

# RESEARCH HORIZONS

*The Official Newsletter of the University Grants Office*

## **IN THIS ISSUE:**

A new Supercomputing Facility at Ahmedabad University

In Conversation with Krishna Swamy

My Student internship experience at Arizona State University

In Conversation with Rajesh Patkar

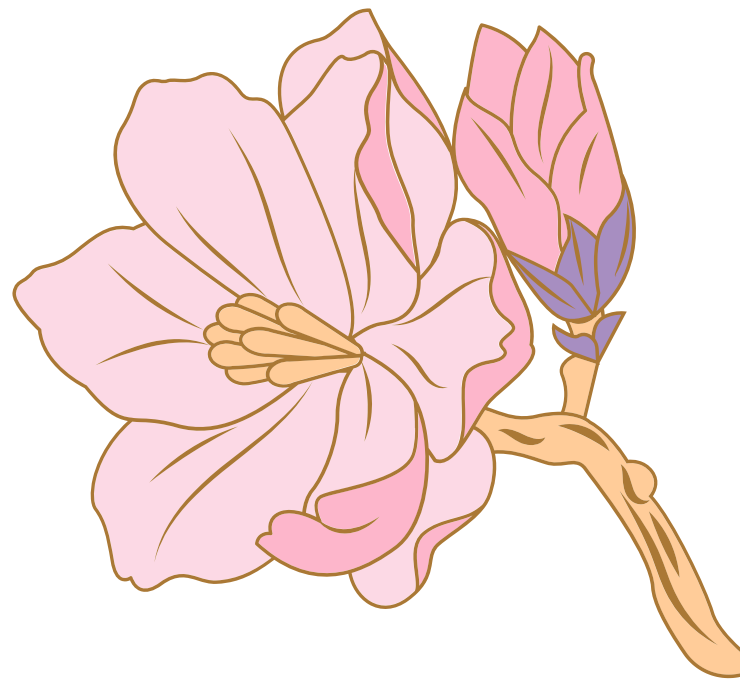
Awarded grants

Research seminars

Research publications

Funding Opportunities

Grant writing resources



# A NEW SUPERCOMPUTING FACILITY AT AHMEDABAD UNIVERSITY

***Ahmedabad University has been selected for the establishment of a new Supercomputing facility for high-end in-house advanced computing studies and research.***

The Supercomputing facilities will be made available via GUJCOST and include the PARAM Shavak system indigenously developed by C-DAC for high-performance computing and deep learning, equipped with x86 based latest Intel processor, 96 GB RAM, 16 TB storage, Nvidia based co-processing accelerator technologies and software development environment. This brings innovative and ground breaking technological approaches to high end computing on a table top platform, which does not require costly data centre infrastructure.

The PARAM Shavak system from GUJCOST will bootstrap Ahmedabad University's high-performance computing initiative, and lay the foundations for expanding research, teaching, and startup incubation in computational science, particularly in High-performance computers (HPC) and Artificial Intelligence (AI). An initial set of ten research projects will utilize the PARAM Shavak system for HPC and Deep Learning. These projects cover a range of topics in engineering and science, including video processing, traffic monitoring, computer network analysis, quantum chemistry, Big Data analytics for agriculture, computational cosmology, molecular and immune response studies in CoVID-19 infection, biological evolution, and computational neuroscience. These projects demonstrate the depth of computational research at Ahmedabad university.

*“Modern high-performance computers (HPC) running Artificial Intelligence (AI) engines provide an unprecedented opportunity for solving complex societal problems. Increasingly, it is recognized that these problems can be addressed only by combining skills from multiple disciplines. Ahmedabad University is uniquely positioned to take up this challenge because of its multidisciplinary thrust, a thrust that encourages faculty, research scholars, and students to broaden their thinking by crossing traditional disciplinary boundaries. It will provide a wonderful opportunity for young faculty, researchers and students to enter into the world of High Performance Computing and address complex needs of the real world.”*, said Sanjay Chaudhary, the convener of the new facility.

The new system will become operational by the end of 2020, as GUJCOST will first receive the instrumentation from C-DAC and will then hand over to Ahmedabad University. It will be installed at the IT Server Room of Ahmedabad University, located at the GICT Building.

More information on PARAM Shavak at:

[https://www.cdac.in/index.aspx?id=hpc\\_ss\\_param\\_shavak](https://www.cdac.in/index.aspx?id=hpc_ss_param_shavak)



## IN CONVERSATION WITH KRISHNA SWAMY



*Krishna Swamy is an Assistant Professor within the Biological and Life Sciences division at the School of Arts and Sciences. He has recently been selected for the prestigious DBT Ramalingaswami Fellowship. We spoke to him about his research programme. Excerpts from the conversation.*

### **Please could you tell us about your key research interest?**

I am fascinated by the extraordinary complexity seen in Biology. Thousands of life forms have been created over the course of our planet's history. While some of these species eventually became extinct, many others have survived. We believe that evolutionary forces have played a crucial role in shaping the species on our planet. Each species has evolved uniquely to be able to thrive in its own ecological niche. I use a quantitative framework and experimental evolution to understand this complexity in biological systems.

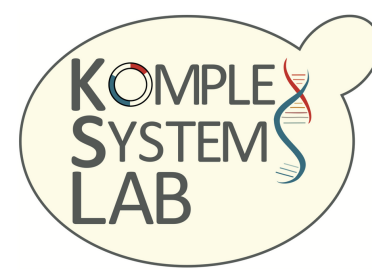
### **Please could you share some insights from your work on evolutionary choices?**

Competition often influences the choices we make. Here, I would like to share an example of some work we have done on how yeasts have evolved a novel complex trait - fermentation.

There are two ways in which organisms can utilise food sources to produce energy: respiration and fermentation. Of these, fermentation is a relatively inefficient way of producing energy, commonly seen in many yeasts, bacteria, and tumor cells. While most yeast species use respiration to generate energy, some have evolved into being obligate fermenters. What evolutionary pressures shaped this choice in the fermenting yeasts?

The first clue for understanding this question came from a closer look at an important event in the history of the yeasts. Some yeasts underwent a process called "whole genome duplication", which resulted in them acquiring two sets of the entire genetic material of their ancestors. At the time when this event happened in yeasts, similar genome duplications also took place in the plant world, giving rise to angiosperms, the fruit bearing plants that we see on earth today. There was a sudden abundance of glucose for yeasts, bacteria and animals to thrive on. These unique evolutionary events gave the yeasts an opportunity to adapt their physiology and set themselves apart from other species present in the same niche.

We designed evolution experiments in the laboratory, growing yeasts and bacteria together in a "co-culture", and in the presence of high amounts of glucose. We chose to work with a respiratory yeast called *Lachancea kluyveri*, which is located just before the whole genome duplication in the yeasts evolutionary tree. Our aim was to check if it was solely the sudden abundance of food source or ecological competition from other microbes that led to the evolution of obligate fermentative yeasts. We simulated a competition of the kind that might have taken place when the genome duplications in plants took place. We wanted to see how a non-fermentative yeast would respond under our controlled experimental conditions. To our delight, we started seeing a huge change in our cultures within a short time span. We found a quantum leap in ethanol production from fermentation. Our non-fermentative yeast became more fermentative with time and additionally, the bacteria started dying because of the ethanol being generated by the yeast. The yeast cells adapted further by reinforcing their own cell walls. Most interestingly, we saw these changes in the yeast only when they were co-cultured with bacteria. This showed us that the evolution of the fermentative yeasts was driven by the presence of an ecological competitor.



**Please could you tell us about ongoing and future research directions for your group?**

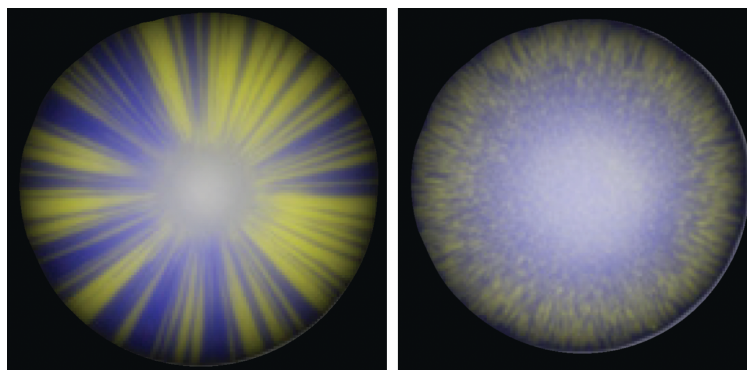
Research in our group aims to identify the key changes in genetic programs that enable an organism to respond to various stresses and evolve new traits. While some genetic changes are permissible in nature, others are eliminated from a population. We are trying to understand the genetic and molecular basis of speciation. Individuals of a species are often unable to mate with other species, due to a combination of genetic and other factors. Differences in the genomes of related species introduce incompatibilities, which make offspring of interspecies pairings either unstable or sterile. However, in some cases, hybrids can be more successful than their parents. This phenomenon is known as hybrid vigour. This raises the conundrum: if hybrids are usually inviable or sterile, then under what conditions can new lineages evolve after hybridization?

We approach these questions by performing experimental evolution in microorganisms such as *Escherichia coli* and *Saccharomyces cerevisiae*. For our work on speciation, we employ a bank of hybrids of *Saccharomyces cerevisiae* and other related yeasts. In our controlled laboratory environment, we are able to speed up evolution and analyse the results. Our experimental work is conducted in combination with mathematical modelling.

**As you mentioned, you have had a career journey spanning both Physics and Biology. What would you advice be to students considering careers in research?**

I started my scientific career in the world of Physics. I was drawn towards research in Biology and decided to explore this further. I spent some time working in the laboratory of Prof MRN Murthy at the Indian Institute of Science, running simulations to correlate the sequences of proteins with their 3-dimensional structures. This experience introduced me to the field of Computational Biology. I then transitioned to a career in experimental biological research, which now also includes quantitative methods.

I would advise students to read comprehensively and prepare themselves before starting work on a new area of interest. In particular, students should read research publications as the world of science is dynamic and fast-paced. This is a good way to see if there is real aptitude for the field, which will then need to be matched by the actual research. Index reading is helpful for quickly getting a view of the topic. Biology is often complex and it is necessary for biologists to become familiar with the details. Many experiments are simple and yet complex at the same time. An understanding of the detail is essential for breaking down the problems and moving forward in Biology.



*Yeast without bacterial competition*

*Yeast with bacterial competition*

More about DBT Ramalingaswami Fellowships at <http://dbtindia.gov.in/schemes-programmes/building-capacities/building-critical-mass-science-leaders/ramalingaswami-re>

# MY STUDENT INTERNSHIP EXPERIENCE AT ARIZONA STATE UNIVERSITY



*Tathy Shah is a 3rd year Mechanical Engineering at the School of Engineering and Applied Sciences. In this article, he recounts his experiences as virtual student intern at Arizona State University (ASU).*

It started with me receiving an email from the Dean of Ahmedabad University informing us that those who were interested could apply for a research program at ASU. I applied and went through their selection process and was selected for the program. Students from all over the world were going to be part of this research program. I was excited to meet them and to develop my contacts internationally.

During this summer, I was preparing to be a part of the research team at Arizona State University. However because of the COVID-19 situation, I could not go there and carry out research. To my delight, ASU provided me the option of attending online. Despite not being there physically, I could work for the research team. My research project was about Sorption Thermal Energy Storage. We regularly had 2 meetings per week to review our development with the Professor and our Professor would advise us what we would do ahead. Many PhD students from Arizona State University were also part of this research, and I came to know many new things by talking with them. They supported me whenever I had some doubts and confusion. As research is carried out in the laboratory and we were working remotely, the PhD students gave the necessary data which they have obtained by doing experiments and then our role was to put the values in a numerical/analytical model and calculate the necessary data. I also analysed different Adsorbent-Adsorbate materials needed for Sorption Thermal Energy Storage Systems and how we can enhance efficiency.

Besides having formal meetings, we likewise had meetings just to talk to the our friends and get to know their culture as each one was from a distinct part of the world. We would play games with each other and would have a great time with each other. ASU had also arranged talks from proficient speakers from INTEL company every week. They would share their experience, how did they got jobs at INTEL. They also guided us on how to make healthy advancement in our careers.

My overall experience was great, working with Professor Phelan (at ASU) and the students from ASU and other students who have been part of this research program. These programs help students in deciding future goals and also help in strengthening one's skills. If someone is planning for a master's degree or PhD then this program will assuredly help you in your career. This was my lifetime memorable experience. If this COVID-19 situation would not have occurred, then it would have been even better.

## IN CONVERSATION WITH RAJESH PATKAR



*Rajesh Patkar is an Assistant Professor within the Biological and Life Sciences division at the School of Arts and Sciences. He has recently been selected for the prestigious DBT/Wellcome Trust India Alliance Intermediate Fellowship. We spoke to him about his journey in research. Excerpts from the conversation.*

**Please could you tell us about your key research interest?**

Right from my undergraduate days, I was interested in understanding interactions between pathogens and their hosts. There is a perennial battle between host systems and the pathogens that invade them, and one or the other wins at any given point of time. During my graduate studies, I looked at how rice plants respond to pathogens and tried to genetically engineer resistance against a devastating and economically important fungal disease in rice. During my post-doctoral research, I focused on the other half of the problem- the pathogen system. This work was aimed at understanding the strategies used by the fungal pathogen to invade the plant host system. Host-pathogen interactions have remained the focus of my research group.

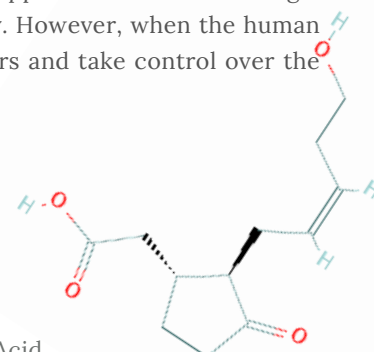
**Please could you share a research highlight from your work?**

During my post-doctoral studies, I made a breakthrough discovery with the finding that the fungal pathogen employs a strategy called “molecular mimicry”, to hijack the natural defense system of the host plant. Here, the molecule Jasmonic Acid is produced in most plants and also gives the characteristic beautiful fragrance to jasmine flowers. Under natural conditions, the hydroxylated version of Jasmonic Acid encourages plants to produce flowers. However, this molecule also affects the ability of a plant to defend itself against invading pathogens. In our research, we found that the fungal pathogen smartly produces hydroxylated Jasmonic Acid and secretes it into the host environment to suppress the host defense response.

That discovery on molecular mimicry laid the foundations of my research program as an independent researcher. It also helped me secure the prestigious Ramalingaswami fellowship from the Department of Biotechnology, when I returned from Singapore to India to set up my own independent research group at The M. S. University of Baroda.

**Your group has also developed a strand of work focussed on understanding host-pathogen interactions in human hosts. Please could you tell us about these experiments?**

We decided to extend our research systems beyond plants and study a fungal disease in human beings. I was fortunate to be able to recruit a brilliant Junior Research Fellow who did some experiments on the opportunistic human fungal pathogen *Candida*. *Candida* species are normally found as a harmless microbe on human body. However, when the human host is immunocompromised for any reason, this fungal species can overcome natural barriers and take control over the human host.



Hydroxylated Jasmonic Acid

There are several species of *Candida* which are known to cause the fungal disease candidiasis individually and such infections are typically treated through antifungal medication. However, some species of *Candida* are resistant to commonly used drugs, which makes it difficult for doctors to treat an invasion. Our research findings demonstrated that there are two particular *Candida* species, that when present together, can form a potent combination and become a formidable foe, as one of them is a drug-resistant species. Timely and accurate identification of such drug-resistant *Candida* species in a clinical sample is crucial in designing an effective treatment regime for the patient. We are currently working on laboratory reference strains of these two species of *Candida* and have identified a unique molecular characteristic of the drug-resistant species. We hope this will aid in developing a novel diagnostic strategy for managing Candidiasis. This research is supported by the recently awarded India Alliance Fellowship. We very much look forward to developing our research further at Ahmedabad University.



*Rice leaves affected by rice blast fungus*

More about DBT/Wellcome Trust India Alliance at <https://indiaalliance.org>

# AWARDED GRANTS

FOR THE PERIOD JULY- OCTOBER 2020

## External grants

Souvik Sen Gupta

**Identification and characterization of a novel protein from Leishmania donovani with potential implication in cell death pathways**

Science and Engineering Research Board

44.29 lakh INR, 3 years

Rajesh Patkar

**Understanding Molecular Pathobiology of Interspecies Interactions during Candidiasis**

DBT/Wellcome Trust India Alliance, Intermediate Fellowship

366.3 Lakhs, 5 years

Maya Ratnam

**Governing the pandemic: Relief and Resilience in Ahmedabad, Gujarat**

Social Science Research Council (SSRC)

5000 USD

Krishna Swamy

Department of Biotechnology, Ramalingaswami Fellowship

113.6 Lakhs, 5 years

Sanjay Chaudhary

**Establishment of the Supercomputer Facility STEM college in Gujarat**

Gujarat Council on Science and Technology

Ratna Ghoshal

**Development of a pattern recognition tool to identify individual marsh crocodiles**

Wildlife Conservation Society, Island Foundation

3.42 Lakhs

## Internal grants

### Seed grant (Ahmedabad University)

Nitin Banker

**Development of Experimental Model to Evaluate Minimum and Optimum Limits of Source Temperature to Drive Solar Adsorption Refrigeration System**

1.98 lakh INR, 1 year

### Start-up grants (Ahmedabad University)

Rama Ratnam

**Signal encoding and signal detection in the electrosensory system of weakly electric fish: Behaviour and neurophysiology**

25.00 lakh INR, 3 years



# RESEARCH SEMINARS

FOR THE PERIOD JULY- OCTOBER 2020

## Amrut Mody School of Management

1. Renée van Diemen, Centre for Environmental Policy Imperial College London & Minal Pathak, Global Centre for Environment and Energy, Ahmedabad University. *Accelerating the Energy Revolution*. July 4, 2020.
2. Bharath Shripathy, IBCC Industries India Private Limited & Pankaj Vaish, Amrut Mody School of Management, Ahmedabad University. *Can India Unlock Global Export Manufacturing Opportunities?* July 11, 2020.
3. Manish Sabharwal, TeamLease Services Limited & Parag Patel, Amrut Mody School of Management, Ahmedabad University. *The New World of Work and Education*. July 18, 2020.
4. Sanjeev Arora, University of New Mexico School of Medicine, Sunil Anand, ECHO India & Pallavi Vyas, Amrut Mody School of Management Ahmedabad University. *Democratising Access: Using Technology to Provide Healthcare Services Across India*. July 25, 2020.
5. Jeemol Unni, Amrut Mody School of Management, Ahmedabad University & Chinmay Tumbe, Indian Institute of Management Ahmedabad. *Crisis within a Crisis: Domestic Migration in India*. August 8, 2020.
6. Viral V. Acharya, New York University Stern School of Business & Amol Agrawal, Amrut Mody School of Management, Ahmedabad University. *Quest for Restoring Financial Stability in India*. August 13, 2020.
7. Reema Nanavaty, Self Employed Women's Association (SEWA), India, Deepali Khanna, Asia Region Office The Rockefeller Foundation & Pankaj Vaish, Amrut Mody School of Management. *The Social Sector - New Approaches to Delivering Tangible Impact*. August 21, 2020.
8. Santosh Desai, Futurebrands Ltd & Chirag Trivedi, Amrut Mody School of Management Ahmedabad University. *Society in The Time of Pandemic: Has COVID-19 Changed Our Social & Business Culture For Ever?* August 29, 2020.
9. Satya Tripathi, UN Environment. *Un Sustainability Goals: How the Student Community Can Accelerate Change*. September 2, 2020.
10. Jagdish N. Sheth, Goizueta Business School, Emory University & Pankaj Chandra, Ahmedabad University. *Is This The End Of The Road For Globalisation?* September 5, 2020.
11. R.S. Sodhi, GCMMF Limited (Amul) & Jeemol Unni, Amrut Mody School of Management Ahmedabad University. *How A Cooperative Of Dairy Farmers Kept The Rivers Of Milk Flowing In Uncertain Times?* September 19, 2020.
12. Rama Bijapurkar, Thought Leader on Market Strategy and Consumer Behaviour & Ravi Miglani, Amrut Mody School of Management, Ahmedabad University. *Why Are There No Customers In The Boardroom? Approach Towards A Customer-Centric Business Strategy*. September 26, 2020.
13. Gary Marchant, Sandra Day O'Connor College of Law, Arizona State University & Nimit Thacker, Amrut Mody School of Management, Ahmedabad University. *How Ethics, Law, Regulations, and Emerging Technologies Intersect*. October 10, 2020.
14. B. Sambamurthy, National Securities Depository Limited & Amol Agrawal, Amrut Mody School of Management, Ahmedabad University. *The Long Road To A Cashless Society*. October 17, 2020.
15. Amit Varma, Yahoo India & Sudhir Pandey, Amrut Mody School of Management, Ahmedabad University. *Hacking Cricket and Decoding IPL : Using The Discipline Of Economics To Rewire Cricketing Strategy*. October 21, 2020.
16. Pratap Bhanu Mehta, Professor of Political Science & Ravi Miglani, Amrut Mody School of Management, Ahmedabad University. *Is It Time Now For The Long-Awaited 'Indian Century'? India's Role In The New Post-COVID World*. October 31, 2020.

## School of Engineering and Applied Science

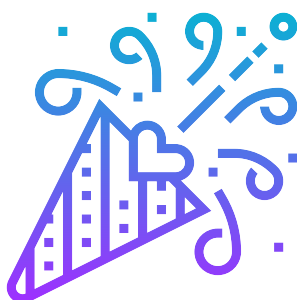
1. Shantanu Bhowmik, School of Engineering, Amrita Vishwa Vidyapeetham. *Recycling of Plastic Waste to Plastic Composite Products*. May 13, 2020.
2. Raj Das, Research Centre, School of Engineering, RMIT University, Australia. *On the Role of Advanced Multifunctional Materials and Structures on the Future Engineering and Technological Innovation*. August 5, 2020.

# RESEARCH SEMINARS

FOR THE PERIOD JULY- OCTOBER 2020

## School of Arts and Sciences

1. Maya Ratnam, Ahmedabad University. *Critical Thinking and the Liberal Arts*. July 14, 2020.
2. Kaushik Jana, Imperial College London, England. *Statistical Models and Methods for Some Environmental Problems*. August 19, 2020.
3. Rajesh Naidu, Institute of Technology, Indiana, USA. *Mundanity*. September 2, 2020.
4. Jess Auerback, North West University, South Africa. *Long Decolonisation: Challenges for the Curriculum in a 21st Century University*. September 4, 2020.
5. Neeraj Kumar, IIT Gandhinagar. *Motor learning and memory: Plasticity in the somatosensory system*. September 22, 2020.
6. Devdutt Pattanaik, Mythologist. *Pluralism in Indian Mythology*. September 30, 2020.
7. Todd Landman, University of Nottingham, UK. *Pandemic and Elections: Digital and Logistical challenges for elections during COVID-19*. October 7, 2020.
8. Simon Goldhill, University of Cambridge, England. *What are the Classics? Ancient Languages in a Modern World*. October 14, 2020.
9. Amit Basole, Azim Premji University. *The Geography of Social Policy: Lessons from the Covid-19 Pandemic*. October 29, 2020.



**Three faculty members from Ahmedabad University have been featured in a list of the world's top 2% most-cited scientists released by Stanford University.**

PR Shukla at the Amrut Mody School of Management and the Global Centre for Environment and Energy, Sanjay Singh at the School of Arts and Sciences and Anjan Anand Sen soon joining the School of Arts and Sciences, have been featured in this list for their work in the fields of Energy, Nanoscience and Nanotechnology and Nuclear and Particle Physics, respectively.

The Stanford University list includes 1,59,683 persons from across the world with expertise in areas such as Physics, Material Sciences, Chemical Engineering, Plant Biology, Energy and others. The results of the Stanford study were published recently in PloS Biology and can be accessed at <https://journals.plos.org/plosbiology/article?id=10.1371/journal.pbio.3000384>

We congratulate our colleagues for this recognition of their research.

# PUBLICATIONS

FOR THE PERIOD JULY- OCTOBER 2020

## Chapters in Monographs and Books

Parikh P., Joshi K. & Trivedi R. (09-2020). Vision-Based Trajectory Planning for a Five Degree of Freedom Assistive Feeding Robotic Arm Using Linear Segments with Parabolic Blend and Cycloid Functions. In Billingsley J., Brett P.. *Mechatronics and Machine Vision in Practice* 4. 193-206. Cham: Springer.

Bhat S. (2020). Maritime Links, Imperialism and Diaspora in the Ibis Trilogy". *Eastern and Western Synergies and Imaginations*. Editor: Katrine K Wong. Boston, Leiden: Brill. 56-78.

Bhat S. (2020). Diaspora and Renewable Energy in Manubhai Madhvani's Autobiography *Tide of Fortune*". *Discourses on Sustainability: Climate Change, Clean Energy, and Justice*. Editors: Elena V Shabliy, Dmitry Kurochkin and Martha J Crawford. London, New York et al: Springer International Publishing, imprint Palgrave Macmillan. 207-219.

Bhat S. (2020). Colonialism and Racialization in *The Madwoman in the Attic, Wide Sargasso Sea and Jane Eyre*". *Women's Human Rights in Nineteenth-Century Literature and Culture*. Elena V. Shabliy, Dmitry Kurochkin, and Gloria Y.A. Ayee. Eds. Maryland, US: Lexington Books: Rowman and Littlefield. 147-161.

## Articles in Refereed Journals

Mathew L. & Lukose R. (2020). Pedagogies of Aspiration: Anthropological Perspectives on Education in Liberalising India. *South Asia: Journal of South Asian Studies* , 43(4), 691-704.

Coelho K., Mahadevia D. & Williams G. (2020). Outsiders in the Periphery: Studies of the Peripheralisation of Low Income Housing in Ahmedabad and Chennai, India. *International Journal of Housing Policy*, Online (DOI:10.1080/19491247.2020.1785660), 1-27. <https://doi.org/10.1080/19491247.2020.1785660>.

Doshi K., Pandya N. & Datt M. (2020). In silico assessment of natural products and approved drugs as potential inhibitory scaffolds targeting aminoacyl-tRNA synthetases from Plasmodium. *3Biotech*, 10(470), 1-12. 10.1007/s13205-020-02460-6.

Padmanabhan R. & Shukla A. (2020). Orchards in elliptic curves over finite fields. *Finite Fields and Their Applications*, Volume 68(101756), <https://doi.org/10.1016/j.ffa.2020.101756>.

Vats V. & Singhal A. (2020). Effect of Ru substitution in La<sub>0.85</sub>Sr<sub>0.15</sub>CoO<sub>3</sub> towards oxygen evolution reaction: Activity of ionic Ru. *Electroanalysis*, 32(-), -. DOI: 10.1002/elan.202060079.

Vásquez-Procopio J., Rajpurohit S. & Missirlis F. (2020). Cuticle darkening correlates with increased body copper content in *Drosophila melanogaster*. *Biometals*, <https://doi.org/10.1007/s10534-020-00245-1> (<https://doi.org/10.1007/s10534-020-00245-1>), <https://doi.org/10.1007/s10534-020-00245-1>.

Vachharajani, V., & Pareek, J. (2020). Effective Structure Matching Algorithm for Automatic Assessment of Use-Case Diagram. *International Journal of Distance Education Technologies (IJDET)*, 18(4), 31-50. DOI: 10.4018/IJDET.2020100103

Khuntia, S., Sinha, M.K., Mohan, G. (2020). Evaluation of Reaction Kinetics for Removal of NO<sub>x</sub> by Ozone and Hydrogen Peroxide, *Ind. Eng. Chem. Res.* 59, 40, 17806-17814.

Bhat S. (2020). Delhi, diaspora and religious consciousness: heritage and palimpsest architecture in M. G. Vassanji's *A Place Within: Rediscovering India, Culture and Religion*. Routledge (Taylor and Francis). Abingdon, United Kingdom. 1-18.

## FUNDING OPPORTUNITIES: COVID-19 CALLS

**Agency: Abdul Latif Jameel Poverty Action Lab (J-PAL)**

**Initiative: Post-Primary Education Initiative**

Scheme: Education Research and Scale for COVID-19 Recovery

Scheme remit: To support randomized evaluations and scale-ups of strategies to improve access, quality, equity, and relevance of pre-primary, primary, and post-primary education in response to the COVID-19 pandemic across low- and middle-income countries.

Applicant eligibility: J-PAL affiliates, J-PAL post-docs, and invited researchers are eligible to apply. Additionally, for some schemes, PhD students, with support from an adviser who is a J-PAL affiliate are also eligible to apply for funding.

J-PAL affiliation: details at <https://www.povertyactionlab.org/page/affiliate-criteria>

Grant types supported: Full research projects, pilot research projects, proposal development projects, and scale-up projects

Submission deadline: 20th December 2020

Application process: Via application form available on website, to be emailed to J-PAL

Website: <https://www.povertyactionlab.org/initiative/education-research-and-scale-covid-19-recovery-request-proposals>

**Agency: Department of Biotechnology, in collaboration with UKRI-MRC**

**Scheme: UK-India Covid-19 Partnership Initiative**

Scheme remit: To provide funding for collaborative research projects with potential to deliver public health impacts in mitigating the severity of the COVID-19 outbreak in both the UK and India

Research focus: Mitigating the severity of COVID-19 in South Asian/Indian populations, through the study of related ethnic groups in different environments.

Team: to include a lead investigator both in India and UK

Duration: Up to 18 months

Deadline: 1st December 2020 for submission to MRC and 3rd December 2020 for submission to DBT

Weblink: <http://dbtindia.gov.in/sites/default/files/India-UK%20COVID-19%20Partnership%20Initiative.pdf>

Application process: A short "intention to submit" proposal by 11 November followed by full application. Full application including a common research plan and DBT budget for the Indian side as an annexure should be submitted by the UK applicant via Je-S. Indian PI to then forward application package to DBT.

## RESEARCH GRANTS AND FELLOWSHIPS

**Agency: Bill and Melinda Gates Foundation**

**Scheme: Global Grand Challenges: Integrating Tradition and Technology for Fermented Foods for Maternal Nutrition**

Scheme remit: To fund pilot studies that investigate the biological effect of traditional locally fermented foods on key microbiome, gut, and health biomarkers in local populations. The goal of this initiative is to ultimately empower local communities to develop geography and culture specific interventions powered by fermentation, in country.

Geographies: Sub-Saharan Africa and South Asia

Duration: 18 months

Budget provisions: 200,000 USD including access to sequencing platforms and training

Deadline: 6th January 2021

Weblink: <https://gcgh.grandchallenges.org/challenge/integrating-tradition-and-technology-fermented-foods-maternal-nutrition>

Application process: via Online platform

**Agency: Department of Science and Technology, in collaboration with the Dutch Research Council****Scheme: Cleaning the Ganga and Agri-Water**

Scheme remit: The call will focus in particular on the impact of agriculture on the Ganga water system and the related scopes for interventions. The Hindon sub-basin is selected as case area.

Additional details: Each project will be expected to address the following areas: (i) River basin system understanding, data and monitoring, (ii) Interventions to improve agricultural water management, and (iii) Recommendations for implementation

Team structure: The consortium should include at least two different research organisations in the Netherlands, two different academic institutions in India, and a partner from a public, semi-public or private practitioner organisation

Duration: 5 years

Budget provisions: Budget cap of Rs 5.5 crores on the Indian side

Deadline: 26th November 2020

Weblink: <https://dst.gov.in/sites/default/files/DST%20NWO%20joint%20Indo%20Dutch%20call%20on%20Cleaning%20Ganga%20and%20Agri%20Water.pdf>

Application process: via form available on ePMS platform

**Agency: Science and Engineering Research Board (SERB)****Scheme: National Science Chair**

Scheme remit: To recognise active eminent senior resident Indian superannuated scientists for their outstanding contributions, in the area of Science, Technology, Engineering, Mathematics (STEM) and Medicine

Mode of implementation:

Mode 1: Scientific excellence- To extend continuance of support for excellence in R&D activities of eminent senior superannuated scientists who are passionate in research as evidenced by the S&T output.

Mode 2: Science leadership-To recognize outstanding contributions made by any of the resident Indian superannuated Scientist towards excellence at the national and the global level.

Budget provisions: Rs 1.5 lakhs Fellowship per month, research grant of Rs 25 lakhs and Rs 5 lakhs per annum for Modes 1 and 2, Rs 1 lakh overheads per annum

Duration: 3 years with the possibility of further extension by 2 years

Deadline: 15th December 2020

Weblink: <https://www.serbonline.in/SERB/nationalScienceChair?HomePage=New>

Application process: via the SERB online portal, as a two-stage online nomination from the Head of the institution or Presidents of the Science Academies

**Agency: Science and Engineering Research Board (SERB)****Scheme: SERB Women Excellence Award**

Scheme remit: To reward young women scientists (below age 40) who have excelled in science and received recognition from any of the Indian National Science Academies

Budget provisions: Research grant of Rs. 5 lakhs per annum and Rs 1 lakh per annum as overhead charges for a period of three years

Duration: 3 years

Deadline: 15th December 2020

Weblink: [https://www.serbonline.in/SERB/Women\\_excellence?HomePage=New](https://www.serbonline.in/SERB/Women_excellence?HomePage=New)

Application process: via the SERB online portal

## FUNDING OPPORTUNITIES: INTERNATIONAL EXCHANGE AND COLLABORATIONS

**Agency: Department of Biotechnology (DBT)**

**Scheme: DBT Initiative on Chemical Ecology of the North East Region (NER) of India**

Scheme remit: to bring together researchers in complementary disciplines to explore the role chemical signals play in shaping the unique ecosystems of the NER by studying interactions at the molecular level

Research focus: can include chemical studies on predator-prey, parasite-host, herbivore-plant, virus-vector, inter- and intra-specific interactions in the NE ecosystems

Team structure: The proposals should be NER centric with multi-institutional participation from institutions within NER or with outside NER Institutions. If the projects are with outside NER institutions then the budget sharing should be in the ratio of up to 60:40 between NER and outside NER institutions, respectively.

Duration: 3 years

Deadline: 15th November 2020

Weblink: [http://dbtindia.gov.in/sites/default/files/NER%20Chemical%20Ecology%20Call%20for%20Proposal\\_Final.pdf](http://dbtindia.gov.in/sites/default/files/NER%20Chemical%20Ecology%20Call%20for%20Proposal_Final.pdf)

Application process: via ePRoMIS

**Agency: Volkswagen Foundation**

**Scheme: 'Mixed Methods' in the Humanities; Funding line 2: Workshops and summer schools**

Scheme remit: Support for Projects Combining and Synergizing Qualitative-Hermeneutical and Digital Approaches

Applicant eligibility: Applications are invited from researchers across all historical-hermeneutical disciplines (e.g. language and literature studies, history, philosophy, history of law and comparative law, art history, musicology) who work in equitable cooperation with partners in the areas of digital humanities or informatics.

Team structure: Research institutions outside Germany must include specific details of a substantial cooperation with academics in Germany.

Budget provisions: The budget may include travel and accommodation expenses, as well as (reasonable) costs of personnel required for the preparation and implementation of workshops, excluding overheads costs.

Deadline: 31st December 2020

Weblink: [https://www.volkswagenstiftung.de/sites/default/files/downloads/MB\\_108\\_e.pdf](https://www.volkswagenstiftung.de/sites/default/files/downloads/MB_108_e.pdf)

Application process: Via the electronic application system for Volkswagen Foundation

## FUNDING OPPORTUNITIES: ACADEMIA-INDUSTRY INTERACTIONS

**Agency: Biotechnology Industry Research Assistance Council (BIRAC)**

**Scheme: Promoting Academic Research Conversion to Enterprise- Academic Innovation Research (PACE-AIR)**

Agency Remit: To strengthen and empower the emerging Biotech enterprise to undertake strategic research and innovation, addressing nationally relevant product development needs

Scheme Remit: To promote development of Proof-of-concept (PoC) for a process/product by academia with or without the involvement of industry

Applicant eligibility: Primary applicant should be from academia

Budget provisions: Rs 50 lakhs

Duration: 18 months

Deadline: 30th November 2020

Weblink: [https://www.birac.nic.in/desc\\_new.php?id=286](https://www.birac.nic.in/desc_new.php?id=286)

Application process: Online via BIRAC website

**Agency: Biotechnology Industry Research Assistance Council (BIRAC)****Scheme: Promoting Academic Research Conversion to Enterprise- Contract Research Scheme (PACE-CRS)**

Agency Remit: To strengthen and empower the emerging Biotech enterprise to undertake strategic research and innovation, addressing nationally relevant product development needs

Scheme Remit: Aims at validation of a process or prototype (developed by the academia) by the industrial partner

Applicant eligibility: Academia has to be the Primary Applicant with one or more partners of which at least one is a company

Budget provisions: While funding is provided to the academia for In-House research which forms a part of validation of the Proof of Concept, funds are provided to the industrial partner for validation.

Deadline: 30th November 2020

Weblink: [https://www.birac.nic.in/desc\\_new.php?id=286](https://www.birac.nic.in/desc_new.php?id=286)

Application process: Online via BIRAC website

**Agency: Biotechnology Industry Research Assistance Council (BIRAC)****Scheme: Biotechnology Industry Partnership Programme (BIPP)**

Scheme Remit: An Advanced Technology Scheme for high risk, transformational technology/ process development from proof-of-concept to validation leading to high value product commercialization

Focus areas: a) Drugs including drug Delivery, b) Vaccines and clinical trials, c) Biosimilars & stem cells, d) Devices & Diagnostics, e) Agriculture, f) Industrial Biotechnology including Secondary Agriculture and g) Bioinformatics & facilities that virtually cover every aspect of Biotechnology.

Team structure: Consortium can include companies and academia

Budget provisions: While funding is provided to the academia for In-House research which forms a part of validation of the Proof of Concept, funds are provided to the industrial partner for validation.

Deadline: 30th November 2020

Weblink: [https://www.birac.nic.in/desc\\_new.php?id=216](https://www.birac.nic.in/desc_new.php?id=216)

Application process: Online via BIRAC website

## GRANT WRITING RESOURCES



### UNIVERSITY GRANTS OFFICE WORKSHOP

The University grants office conducted two online grant-writing workshops for the faculty members at Ahmedabad University, on 30th September 2020 and 7th October 2020, respectively.

Workshop 1 was aimed at faculty who wished to familiarise themselves with support available at Ahmedabad University for seeking and managing internal and external grant funding. Workshop 2 was aimed at early career faculty who wished to understand the essentials of writing successful grant proposals.

A recording of Workshop 2 can be accessed on AURIS.



*Image credits: Ahmedabad University Communications Office, C-DAC, Krishna Swamy, Rajesh Patkar, Tathy Shah, PubChem, Kangna Bagani and Savita Ayyar*

*All requests for research funding from internal and external sources should be sent to the University Research Board for approval, via the Grants Portal.*

*Details of intramural funding available via Ahmedabad University are available in the University Research Board Policy Document. This includes Start-up grants, Seed grants, University Challenge grants, Teaching Material Development/Innovation grants and Conference Travel support.*

*Previous editions of the Research Horizons Newsletter and Funding compendium are archived on AURIS.*

*For suggestions on the Funding compendium, please contact the Dean of Graduate School and Research at [urb@ahduni.edu.in](mailto:urb@ahduni.edu.in).*