sweet liquid made by bee using flower nectar has been in limelight as an effective natural therapy because it has the ability to attenuate acute inflammation through encouraging immune response. Among numerous benefits having honey, its capability to fight against several chronic diseases, bacterial, viral and fungal infection have been proved in several studies. Nonetheless it is effective against viruses like HIV, influenza virus, herpes simplex, varicella zoster virus and so on. Observing its efficacy against these enveloped viruses, it can be hypothesized that it may be beneficial for us against recently occurred world pandemic COVID-19. To prove this hypothesis, currently some clinical trial is also going on. In this review we tried to incorporate several potential benefits of honey in context of boosting immune system, improving different chronic disease, antimicrobial activities and others with an intention to build a relation between honey and COVID-19 treatment. This review will be helpful in many ways to let us consider this potential therapeutics to fight against COVID-19. But we need further experiments to give explanation on how honey is useful in affecting SARS-CoV-2 replication.

Keywords: Honey, COVID-19, SARS-CoV-2, Immune response, Viral infection.

Publication details (DOI, links, proof of acceptance or preprint DOI): <https://osf.io/w3hqj>



Abstract Code: TAM-202

Type: Review Article

Published Journal: Phytotherapy Research

Title: Pharmacological potentials of *Nigella sativa* seed and its bioactive constituents to combat COVID-19 pandemic

Authors: Mohammad Nazrul Islam^{1,2}, Khandkar Shaharina Hossain^{2,3}, Partha Protim Sarker^{2,4}, Jannatul Ferdous^{2, 5}, Md. Abdul Hannan^{2,6,7}, Md. Masudur Rahman⁸, Dinh-Toi Chu⁹, Md Jamal Uddin^{2,10*}

¹Department of Biotechnology, Sher-e-Bangla Agricultural University, Sher-e-Bangla Nagar, Dhaka-1207, Bangladesh; ²ABEx Bio-Research Center, East Azampur, Uttara, Dhaka-1230, Bangladesh; ³Biotechnology and Genetic Engineering Discipline, Khulna University, Khulna 9208, Bangladesh; ⁴Mawlana Bhashani Science and Technology University Santosh, Tangail - 1902, Bangladesh; ⁵Department of Physiology, Biochemistry and Pharmacology, Chottogram Veterinary and Animal Science University, Chottogram, Bangladesh; ⁶Department of Biochemistry and Molecular Biology, Bangladesh Agricultural University, Mymensingh-2202, Bangladesh; ⁷Department of Anatomy, Dongguk University College of Medicine, Gyeongju 38066, Korea; ⁸Department of Pathology, Faculty of Veterinary, Animal and Biomedical Sciences, Sylhet Agricultural University, Sylhet 3100, Bangladesh; ⁹Hanoi National University of Education, Hanoi, Viet Nam; ¹⁰Graduate School of Pharmaceutical Sciences, College of Pharmacy, Ewha Womans University, Seoul 03760, Republic of Korea

Corresponding author: Md Jamal Uddin, PhD. CEO, ABEx Bio-Research Center, East Azampur, Dhaka-1230, Bangladesh. Email: hasan800920@gmail.com

Abstract: While the whole world is hoping for an effective drug or vaccine to combat COVID-19, we have tried to draw our attention on the pharmacological potentials of black cumin (*Nigella sativa*) seed and its bioactive compounds for further scientific concern to adopt an alternative strategic plan. Black cumin seed and its essential components already have a proven history of boosting up immune systems, thereby, are recognized as an effective herbal panacea. The essential oil and other preparations of *N. sativa* seed have substantial therapeutic outcomes against immune disturbance, autophagy dysfunction, oxidative stress, ischemia, chronic inflammation, in several COVID-19 comorbidities such as diabetes, cardiovascular disorders, paediatric inflammatory multisystemic syndrome (PIMS) or Kawasaki-like diseases and many bacterial and viral infections. Compelling evidence in the therapeutic efficiency of *N. sativa* along with the recent computational findings is strongly suggestive of combating recently emerged COVID-19 pandemic. Also, being an available candidate in nutraceuticals, *N. sativa* seed oil could be immensely feasible and easily accessible for all classes of people along with self-awareness and –protection against COVID-19. The present study was aimed at revisiting the pharmacological benefits of *N. sativa* seed and its active metabolites that may constitute a potential basis for developing a novel preventive and therapeutic strategy against COVID-19. The study forwards valuable information for the bonafide public domain or organization, where firstly, *N. sativa* seed and oil can be considered as a first-aid kit as a preventive measure against COVID-19 and secondly, its bioactive compounds, thymoquinone, -hederin and nigellidine could be selected as alternative and promising herbal drug to combat the world-wide epidemic COVID-19. Furthermore, we strongly recommend concurrent studies including preclinical and clinical trials to delineate detailed mechanism of *N. sativa*'s active components and to investigate their efficacy and potency under specific pathophysiological conditions of COVID-19.

Keywords: *Nigella sativa*, COVID-19, SARS-CoV-2 infection, Immune response, Inflammation, Cytokine storm, Oxidative stress

Publication details (DOI, links, proof of acceptance or preprint DOI): <https://doi.org/10.1002/ptr.6895>



Abstract Code: TAM-203

Type: Review Article

Published Journal: OSF Preprints

Title: Targeting vitamin C as a potential therapeutic regime for alleviating the complications associated with COVID-19

Authors: Mithila Farjana^{1,2}, Akhi Moni¹, Abdullah Al Mamun Sohag³, Adeba Hasan¹, Md. Abdul Hannan^{1,3,4}, Md. Golzar Hossain^{5,6}, Md Jamal Uddin^{1,7#}

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Abstract: Vitamin C (L-ascorbic acid) is a long-known super nutrient with pleiotropic functions, ranging from antioxidant to antimicrobial functions. Numerous evidence suggests that vitamin C fights off inflammation, oxidative stress, autophagy chaos, and immune dysfunction, cardiovascular diseases even cancer correspondingly. Being highly effective against the influenza virus causing the common cold, vitamin C may also function against SARS-CoV-2 infection and its associated complications. Among the epidemic, coronavirus (SARS-CoV-2) and influenza virus (SARS-CoV) can cause lethal lung injuries and death from ARDS (Acute Respiratory Diseases). Therefore, compelling all the past and present experimental findings, it is strongly suggestive to use high dosed vit-C to combat the newly emerged COVID-19 infection. Notably, severe infections require higher doses of the vitamin to compensate for the augmented inflammatory response and metabolic demand that commonly occur during COVID-19. Compelling evidence also suggests that a high dose of vitamin C (1.5 g/kg body weight) in inflammatory conditions can result in effective clinical outcomes and thus can be employed to combat COVID-19 without any antagonistic reaction. However, further studies are crucial to delineate the underlying mechanism of vitamin C action against COVID-19. The current effort was aimed at repositioning vitamin C for developing an alternative approach for alleviating COVID-19-associated complications. Therefore, to design a novel preventive agent, this paper is targeted to explore the pharmacological possibility of vit-c to combat Covid-19 intensively.

Keywords: Vitamin C, SARS-CoV-2, COVID-19, inflammation, oxidative stress, autophagy chaos, and immune dysfunction.

Publication details (DOI, links, proof of acceptance or preprint DOI): <https://osf.io/qamsw/>



Abstract Code: TAM-204

Type: Review Article

Published Journal: Journal of Advanced Biotechnology and Experimental Therapeutics

Title: Self-confidence as an immune-modifying psychotherapeutic intervention for COVID-19 patients and understanding of its connection to CNS-endocrine-immune axis

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Abstract: Coronavirus disease 2019 (COVID-19) caused by severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) not only costs millions of human lives across the globe but also causes uncountable damage to mental health. As the incidence of COVID-19 continues to rise, so does the psychological burden. COVID-19 patients often encounter a variety of psychological stresses, including occupational damage, uncertain future of the family, and even fear of death which cause anxiety and distress, compromising the immune system, and influencing the severity of the disease. Beyond this, stressed individuals are more likely to practice unhealthy habits such as indifference to sleep and food that put them at greater risk. The CNS (central nervous system)-endocrine-immune axis is known to be crucially implicated in the stress-mediated dysregulation of the immune response. Following CNS stimulation, stressors provoke the release of several hormones. Self-confidence, a function of mental strength and positive attitude of an individual, is such an intervention that may hold a potential capacity to control stress-mediated immune dysfunction. Several factors, including psychological counseling, social supports, spiritual connections, food habit, health supports, control on emotions, positive thoughts, and reasons for living may help develop self-confidence. Substantial evidence suggests an association between psychological well-being and immune response. Since there is no specific treatment for COVID-19 yet, the only means to survive from this disease is to consolidate the immune system. In addition, as the immune system is closely linked to the neuroendocrine system, any kind of psychological stresses that overwhelm this association causes immune dysfunction. In this context, self-confidence that can mitigate psychological stresses posed by COVID-19 can play an important role in consolidating immune response against this disease.

Keywords: COVID-19; CNS; Endocrine system; Immune response; Psychological stresses; SARS-CoV-2; Self-confidence.

Publication details (DOI, links, proof of acceptance or preprint DOI): <https://doi.org/10.5455/jabet.2020.d151>



Abstract Code: TAM-205

Type: Review Article

Published Journal: Journal of Drug Delivery and Therapeutics (JDDT)

Title: Repurposable Drug Candidates are Potential Therapeutic Target against Global SARS-CoV-2 Crisis

Authors: Md. Siddikur Rahman^{1†}, Fahmida Begum Mina^{1†}, Sabuj Das^{1†}, Mutasim Billah^{1†}, Sumon Karmakar¹, Alam Khan², Sharmin Akhtar³, Uzzal Kumar Acharjee¹, Md. Faruk Hasan^{1†}

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Abstract: This review provides a pharmacological approach to combat Severe acute respiratory syndrome coronavirus-2 (SARS-CoV-2) based on two comprehensive denominations which could be specifically intended for viral replication process by either inhibiting essential genomic viral enzymes or preventing viral entry to human cells. These denominations focused on immune therapies either to improve innate antiviral immune responses or to reduce impairment triggered by underactive inflammatory reactions. A variety of drug candidates are available which can inhibit SARS-CoV-2 infection and replication, comprising serine protease inhibitors: Transmembrane Protease/Serine Subfamily member 2 (TMPRSS2), camostat mesylate, nafamostat mesylate, and angiotensin-converting enzyme inhibitors. This review is also concerned with identifying drugs and ongoing clinical trials with their mechanisms of action against SARS-CoV-2. Chloroquine and hydroxychloroquine, monoclonal antibody, off-label antiviral drugs, nucleotide analog remdesivir and broad-spectrum antiviral drugs also could be used as inhibitors of SARS-CoV-2. Moreover, non-steroidal anti-inflammatory drugs (NSAIDs), dexamethasone, and antiviral phytochemicals that are currently reachable, can prevent SARS-CoV-2 pandemic morbidity and mortality.

Keywords: COVID-19; Antiviral drugs; NSAIDs; ACE2; Clinical trials

Publication details (DOI, links, proof of acceptance or preprint DOI): <https://doi.org/10.22270/jddt.v10i5-s.4343>



Abstract Code: PIM-301

Type: Review article

Published Journal: Immunology Letters

Title: Prospects of intermittent fasting against SARS-CoV-2 infection: Crosstalk among calorie restriction, autophagy and immune response

Authors: Md. Abdul Hannan^{a,b,c}, Md. Ataur Rahman^{b,d,e}, Md Saidur Rahman^{b,f}, Abdullah Al Mamun Sohag^a, Raju Dash^c, Khandkar Shaharina Hossain^{b,g}, Mithila Farjana^{b,g}, and Md Jamal Uddin^{b,h}.

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Abstract: Severe acute respiratory syndrome coronavirus-2 (SARS-CoV-2) is the causative pathogen of deadly Coronavirus disease-19 (COVID-19) pandemic, which emerged as a major threat to public health across the world. Although there is no clear gender or socioeconomic discrimination in the incidence of COVID-19, individuals who are older adults and/or with comorbidities and compromised immunity have a relatively higher risk of contracting this disease. Since no specific drug has yet been discovered, strengthening immunity along with maintaining a healthy living is the best way to survive this disease. As a healthy practice, calorie restriction in the form of intermittent fasting (IF) in several clinical settings has been reported to promote several health benefits, including priming of the immune response. This dietary restriction also activates autophagy, a cell surveillance system that boosts up immunity. With these prevailing significance in priming host defense, IF could be a potential strategy amid this outbreak to fighting off SARS-CoV-2 infection. Currently, no review so far available proposing IF as an encouraging strategy in the prevention of COVID-19. A comprehensive review has therefore been planned to highlight the beneficial role of fasting in immunity and autophagy, that underlie the possible defense against SARS-CoV-2 infection. The COVID-19 pathogenesis and its impact on host immune response have also been briefly outlined. This review aimed at revisiting the immunomodulatory potential of IF that may constitute a promising preventive approach against COVID-19.

Keywords: SARS-COV-2, Calorie restriction, Autophagy, Cytokine storm, Immune responses, COVID-19.

Publication details (DOI, links, proof of acceptance or preprint DOI): <https://dx.doi.org/10.1016%2Fj.imlet.2020.07.001>



Abstract Code: PIM-302

Type: Research Article

Published Journal: Frontiers in Public Health

Title: Women's knowledge, attitude and perceptions towards COVID-19 in lower-middle-income countries: a representative cross-sectional study in Bangladesh

Authors: Saeed Anwar¹, Yusha Araf², Asir Newaz Khan³, Md. Asad Ullah⁴, Nur Haque⁵, Bishajit Sarkar⁴, Riyan Al Reshad², Rahatul Islam², Md. Nurshad Ali⁶ and Mohammad Jakir Hosen²

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Abstract: The coronavirus disease 2019 (COVID-19) is a global health emergency of unprecedented proportions. Countries around the world have taken extraordinary steps to control the disease. The preventive measures face challenges in low and lower middle income countries (LICs and LMICs). Especially the marginalized communities, e.g., women are the hardest hit of the virus. This study took Bangladesh as a representative LMIC and aimed to determine the level of knowledge, perception, attitude, and preparedness related to COVID-19 among the adult women in the country. Using a comprehensive questionnaire, we channeled a cross-sectional study among adult women in Bangladesh. Participant's self-reported data on the knowledge, attitude, and preparedness were tabulated and analyzed using suitable statistical tools. A total of 1869 adults from 61 districts of Bangladesh took part in this study. 97% of the participants claimed to have heard of COVID-19 before it arrived in Bangladesh. Regarding the general knowledge related to COVID-19's causal agent, symptoms, and treatment, the positive response rate was nearly 80%, with a mean of 10.68 ± 1.72 . Younger and educated women had better knowledge levels compared to the older and lower-educated participants ($p < 0.01$). More efforts are required to educate women with older age and lower socioeconomic status. An overall positive attitude and perception were observed, although a significant proportion of the participants opined that the Government's efforts in controlling the outbreak were not adequate. Although the participants had a satisfactory level of knowledge and a positive attitude in adopting preventive measures against COVID-19, greater efforts are needed from the healthcare authorities and Government.

Keywords: COVID-19; Antiviral drugs; NSAIDs; ACE2; Clinical trials

Publication details (DOI, links, proof of acceptance or preprint DOI): [doi: 10.3389/fpubh.2020.571689](https://doi.org/10.3389/fpubh.2020.571689)



Abstract Code: PIM-303

Type: Review article

Published Journal: Journal of Advanced Biotechnology and Experimental Therapeutics

Title: Current knowledge on mechanisms involved in SARS-CoV-2 infection and kidney diseases

Authors: MD. Hasanur Rahman^{1,2} , Md. Sarwar Zahan^{1,2} , Tasnin Al Hasib^{1,3} , Kazi Ahsan Ahmed^{1,3} ,Mushira Khanam³ , MD. Sadman Omit⁴ , Akhi Moni¹ , Md Jamal Uddin^{1,5}

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Abstract: Severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) is cause of a global pandemic which is demolishing global health and economy. SARSCoV-2 infected patients are hospitalized with pneumonia where almost 20-30% of patients are led to kidney failure. The entry of SARS-CoV-2 into the systemic circulation leads to acute kidney injury (AKI) which may develop chronic kidney disease (CKD). In addition, patients who are diagnosed with AKI or CKD are at major risk of SARS-CoV-2 infection. Although a significant number of compounds have been proposed and the existing drugs have also been tested for repurposing, no specific therapy has been approved yet. SARS-CoV-2 invades human cells binding to the receptor of angiotensin converting enzyme 2 (ACE2) via the receptor-binding domain. Cells that express ACE2 are susceptible to SARS-CoV-2 infection and the proportion of ACE2-positive cells in kidney proximal tubule is approximately 4%, indicating that SARS-CoV-2 might damage the kidney tubules leading to fatal kidney injury. Therefore, a better understanding of the potential mechanisms involved in SARS-CoV-2 infection-mediated kidney disease may unveil a novel therapeutic strategy against kidney diseases during COVID-19.

Keywords: Acute kidney injury, chronic kidney disease, COVID-19, mechanisms, SARS-CoV-2.

Publication details (DOI, links, proof of acceptance or preprint DOI): <https://doi.org/10.5455/jabet.2020.d153>



Abstract Code: DKV-401

Type: Review Article

Published Journal: *Cureus*

Title: COVID-19 Lab: A Whistlestop Journey at a Tertiary Health Care Center

Authors: Sulin K. Behera¹, Soumyashree Mohapatra Jr.¹, Dipankar Pattnaik¹, Swetalina Jena¹, Satyabrata Thakur¹, Sumanta Sahu¹

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Abstract: Right now, our world is gripped by the COVID-19 pandemic. The global spread of COVID-19 (SARS -CoV-2) has dramatically multiplied the no of suspected cases with expanding geographical area. Rapid collection and testing of appropriate samples of asymptomatic and mildly symptomatic contacts is priority for clinical management and outbreak control. The suspected cases should be screened for the virus with Nucleic Acid Amplification Test (NAAT) such as REAL TIME -PCR under the guidance of laboratory experts. This manuscript details the process of establishment of COVID-19 lab which is a Medical College Virology Lab (VRDL) in less than a month's time. Detailed data of the tests was studied over the initial 1month and reported. Within one & half months of start of the lab, 3196 no. of tests were conducted which caters to 5 adjoining districts in western Odisha. These included both symptomatic and asymptomatic (contacts and with travel history from affected areas) cases and 6 COVID-19 positive cases have been detected. CONCLUSION:" The mind is a powerful thing. It can take you through walls." Aptly said by Denis Avey. Though establishment of a Covid-19 lab in a short time is a challenge, it can be achieved through determination, team work and support from the authority.

Keywords: COVID-19, SARS-CoV-2, pandemic, VRDL, REAL TIME-PCR

Publication details (DOI, links, proof of acceptance or preprint DOI): [doi: 10.7759/cureus.10162](https://doi.org/10.7759/cureus.10162)



Abstract Code: DKV-402

Type: Research Article

Published Journal: Immunobiology

Title: Immunoinformatics-guided designing of epitope-based subunit vaccines against the SARS Coronavirus-2 (SARS-CoV-2)

Authors: Bishajit Sarkar^a , Md. Asad Ullah^a , Fatema Tuz Johora^a , Masuma AfrinTaniya^b , YushaAraf^c

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Abstract: Covid-19 is a life-threatening disease, which has become a global health crisis affecting the daily livelihood of billions of people all around the world. SARS coronavirus-2 (SARS-CoV-2) is a deadly virus that has killed millions of lives within several months globally. In early 2020, World Health Organizations (WHO) has announced SARS Coronavirus-2 as a pandemic. Several protective measures have been taken from the beginning of this pandemic to reducing the spreading of the virus. Scientifics are working around the clock to discover the covid-19 vaccine. Unfortunately, there is no vaccine available until now to fight against this deadly and highly infectious virus. In an attempt to find a covid-19 vaccine, we have performed research on possible epitope-based subunit vaccines design against the SARS-CoV-2 virus using the approaches of reverse vaccinology and immunoinformatics. Based on continual computational experimentation, three possible vaccine constructs have been designed; and based on molecular docking study, one vaccine construct was chosen to be the most suitable vaccine, which is supposed to be the most effective vaccine against the SARS-CoV-2. Subsequently, the molecular dynamics simulation and in silico codon adaptation experiments were conducted to check biological stability and find an effective mass production strategy for the selected vaccine. Our study aims to present the scientific community with a potential vaccine design using bioinformatics tools and to accelerate covid-19 vaccine researches against this highly infectious virus.

Keywords: COVID-19, Coronavirus, SARS-COV-2, Reversevaccinology, Vaccine, Immunoinformatics

Publication details (DOI, links, proof of acceptance or preprint DOI): <https://doi.org/10.1016/j.imbio.2020.151955>



Abstract Code: EHZ-501

Type: Review Article

Published Journal: Pathogens

Title: A review on the severe acute respiratory syndrome coronavirus-2 (SARS-CoV-2) in light of past human Coronavirus outbreaks

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Abstract: Coronaviruses (CoVs) are RNA viruses that have become a major public health concern since the first outbreak of Severe Acute Respiratory Syndrome-CoV (SARS-CoV) in 2002. The continuous evolution of coronaviruses was further evidenced with the appearance of the Middle East Respiratory Syndrome-CoV (MERS-CoV) outbreak in 2012. Currently, the world is well concerned about the 2019 novel CoV (SARS-CoV-2) that was initially detected in the city of Wuhan, China in December 2019. Patients presented with severe viral pneumonia, respiratory illness and many other comorbidities. The number of cases has been mounting since then. As of late February 2020, tens of thousands of cases and several thousand deaths have been reported in China alone, in addition to thousands of cases in other countries. Although the fatality rate of SARS-CoV-2 is currently lower than SARS-CoV, the virus seems to be highly contagious based on the number of infected cases to date. In this review, we discuss structure, genome organization, entry of CoVs into target cells, and provide insights into past and present outbreaks. The future of human CoV outbreaks will not only depend on how the viruses will evolve, but will also depend on how we develop efficient prevention and treatment strategies to deal with this continuous threat. Coronaviruses (CoVs) are RNA viruses that have become a major public health concern since the first outbreak of Severe Acute Respiratory Syndrome-CoV (SARS-CoV) in 2002. The continuous evolution of coronaviruses was further evidenced with the appearance of the Middle East Respiratory Syndrome-CoV (MERS-CoV) outbreak in 2012. Currently, the world is well concerned about the 2019 novel CoV (SARS-CoV-2) that was initially detected in the city of Wuhan, China in December 2019. Patients presented with severe viral pneumonia, respiratory illness and many other comorbidities. The number of cases has been mounting since then. As of late February 2020, tens of thousands of cases and several thousand deaths have been reported in China alone, in addition to thousands of cases in other countries. Although the fatality rate of SARS-CoV-2 is currently lower than SARS-CoV, the virus seems to be highly contagious based on the number of infected cases to date. In this review, we discuss structure, genome organization, entry of CoVs into target cells, and provide insights into past and present outbreaks. The future of human CoV outbreaks will not only depend on how the viruses will evolve, but will also depend on how we develop efficient prevention and treatment strategies to deal with this continuous threat.

Keywords: 2019-nCoV; SARS-CoV-2; SARS; MERS; COVID-19.

Publication details (DOI, links, proof of acceptance or preprint DOI): <https://doi.org/10.3390/pathogens9030186>



Abstract Code: EHZ-502

Type: Review Article

Published Journal: Journal of Microbiology, Immunology and Infection

Title: SARS-CoV-2 host diversity: An update of natural infections and experimental evidence
Coronavirus outbreaks

Authors: Md. Golzar Hossain^{a,b,*}, Aneela Javed^c, Sharmin Akter^d, Sukumar Saha^{a,e}

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Abstract: Coronavirus disease-19 (COVID-19) caused by the severe acute respiratory syndrome coronavirus-2 (SARS-CoV-2) is now a pandemic threat. This virus is supposed to be spread by human to human transmission. Cellular angiotensin converting enzyme 2 (ACE2) is the receptor of SARS-CoV-2 which is identical or similar in different species of animals such as pigs, ferrets, cats, orangutans, monkeys, and humans. Moreover, a recent study predicted that dog might be secondary host during the evolution of SARS-CoV-2 from bat to human. Therefore, there is a possibility of spreading SARS-CoV-2 through domestic pets. There are now many reports of SARS-CoV-2 positive cases in dogs, cats, tigers, lion, and minks. Experimental data showed ferrets and cats are highly susceptible to SARS-CoV-2 as infected by virus inoculation and can transmit the virus directly or indirectly by droplets or airborne route. Based on these natural infection reports and experimental data, whether the pets are responsible for SARS-CoV-2 spread to human; needs to be deeply investigated. Humans showing clinical symptoms of respiratory infections have been undergoing for COVID-19 diagnostic test but many infected people and few pets confirmed with SARS-CoV-2 remained asymptomatic. In this review, we summarize the natural cases of SARS-CoV-2 in animals with the latest researches conducted in this field. This review will be helpful to think insights of SARS-CoV-2 transmissions, spread, and demand for sero-prevalence studies especially in companion animals.

Keywords: SARS-CoV-2, COVID-19, animals, pets, transmission

Publication details (DOI, links, proof of acceptance or preprint DOI): <https://doi.org/10.1016/j.jmii.2020.06.006>



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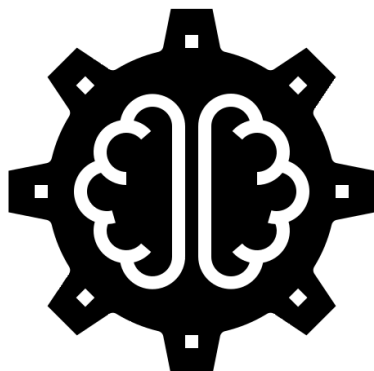
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