

RESEARCH HORIZONS

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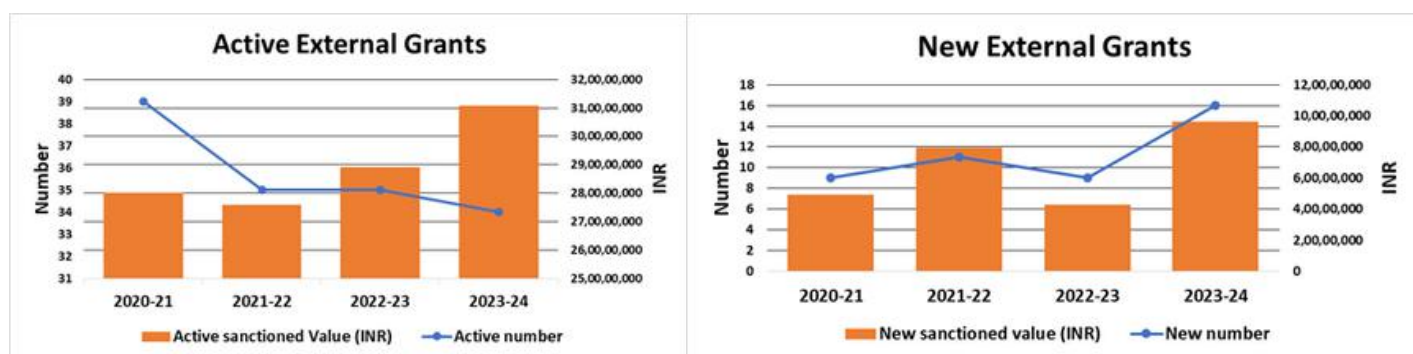
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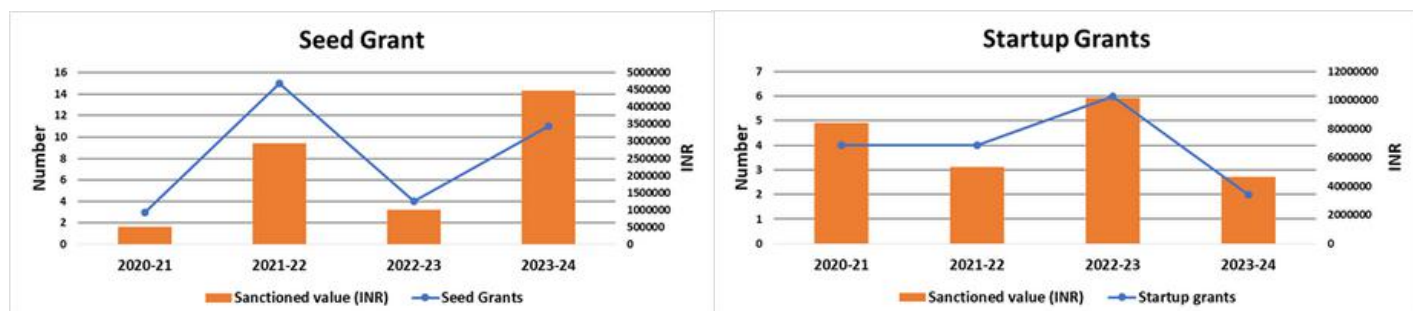
About Ahmedabad University Grants Office

The University Research Board (URB) supports and promotes the research of faculty, students and staff at the University. The University Grants Office (UGO) was established in June 2019 to support the activities of the URB and facilitate fundraising for research at different levels. The UGO provides administrative assistance and guidance in proposal preparation and submission, and oversight of all post-award financial and non-financial aspects of the grants.

In addition to publishing this newsletter, the UGO also publishes a monthly Research Compendium to collate and disseminate information to the University community on potential funding opportunities. Twelve issues of this compendium were published in 2023-24 through which information about 146 unique funding opportunities was shared. Of these, 76 applications were submitted to 43 opportunities. Members of the University faculty received 16 new grants worth INR 963.9 lakhs this year, taking the total active grants at the University to 34 with a total sanctioned value of INR 3,107.3 lakhs. The number of new and ongoing grants has seen a significant increase this year along with the sanctioned value. In addition to the national funding bodies such as the SERB, DST, DBT, ICMR, Ministry of Environment, Forests, and Climate Change, ICSSR, DBT/Wellcome Trust India Alliance and Gujarat State Biotechnology Mission, faculty also received grants this year from international funding bodies such as the United Nations Office for Project Services, IEEE ITS Society and Cisco University Research Program Fund.



As part of the policy to promote research activity at the University, the URB awards research grants from internal funds in the form of Seed Grants (up to INR 5 lakh funding for initiating new projects), Start-up Grants (up to INR 25 lakh funding for newly recruited faculty) or University Challenge Grants (up to INR 25 lakh funding for interdisciplinary projects). In 2023-24, eleven Seed Grants with a sanctioned value of INR 44.8 lakhs, two Startup Grants (total sanctioned value = INR 46.76 lakhs) and one University Challenge Grant (INR 11.5 lakhs) were awarded. In addition, URB also disbursed approximately INR 205 lakhs for the purchase of high-end research equipment and supported the travel of thirty two faculty members for presenting their research at international conferences.



As part of the efforts to help the University faculty put together effective grant applications, the UGO organized a seminar in March 2024 titled "The Art of Grant Writing" that was delivered by Professor Shagufa Kapadia, Emeritus Professor at M. S. University, Vadodara.

Decoding Political Mobilization in India

In Conversation with Sarthak Bagchi



Sarthak Bagchi is an Assistant Professor in the School of Arts and Sciences, Ahmedabad University. He is a political scientist who studies clientelism and patronage politics, regional politics in Indian states, populism, and politics of identity. His first job out of college was as a television journalist reporting on events such as the 26/11 terrorist attacks in Mumbai. During the recent assembly elections in Odisha and Andhra Pradesh, he worked extensively in the field collecting data for his research. In this issue of *Research Horizons*, Professor Bagchi shares his journey from a journalist reporting political events to a researcher studying them.

Let's start with your background. Where were you born, where did you go to school?

I am a Bengali, but I was born and brought up in Mumbai. So, I have always been like an outsider from Bengal. I studied in a Kendriya Vidyalaya till my twelfth standard, where I was a science student. I was a 'not so sincere' science student, I would say. At the time of my undergrads the path changed, and I went on to do a Bachelor of Mass Media from Mumbai University with a specialization in journalism. I wanted to become a journalist at that time.

What motivated this change from studying science in the twelfth class to an interest in a journalism career? Was there any trigger for choosing a different track?

I think my choice of science was not really a choice. I was just following the norm of that time. I was studying in Kendriya Vidyalaya at that time, and though the school was in Mumbai, there was really no option for humanities or social sciences. So there were only 2 options. There was science with physics, chemistry, maths and biology, which the elite or the 'good students' took, and I think I was in that category, and there was the commerce stream for those who did not make it to science. Then, there was the commerce with Hindi for those who were hopeless. That was the segregation we had in education at the time, a hierarchy like the caste system, and it was steadfastly followed. I was interested in pursuing a career in medicine. But over a period of time, during the 12th standard, I got a little disenchanted with that kind of rat race and I went on to get a journalism degree. Those days, while still in college, when I met

my school friends, they would treat me like an exotic being because I was not into medicine or engineering or another science degree. But later on, after I started writing for newspapers like Mid-Day or DNA or when they saw me reporting on TV, they were fascinated with my career choice.

How did you get interested in Political Science?

I have always been interested in interacting with people and learning more about people. I have been intrigued to know their stories. Even while I was working, I realized that television journalism, or even print journalism for that matter, doesn't offer you that space to engage with any issue in depth and I wanted to do that. If I was looking at an issue in politics, I wanted to gather more information, go into more depth and look at it from multiple perspectives and spend more time in doing research on the topic. Very few media outlets, even today, publish those kinds of reports with in-depth perspectives. So, I realized that a switch to academics would be a better option for me because then I would get some more time and space to engage with issues in a more informed manner. Because I was interested in understanding politics and its interfaces with society, a natural progression for me was to apply for a master's in political science.

I got through into the University of Hyderabad which has a very strong political science department. It has some of the best faculty members in Political Science. This opened up an entirely new field of political science for me. I learnt many theories or political philosophies, Indian political philosophies, thoughts of Gandhi, Ambedkar and Jinnah and also Western political philosophers like Machiavelli, Plato, Aristotle and Gramsci. Being a part of the central university also impacted me in not only the kind of learning I was getting from the syllabus or the courses being taught, but also from the experience of being in a very diverse university. I think the real interactions that mattered to me, or that influenced me the most, were the ones that I had at the University of Hyderabad as a master's student and later as an MPhil scholar. The four years I spent in Hyderabad really opened me up to many different kinds of perspectives and the rich diversity represented in India, and that opened me up to the idea of Ambedkar and why he is so important, the Dalit and Bahujan politics, student politics, etc. That appealed to me and intrigued me to know and to read more. This experience changed me, and I started engaging with society differently.

What was your M. Phil dissertation work?

My MPhil supervisor was teaching a course on elections and voting behaviour at that time. He nudged me to research clientelism, an emerging area of study in understanding Indian politics. Clientelism is defined as a relationship between a politician and a voter in which the politician, who has control over resources, promises to give access to those resources to the voter in a selective manner. However, the selective distribution of the resources is contingent on whether the voter extends or promises to extend electoral support to the politician in return. This type of relationship between a politician and a voter is similar to a patron-client relation or a clientelistic relation. A common example of this seen in our country is the distribution of money or liquor or sarees during the elections. When I started studying clientelism, though the practice was widely prevalent, there weren't many studies on that topic, especially applying quantitative methods like multivariate regression analysis which I did in my MPhil thesis.



Can you share an example or two of what the politicians offer their voters to secure their votes?

In a clientelistic network, there is the politician at the top of the chain and the voter at the bottom. But in between these two ends, there are the middle level operators who we call brokers. In Bihar, a typical middle level leader would be a panchayat head or a Mukhia. These will be the leaders who can get some kind of a favour or money from the top-level politician and their identity is tightly woven around the figure of the politician such as an MLA because the politician himself does not have access to personal wealth that can be disbursed to the voters. What happens in Maharashtra is the brokers can be unattached to any particular top-level leader

and can have different choices because of the multiple avenues for generating private funds. A politician may own, for example, a medical college. He can employ people there who will in turn campaign for him during the election. Another example is a milk or a sugar cooperative where the politician would be the head of the governing council and the farmer members of the cooperative will be cajoled into voting for them. These types of arrangements are independent of government's

resources. So there is a diversification in the nature of resources through which the brokers or mediators exert their political influence. To help a constituent with a health emergency, a Bihari politician will have to exert influence on a hospital in the district headquarters or the state capital, Patna. A Maharashtra politician on the other hand can refer them to a medical college he himself owns. These are some examples of how the clientelistic politics differs between the resource-rich and a resource-constrained settings.

Is clientelism a phenomenon unique to India and Southeast Asia or is it observed in other countries too, especially in the West?

Though this phenomenon is more visible in what we know as the global south, the more famous cases of clientelism in political science literature are from the Latin American countries like Peru, Mexico, Argentina and Brazil. These countries had strong governments which had these kind of informal clientelistic networks. These networks played an important role in maintaining stable governments in those countries after the military dictatorships. In sub-Saharan Africa also some kinds of clientelism exists. In Southeast Asia, the focus on clientelism emerged from a lot of anthropological and historical work of people like James Scott and others to understand how clientelistic exchanges work. This was also to understand how state-society interactions work, to see how the society makes claims of the State.

Actually, if you look at it, the origins of clientelism go as far back as the historical idea of democracy itself. The practice of giving favours in return of vote was prevalent even during the Roman Times. There is a book called 'How to Win Elections' by Cicero in which he charts out different ways to win elections. One of them is to offer everything to everybody, give individual gifts and just entertain any request that you get from people. In the US there was this concept of pork barrel politics. The origin of this term comes from a practice during the early days of elections in US where the agents of political parties would stand outside the polling booth with barrels of rum and pork which will be offered to voters coming out of the booth. Pork barrelling still exists in the US but it has taken a different shape in the form of giving some kind of discretionary resources to the constituencies. There is a lot of literature coming out of European countries also about clientelistic politics there. So clientelism is not a phenomenon of just the Southeast Asia or the global south, but is seen in the West also. The degree and the nature might differ.



What is the future direction of your research?

I am interested in understanding the question of political mobilization. How do politicians mobilize voters, and how do voters in turn connect with politicians? I have studied the question of political mobilization through the case of the Nishad community which is a riverine community engaged in fishing and allied activities like rowing boats, making nets, boats and oars and making salt near the seawater or the Delta. They have a very interesting history, which has references in Ramayan and Mahabharat. I have been working with this community to understand how a group categorized as extremely backward caste uses their numerical strength in electoral politics, by virtue of being 10% of the population, to make a claim on the

resources. The Nishad community is attempting to bridge 22 subcastes or jatis within the EBC fold and creating a composite caste identity. They have formed 2 political parties in 2 different States; in Bihar it is called the Vikassheel Insaan Party and in UP it is called the Nishad Party. I have been

trailing the Vikasheel Insaan Party for 9 to 10 years now. Both of these parties have emerged from caste-based association, and have transformed into political entities. So I am also very keenly observing this rise of the Nishad politics and what it says about the process of democratization and political mobilization.

Another research project I am working on is looking at the role of money power in elections and in democracy. This project spans 2 countries, India and Indonesia, which are very diverse democracies. What we want to see is not only the extent of the money involved in election campaigns but also the nature of it and the variations in the economy of campaign financing. I am coordinating the qualitative parts of the study in India. As part of the study, we had researchers on the ground collecting data during the recently concluded assembly elections in Odisha and Andhra Pradesh. We are trying to understand the impact of different regional economy structures on campaign financing and the variations between different regions in terms of the nature of expenditure and the source of the money. What will be very interesting to understand is why the variations happen. Through this project we aim to publish both academic papers and policy reports so that we can also contribute meaningfully to the discourse on policymaking around making elections more democratic.

How does a political scientist ensure their personal political beliefs do not influence the direction or outcome of their research?

This is a very important question as I think consciously or unconsciously we all subscribe to some or the other form of an ideology or are sympathetic towards some kind of a political idea. It can be on either side of the spectrum, but irrespective of that it is very important for us to acknowledge that we have certain ideas about how society is structured or should be structured. Many of these ideas come from various sources. It can be from the books we read, the arts we enjoy, the friends we interact with and even our upbringing. Now, as a political scientist, I think half of my task of preventing my biases from coming into my work is done if I acknowledge the fact, or if I am aware of the fact, that I have some biases or rather, I have some preferences of how the society should be, in an ideal sense. The other half is achieved if I extract myself from the research as much as possible. My positionality as a researcher will definitely have an impact on the kind of responses I derive and the kind of access I achieve in my ethnography, but if I am trying to find out how politicians mobilize voters, I have to make sure that the story that I tell has two actors, the politicians and the voters. I am not the star of the story and therefore I do not get to play any role in it, in terms of interpretations of the data. It also helps if I am able to de-contextualize myself from the story, as much as possible.

What are the things you are interested in outside work?

Outside of research in Political Science, doing fieldwork to study election campaigns and looking at the different patterns of political mobilization, I am extremely interested in political cartooning. I have always been into doodling since my school days and as a child I used to draw on the empty sides of the wall calendars. During college I delved into political cartooning and participated in some events of political cartooning during various college festivals. It was during COVID that I really started drawing political cartoons more seriously and now I have also self-published a book of cartoons and I bring out an annual calendar of my political cartoons, which is turning out to be popular among my colleagues here at Ahmedabad University.



Awarded Grants

(for the period April - June 2024)



Ahmedabad University Grants

Startup Grant

Samyaday Choudhury, School of Arts and Sciences

Probing stellar populations in the Magellanic Bridge – using the UVIT/AstroSat and multi-wavelength data

INR 21,76,000; 3 years

The Magellanic Bridge (the Bridge) is a vital signature of ongoing tidal interactions between the Large and Small Magellanic Clouds (LMC and SMC), the closest pair of satellite galaxies of the Milky Way (MW). Despite decades of study, the origin, structure, metallicity distribution and star formation history of the Bridge is not well understood. The Bridge consists of gas as well as stars of different generations which emit across multiwavelengths, from ultraviolet to infrared. These stars could be used as tracers to understand the aforementioned aspects. Through this study, Professor Choudhury will conduct the first-ever study of the Bridge using the Ultraviolet Imaging Telescope (UVIT) onboard AstroSat, the Indian space observatory, and combine UVIT with multiwavelength data to probe stellar populations in the Bridge.

Seed Grant

Neel Kamal Chapagain, Amrut Mody School of Management

Understanding the making of ‘Gandhi of Architecture’: exploring the values of vernacular heritage of Pithoragarh in the Indian Himalayas

INR 4,04,250; 16 months

There is a general assertion that vernacular architectural heritage is worth studying and preserving. However, the real scenario in most of the contexts is that most of the vernacular architecture disappear giving way for some other architecture. Hence, the critical question is what makes the heritage of such vernacular architecture – if one sees them as heritage, and what and how one can learn from them. Again, sufficient literatures can be found on explaining the do’s and don’ts of architecture which relate to vernacular, but how many architects or heritage activists would relate to the vernacular heritage in real way? This research proposes to look into these questions by looking into the practice of an architect – Laurie Baker, who has been recognised as being rooted to such vernaculars, and for pursuing such a practice so widely that some call him ‘Gandhi of Architecture’. Baker was inspired by Gandhiji when he met him in his transit at Mumbai – on his trip to England from China, and actually Gandhiji did ask him to consider offering his service to millions of people in rural India. Not sure at that time though, Laurie Baker returned to India after a few months to serve as an architect building homes and hospitals for Leprosy patients. This research aims to look into these 15 years and the vernacular contexts to engage with these critical questions on the relevance of vernacular architecture and heritage.

Rahul Rao, Amrut Mody School of Management

Global oil price pass-through and optimal monetary policy in India
INR 3,12,000; 2 year

The role of monetary policy in the transmission of global oil price shocks to real economy is well recognized in the economics literature. The incomplete pass-through of global oil price shocks into the domestic oil prices along with its structural origins is, however, not explored enough. In the context of Indian economy, this research project will examine the interaction between these pass-through frictions and optimal monetary policy action. Empirically, it will estimate the magnitude of the pass-through of the global oil price shocks into domestic oil prices in India and look at its cyclical properties, i.e., the direction of the pass-through. Whereas, theoretically, using a New Keynesian model with the novel introduction of oligopolistic competition between oil (an intermediate good) producers, it aims to estimate the loss of aggregate output and the additional interest rates that persist in the economy on account of the above mentioned interaction.

Maya Ratnam, School of Arts and Sciences

Shifting cultivation and the invention of tradition: agroecology, climate change and the discourse of indigenous agriculture
INR 1,60,000; 6 months

The proposed project is an ethnographic study of innovations in forest-based agriculture in three districts of central India- Dindori, Mandla and Balaghat. The study examines how, with the introduction of terms such as agroforestry and agroecology, indigenous or 'tribal' farming practices such as shifting cultivation are coming to be seen as sustainable, and forest-friendly. This marks a significant shift from earlier perspectives that delegitimized and criminalized the tribal relationship to the forest. With the emergence of sustainable agriculture as an important counter to market-driven agricultural practices, shifting cultivation is being revived as a 'traditional' form of forest-friendly farming kept alive by indigenous or tribal communities in their customary regions of habitation. It is this discursive shift and the concomitant reinvention of tradition and custom, through concrete developmental interventions into the ground, that this project wishes to examine.

Teaching Material Development/Innovation Grant

Samyaday Choudhury, School of Arts and Sciences

Establishing astronomy & astrophysics teaching laboratory – phase I: setting up pyramidal horn antenna radio telescopes
INR 73,000; 2 years

Teaching Astronomy & Astrophysics (A&A) in India faces a significant hurdle due to the inaccessibility of professional telescopes and observatories. While A&A captivates the minds of young science and engineering students, universities find it difficult to provide hands-on experience to teach A&A to undergraduate and postgraduate students. To address this, building a teaching laboratory with small telescopes is imperative.

Policy Dissidents: Understanding Girl Activism as Creating “Tactical Crevices”

Mary Ann Chacko

Mary Ann Chacko is an Assistant Professor in the School of Arts and Sciences. Her research work is in critical childhood and youth studies, the role of police in schools, gender, citizenship, and qualitative methods, especially ethnography. She is currently developing a research project on Indian Muslim Women's Rights Activism. In this issue of the *Research Horizons*, she presents a summary of a recent publication in the journal *Policy and Society* (<https://doi.org/10.1093/jhs/hiad022>). This paper was published through an international collaboration with Shenila Khoja-Moolji of Georgetown University, USA.



Greta Thunberg (Anders Hellberg, CC BY-SA 4.0 <<https://creativecommons.org/licenses/by-sa/4.0/>>, via Wikimedia Commons)



Disha Ravi (Rottencluster, CC BY-SA 4.0 <<https://creativecommons.org/licenses/by-sa/4.0/>>, via Wikimedia Commons)

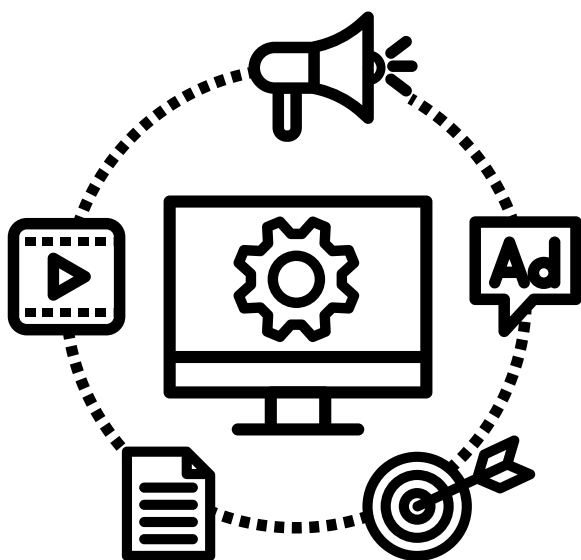
Girl activists often become poster children of girl empowerment. They symbolize the fulfilment of feminist struggles, heralding a post-feminist world. In the article “Policy Dissidents: Understanding Girl Activism as Creating ‘Tactical Crevices’”, we re-think this dominant narrative through our study of two youth activists—Greta Thunberg and Disha Ravi—whose climate change activism and the responses to it, destabilise postfeminist fantasies. We show that despite all the talk about gender mainstreaming and youth participation in policy making processes, girl activism gains legitimacy only when it conforms to state and societal expectations and when their activism is perceived as apolitical and geared towards economic growth. The study is based on a close reading of writings by and about Greta and Disha, including social media content, specifically hashtag campaigns #FridaysforFuture and #StandwithDishaRavi on X (previously Twitter). We refer to Greta and Disha as “policy dissidents” because rather than adhering to the playbook for girls’ participation in policy-making processes, both these activists engage in tactics that puncture these logics through strikes and protests that stand in the way of popular notions of development. The concept of “tactical crevices” is central to our argument. The term refers to temporary and strategic interruptions that these activists are compelled to create to challenge adult-dominated climate policy and law-making processes driven by nationalist and economic interests. Inspired by the work of Michel de Certeau and Shruti Devgan, tactical crevices refer to the impact of strategies used by the marginalized, often with limited resources, to fragment dominant discourses and practices. We highlight commonalities between Greta and Disha’s activist tactics and the coalition they are able to forge through networked conversations in cyberspace. However, the article is attentive to how their differential racial, national and class locations leads to Disha being exposed to greater risks for her climate change activism in India. This article is an invitation to move away from thinking about policy making processes and their impacts through the usual metrics of gender mainstreaming.

There is a Thin Line Between an Email Marketer and a Spammer

Prithwiraj Mukherjee

Prithwiraj Mukherjee is an Associate Professor in the Amrut Mody School of Management. His research interests include digital marketing, agent-based modeling and behavioral decision making. He is particularly interested in the grey areas of digital marketing like clickbait, influencer fraud and platform exploitation. In this issue of the Research Horizons, he presents a summary of a recent publication in the Journal of the Academy of Marketing Science (<https://doi.org/10.1093/jhs/hiad022>). This paper was published in collaboration with Alina Ferecatu, Erasmus University, Netherlands and Arnaud De Bruyn, ESSEC Business School, France.

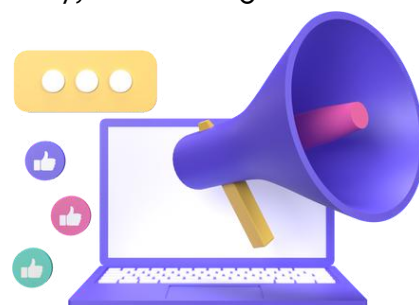
Before the age of the internet and SMS, sending personalized marketing communications was costly. For every pamphlet or coupon mailed to customers, marketers had to pay for printing, envelope-stuffing and postage. Even phone calls involved human effort for every call made. Contrast this to emails, SMS or push notifications on phones – these are virtually costless for marketers to send. It is thus no wonder that our mailboxes are always full, and our phones are always buzzing.



But is such over-soliciting (borderline spamming) really costless to the marketer? Many of us simply blacklist a persistent marketer by consigning them to the spam folder. In customer analytics terminology, this is called silent and unobservable customer dropout. Thus, by over-soliciting a customer, a marketer can end up losing them – a severe hidden cost.

This problem is especially acute for companies who perform market research for clients by sending surveys to a large database (called e-panels). For every survey response, they are paid by a client. The e-panel company now faces a unique problem: a panel member must be solicited to elicit a response, but over-solicitation may lead them to be blacklisted as spam. Thus, they need to figure out an optimal solicitation patterns. But before that, they need to figure out a panelist's probability of both responding to a solicitation, as well as their probability of quitting the e-panel (attrition). And this needs to be done with only past data of solicit times and observed binary responses (RESPONSE/NO RESPONSE).

Using a unique data set of over 150,000 solicitations and responses of survey panelists by an epanel company, we find that over-solicitation not only decreases future responses, but also increases the attrition. We then used differential evolution (an evolutionary optimization algorithm) to arrive at optimal solicitation patterns over a time horizon. This differential evolution-based solicitation strategy outperforms both a random strategy (targeting random panelists) and a "greedy" strategy (targeting those who are most likely to respond immediately) over a long time horizon.



Publications

(for the period April - June 2024)



Articles in Refereed Journals

Bhatt, V., Pandey, S., Patel, R., Ghodake, S., Jariwala, H. & Thomas, S. (2024). Predicting online donation intention in donation-based crowdfunding apps: a multi-stage SEM-ANN-NCA model integrating anthropomorphism, satisfaction, trust, and privacy concerns. *Journal of Nonprofit & Public Sector Marketing*, 1–25. <https://doi.org/10.1080/10495142.2024.2351012>.

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It's More Than the DNA: Studying the Role of Epigenetics in Cancer

In Conversation with Noopur Thakur



Noopur Thakur is an Associate Professor in the School of Arts and Sciences at the Ahmedabad University. Her research focuses on studying the role of epigenetic changes in cancer development. She studies the role of growth factors in maintaining the epigenetic state of the cells and the mechanism for deregulation in the cancer cells. She is also interested in looking at cancer cells as a model to study normal cell functions. In this issue of Research Horizons, Professor Thakur shares the experiences from her life and work.

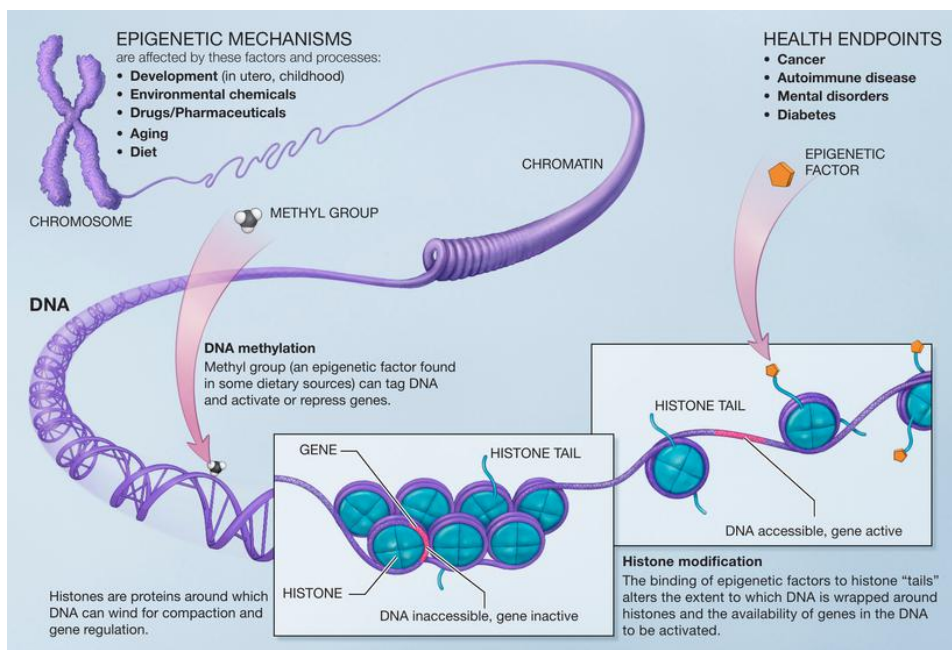
I come from Bijnor, a small town between the revolutionary city of Meerut and the timeless pilgrimage of Haridwar. After my schooling and early education in Bijnor, I moved to Banaras Hindu University (BHU). At BHU, I joined the Molecular and Human Genetics (MHG) programme for a master's degree. While BHU is a great seat of higher education, my joining of the MHG was special in ways more than one. MHG was the newest programme at BHU, one of the oldest schools in our country. An uphill addition to that was that this was my first face-off with the challenging and gravitating field of biology at a molecular level. I was one of the ten students admitted to the first batch of MHG. We were expected to carve out a niche for ourselves and set a template for our juniors to follow. I had a mountain in front of me and thanks to my teachers, family and friends, I began my climb. The journey couldn't have been more exciting. The experience and mentorship I received at BHU introduced me to academic research, the fundament of all knowledge we possess and apply. It tamed my curiosity and became a turning point in my career. I never dreamt of becoming anything. Instead, I just remained perpetually curious, and my efforts to ask and answer questions in biology have led me to where I am today.

Thinking back, I think I was made for it. I was the studious type of kid who was hard to pacify with superficial answers and often chose to dig deeper. I think that turned into a research orientation when I went to BHU and had the opportunity to be mentored by some great scientists and teachers. The curriculum was oriented towards project work, and we spent much of our wakeful hours performing experiments in the labs, often from 8 in the morning to 9 in the evening. I completed a project on *Drosophila* with the maverick Professor S.C. Lakhotia, whom I regard as my mentor. I also went to JNU for training in bioinformatics with Professor Alok Bhattacharya as part of my master's thesis on drug delivery. I identified drug delivery targets through bioinformatics analyses. It was a first-of-its-kind study at that time, which combined bioinformatics analysis of different bacterial genomes to identify sites that could be targeted for tuberculosis therapy. I got my first publication out of this project.

As a next step in my academic journey, I went abroad. I have a conviction that the way we pursue science is significantly affected by the society and its culture; science is universal, but in different societies, it exists in different avatars. For me going abroad was not just about falling to a fad. It was about experiencing the culture of science in different societies. Sweden, the seat of the Nobel Prize, is a small country with an amazing investment in science and remarkable per-capita science output. There, I got admission to a PhD in natural sciences at the Uppsala University. Back in 2001, it was not commonplace in a small town to send a young female child abroad. But my parents were different. Perhaps they foresaw my inclination before, and better than, I myself did. My father

rose above the customary limitations and gave me the vision of taking giant leaps in life for great causes. Much of my academic entrepreneurship stems from this vision of my father. In 2001, he saw it for me, and today, I am proudly doing so for my students and the next generation.

Fast forward, and I landed in Sweden to join a coveted doctoral programme at Uppsala, much known for Svedberg, Angstrom, Celsius, Linnaeus, Paabo, Rudbeck, Arrhenius and other great scientists. The academic grandeur of Uppsala was, to me, offset by its small size and remarkably little population; something I was new to. I quickly adjusted to Uppsala's nature; a university town full of students from Uppsala University, its affiliate institutions like the monumental Ludwig Institute for Cancer Research or the Agriculture University SLU. An anecdote about culture and its influence on science: I was told I needed to get a bike to move around in Uppsala during one of my first days there. I was expecting to buy a motorbike but was taken to a pedal bicycle store instead. In one of the most industrialized societies, students and elderly researchers would go to the labs on bicycles. It was humbling to experience such an unostentatious display of knowledge and technology. Like most students who go there, I was in awe of everything there, except one thing: up north, so close to the Arctic Circle, even if one is a big fan of snow and skiing, the absence of sunlight for straight 7-8 months was a drag. That was a little difficult to adjust to, especially for someone coming from India, where there is sunlight around the year. It took me a while to get adjusted to that kind of environment. However, in that cold and dark climate, I met some of the warmest and brightest people ever. I also made sure that I travelled extensively meeting scientists from across Europe, the US and Japan to get to experience science from different cultures.



National Institutes of Health, Public domain, via Wikimedia Commons

Uppsala was an academically exciting place, especially for doing research. Any facility needed for your work was readily available without any restriction. I did my PhD in a field called epigenetics, which, at the time, was fairly new to the scientific community. Without going too technical, I will briefly describe what epigenetics is. For a very long time, scientists thought that it was always the DNA sequence that dictated all the characteristics of an organism. However, after many decades of study, it was understood that factors over and above the DNA sequence could influence an organism's genetic traits. Conrad Waddington coined the term Epigenetics in the 1940s to describe these factors. Epigenetics is how the environment and behaviour actually dictate the genes' expression. So, the DNA sequence remains the same for all of us, but it is the environment around us and our behaviour that dictate our differences. I was very lucky to do my PhD project on the epigenetic phenomenon in cancer cells - how does the environment surrounding a cell play a role in converting a normal cell into a cancerous one - because up to that point, people had looked only at the DNA mutations in the context of cancer. Epigenetics because, at that time, it was a very new area of studying gene expression, and everybody was fascinated by its possibilities. There were many labs working on genetics, but few were on epigenetics. My thesis work was specifically on control of the gene expression by non-coding RNA in different types of cancer cell lines, and our group was among the

first ones to discover that they play a role in repressing gene expression.

After PhD, I moved to the Ludwig Institute of Cancer Research, also located in Uppsala, for post-doctoral work. My research there was on the TGF-beta signalling in prostate cancer. My then supervisor was looking at the TGF-beta because it was a growth factor required for the metastasis of the cancer cells. Metastasis is a process where the cancer cells lose their morphology and become more migratory and invasive. Most cancer deaths are because of metastasis where the cancer cells move to other parts of the body. It was already known that TGF-beta is one of the modulators of this process. We were studying the molecular mechanism by which TGF-beta facilitates this invasiveness. Interestingly, at the beginning TGF-beta acts as a tumour suppressor but at later stages converts into a promoter. During my postdoc project, we discovered a completely new pathway through which TGF-beta turns tumour cells more invasive and mapped the many factors involved in this process.

When I returned to India to set up my independent research group, I decided to combine my epigenetics training from PhD with TGF-beta studies during postdoc work. So now my lab works on both aspects of how epigenetics is involved in TGF-beta signalling, and both are affecting the conversion of normal cells into cancer cells. We are trying to uncover the correlation between epigenetics phenomenon and the TGF-beta signalling - how do they cooperate with each other to promote carcinogenesis? A good point about epigenetic changes is that they are reversible, unlike genetic mutations. So, it is easier to make the inhibitors reverse those processes. We just published a paper from my lab where we used an epigenetic inhibitor along with a phytochemical, a plant product, to inhibit the invasiveness of the cancer cells. My first PhD student, who recently graduated, mostly worked on this project. When cells were treated with this combination of a phytochemical and an epigenetic inhibitor, we found that almost 80% of the invasiveness of cells was lost. We are now working to find out exactly where these inhibitors bind. In future projects, we want to decipher how TGF-beta communicates with epigenetic modifications. In another project, we are trying to develop more combinations of epigenetic inhibitors with phytochemicals to inhibit cancer cell metastasis completely.

I have had the opportunity to work with some wonderful people and learnt a lot from each one of them. I am lucky to have great mentors like Professor Subhash Lakhota, Professor Karl-Henrik Heldin and Professor Marine Landstrom, who have all inspired me uniquely. But, if you ask me who my hero is, I will refer to the story of Howard Temin and David Baltimore. Temin was working on the problem of cancer-causing viruses that did not have any DNA. He was the first to propose that something other than DNA could be the genetic material. This challenged the prevailing dogma of the time. Nobody believed him and the scientific community completely ignored him. David Baltimore was the only one who supported him. Three decades later, they discovered Reverse Transcriptase, the enzyme used worldwide to synthesize DNA from an RNA template. All the antiretroviral therapy as well as our understanding of the RNA genome, finds its origin in that work of Temin and Baltimore. The Nobel Prize was awarded to them for this discovery. I have always been fascinated by their story; how they were completely ignored and nobody believed them for a very long time, and then suddenly they discovered something that has changed the Central Dogma of biology. I believe answering every question in biology is a bit of Temin and Baltimore journey. You always have to wonder, you always have to ponder, you always have to struggle, and then you have a hope that you will find good results. You have to remain very critical of whether it is right or whether it is wrong, but you have to be focused. So it's a whole journey. I take inspiration from them.



Howard Temin and David Baltimore
(<https://www.nobelprize.org/prizes/medicine/1975/summary/>)

Research Seminars

(for the period April - June 2024)



School of Arts and Sciences

Faculty Recruitment Seminar

Khusdeep Malhotra, Temple University, USA. Precarious citizens, excepted state: Sikh rootedness in Kashmir after the Chittisinghpura massacre. April 02, 2024.

Rachna Mishra, Flame University, Pune. Exploring resilience in the context of child-care institutions. May 02, 2024.

Seminar and Lecture Series

Manash Firaq Bhattacharjee, Jawaharlal Nehru University, New Delhi. Nehru and the ethics of contradiction. April 03, 2024.

Research Seminar Series

Natasha Raheja, Cornell University, USA. Border as film cut: scenes from the Indo-Pak border. April 03, 2024.

PVA Divisional Seminar

Margaret Olin, Yale University, USA. The bitter landscapes of Palestine. April 12, 2024.

H&L Research Seminar

Zachary Joachim, Denison University, USA. Mòzǐ's moral cosmos. April 09, 2024.

MPS Research Seminar

Vishal Joshi, Physical Research Laboratory, Ahmedabad. A flavour of Astrophysical research. April 03, 2024.

Sudhir Ranjan Jain, UM-DAE Centre for Excellence in Basic Sciences, Mumbai. Tilings, tessellations, and quantum codes. April 10, 2024.

Jayanta Dutta, Harish-Chandra Research Institute, Prayagraj. Formation and evolution of the very first stars (primordial stars) in the universe. April 24, 2024.

Yogesh Chandola, Purple Mountain Observatory, China. Cold neutral atomic hydrogen in radio AGN hosts and blue compact dwarf galaxies. May 06, 2024.

BLS Research Seminar

Samraat Pawar, Imperial College London, UK. Predicting the climate change adaptability of terrestrial ectotherms. April 26, 2024.

School of Engineering and Applied Science

Faculty Recruitment Seminar

Baibhav Kumar Gupta, Indian Institute of Technology Ropar, Ropar. Power quality assessment of solar inverters connected with utility grid. May 06, 2024.

Aalok Thakkar, University of Pennsylvania, USA. Example-guided synthesis of relational queries. May 24, 2024.

Kamal Raj Sharma, Indian Institute of Technology Roorkee, Roorkee. Flow control of wake, jet and boundary layer flows. May 30, 2024.

Abhishek Chakraborty, Indian Institute of Space Science and Technology, Thiruvananthapuram. On temporal and spatial behaviours of CBRS SAS near incumbent installations. May 31, 2024.

Research Seminar Series

Timothy Gonsalves, Ahmedabad University, Ahmedabad. Thinking like an engineer. April 05, 2024.

Amrut Mody School of Management

Faculty Recruitment Seminar

Abhitesh Ranjan, University of Minnesota, USA. Effect of reserve accumulation on employment. April 09, 2024.

Abhishek Dureja, Indian Institute of Management Ahmedabad, Ahmedabad. Demand- and supply-side incentivization and child health outcomes: evidence from India. April 16, 2024.

Md Shahrukh Anjum, Indian Institute of Management Bangalore, Bangalore. A cardinality-driven optimization for the unsplittable multi-commodity network design problem. April 25, 2024.

Ankit Surana, Macquarie University, Australia. Internationalization process: a contextual analysis of Indian business firms. April 30, 2024.

Ravi Kant Rai, University of Liverpool, UK. Discrete Richman-Bidding scoring games. May 01, 2024.

Harnain Kaur Arora, Indian Institute of Management Ahmedabad, Ahmedabad. Exploring the trajectory of moral courage in whistleblowing at work: actual whistleblowers' lived experiences. May 20, 2024.

Research Seminar

Aditya Prakash Kanth, Ahmedabad University, Ahmedabad. A study of detection of chemical transformation in Indian wall paintings using Raman and FTIR analyses. April 10, 2024.

Leading Legacies Series

Behram Mehta, Founder, Owner and Director of Aava Natural Mineral Water; Shiroy Mehta, Managing Director of Aava Natural Mineral Water; and Avanti Mehta, Water Sommelier and Brand Lead of Aava Mineral Water. April 10, 2024.

School of Public Health

Research Seminar

Subhabrata Moitra, University of Alberta, Canada. Social determinants, behavioural factors, and health-related quality of life in asthma. April 18, 2024.

Anil Patel, University of California Los Angeles, USA. Oxidative potential of atmospheric aerosols: unveiling the impacts for public health perspectives. June 13, 2024.

