

**AMITY**  
UNIVERSITY  
— HARYANA —

# RESEARCH & INNOVATION

**SNAPSHOT 2020**



**DIRECTORATE OF RESEARCH & PUBLICATION**



# CIRF

Central  
Instrument  
Research Facility

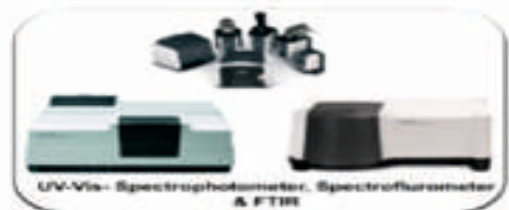


The central instrument research facility (CIRF) is housed at Amity University Haryana, Gurugram provides a central facility of latest and advanced analytical instrument for research and for promoting interdisciplinary research. Instruments are manned by qualified personnel. This facility is available for Amitians and other academic research institutions, industries and organizations.



# CIRF

Central Instrument Research Facility





## India 2030 Knowledge Super Power

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**“Amity's Mission, Amity's Passion, Amity's Junoon”**

NATIONAL BUILDING THROUGH PHILANTHROPY,  
EDUCATION & RESEARCH

"When God pushes somebody, inspires somebody, leads somebody-no power in the world can stop such a person."

**Dr. Ashok K. Chauhan**



**Dr. Aseem Chauhan**

- The torch bearer
- Dynamic & Innovative Leader
- Taken Amity to the World and World to Amity

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**"Amity University is an epitome of higher education that blends modernity with tradition and culture, where science and technology blend harmoniously with performance, progression and innovation".**

**Dr. Aseem Chauhan**



## FROM THE DESK OF VICE CHANCELLOR

Research and Innovation form a strong pillar of strength of a future ready world class university. Further, the R & D and Innovations should be in line with the national missions and should remain relevant to serve the needs of the local and global society.

At AUH, in line with the vision of our Founder President Dr Ashok K Chauhan of Research and Innovation driven Amity University and under the innovative leadership of our Hon'ble Chancellor Dr Aseem Chauhan, R & D and Innovations are pursued with a mission and a passion, Even during Covid-19 pandemic times our research driven faculty and research scholars have seriously engaged in cutting edge research and innovations as well as in competitive bidding for funded R & D.

I am delighted to mention that during the Covid-19 lockdown our faculty has received approval for 14 R & D Projects amounting to approximately 5 crores, 40 patents have been filed by the faculty on their industry relevant inventions and around 455 research papers have been published in Reputed Journal and Conferences during the testing times.

This compendium provides highlights of our R & D Projects, Patents and Research Publications of AUH and is intended to inspire the faculty and students to continue their march on the path to excellence as we firmly believe that the integration of research with education is the surest way to achieve excellence.

I wish to place on record my fullest of appreciation of the commendable leadership provided by our Dean of R & D, Dr Rajendra Prasad, himself a globally renowned scientists and the Hols and their brilliant teams of faculty and research scholars who have exhibited their exemplary performance during 2020 and have set high standards of their R & D and innovation performance.

On the Innovation Day 2020, I extend my warm greetings to all Deans, Hols, members of faculty and brilliant Scholars and call up on them to continue to raise the bar of R & D and Innovation at AUH.

**Prof PB Sharma**

Vice Chancellor, AUH



## MESSAGE FROM PRO VICE CHANCELLOR

Research and Innovation have been ingrained into the core philosophy of Amity University Haryana. From the time of its inception, AUH has shown tremendous progress in its research and the steady rise in our projects, patent filing and publishing is something to be proud of.

Innovation, that is based on Research, is an important factor in development of a society and nation in general. The industry and the commercial markets look towards academics for the disruptions and newer technologies that can help them grow.

Research is instrumental in evolving product concepts, new equipment's, industrial designs and groundbreaking technologies, thus, putting the country on a definite path to progress in a global platform. Amity University Haryana is built on the foundation of three I's which are Innovation, Internationalization and Industry integration and research is the bedrock beneath that.

Measurement and assessment of innovation is a significant step to evaluating the development of any organization. The DRP Report is a testimony to the phenomenal work of the AUH resources' dedication and commitment towards Research and Development. I can say with certainty that we will continue to achieve many more milestones in the future and prove to be a shining star amongst the academic fraternity.

**Dr Padmakali Banerjee**

Pro Vice Chancellor & Dean Academics



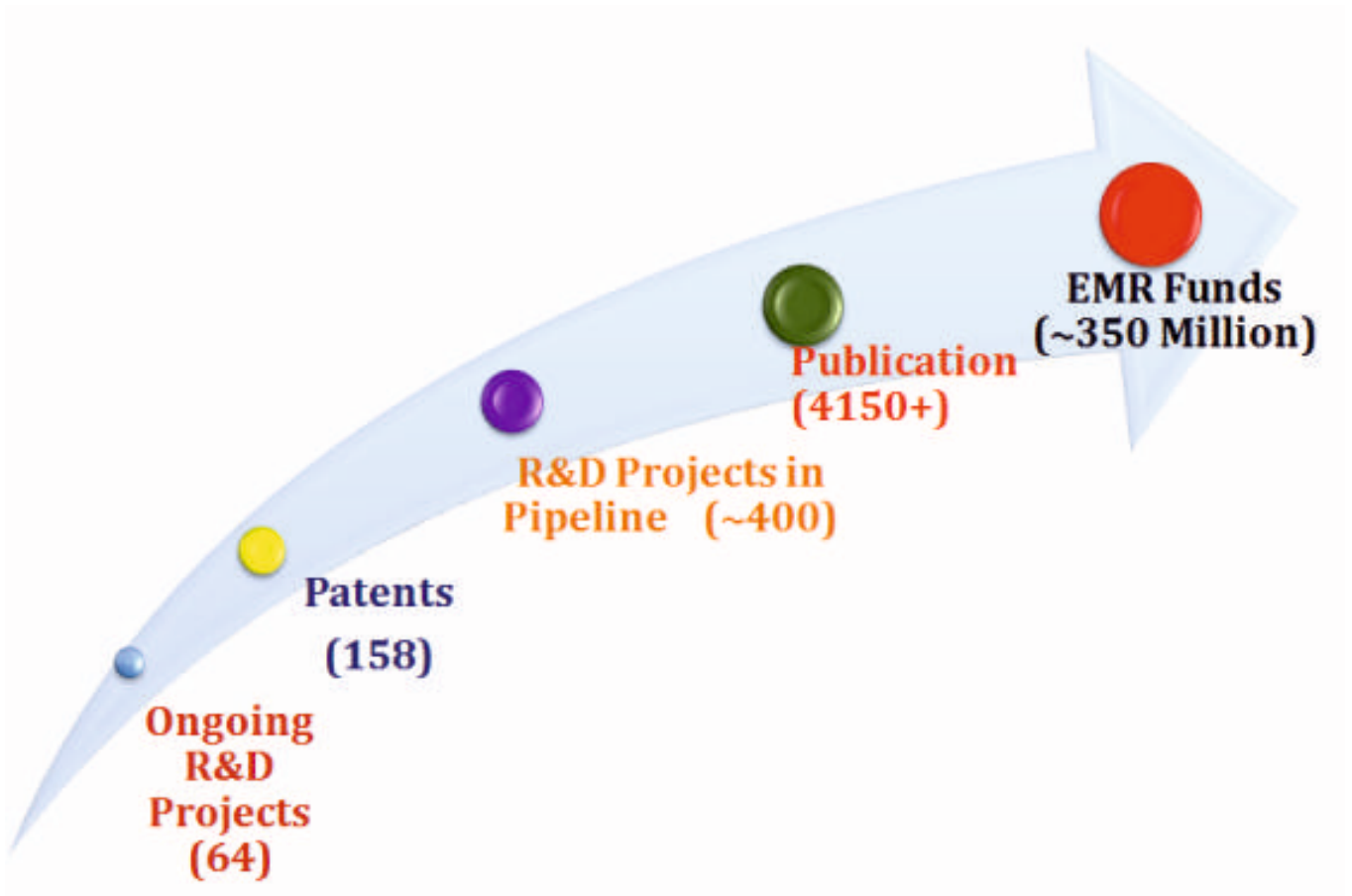
## MESSAGE FROM DEAN

The Directorate of Research & Publication (DRP) since its inception has successfully completed five years of guiding and keeping track of the progress made by AUH faculty in terms of research and innovations. Directorate of Research & Publication is responsible for providing research leadership, which normally includes: promoting and facilitating leading-edge research, including collaborative and interdisciplinary research; building, and providing sufficient support for, a community of innovative researchers to enhance research capacity at the university and to increase internal and external research opportunities for faculty, post-doctoral fellows, and graduate students; developing networks between the research centre and researchers in the field in the public and private sectors, nationally and internationally; transferring knowledge to society through outreach).

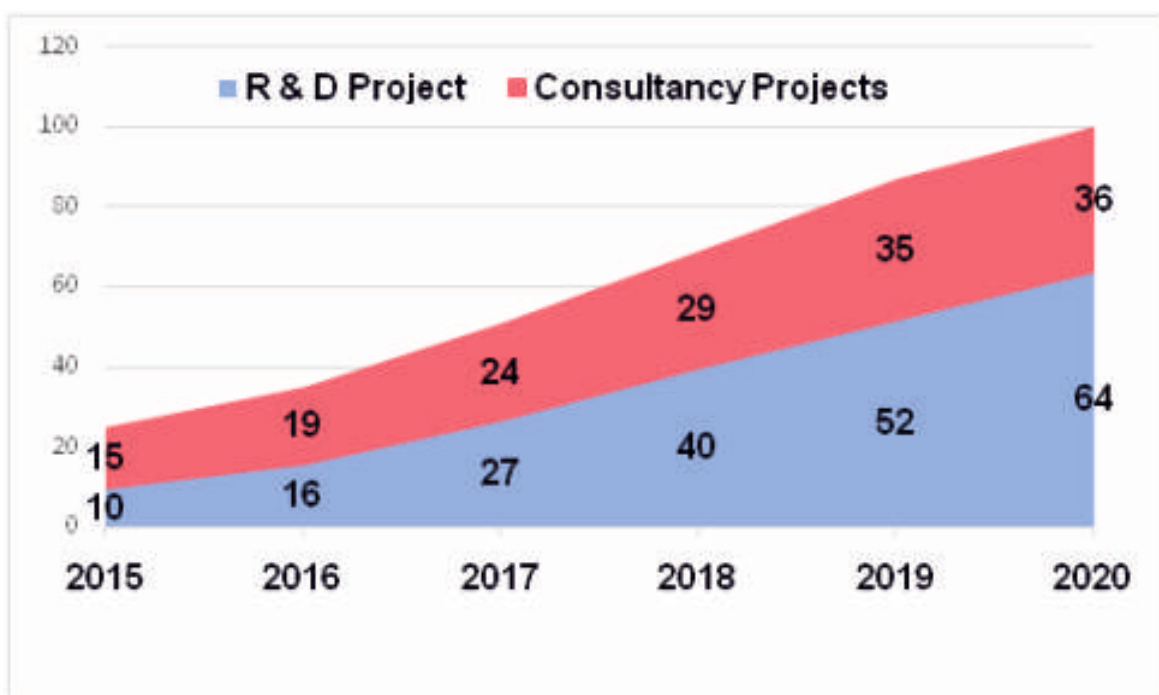
DRP has been able to fulfil its mission in promoting research and innovation apart from ensuring proper implementation of research projects and mobilization of extra-mural research funds to AUH. Most heartening development was that our faculty competed and procured major grants funded by the Government Funding Bodies such as DBT, DST, DAE, IUAC, MNRE, Ministry of Ayush etc. and as a consequence during preceding year more than 35 Cr worth projects were awarded to AUH and 158 patents have been filed. AIB/AIISH could compete with a mega infrastructural grant from the DST to help set up a 'Lipidomics Center' in AUH. AUH has established a CIRF a state of the art ultra-sophisticated instrumentation labs facility to offer cutting edge research and practical exposure to the students and train them to be industry ready professionals., DRP has also been able to motivate graduate and post graduate students to opt research as their career. As a result, our students not only have been able to compete for internship in various national educational institutes but could also get better placements in leading organizations. AIB/AIISH is in the process of world class modular laboratories which will provide even more impetus in our research and innovation drive. The impetus provided by DRP has yielded quality publications in high impact factor journals and books. Few of our publications have also made to cover pages of these journals. To show case the excellence in global science, the past year also saw regular visits of galaxies of distinguished guest speakers and in organizing various national and international meetings in AUH. Our students and faculty were also invited to several national and international meetings where they presented their research, chaired sessions and fetched awards. DRP has been able to promote and manage research and innovation drive of AUH, however, there is more to be done. We hope that our efforts will bring in more extra-mural grants and laurels in terms of quality publication and patents.

**Prof. Rajendra Prasad**

Dean, Faculty of Science, Engineering and Technology

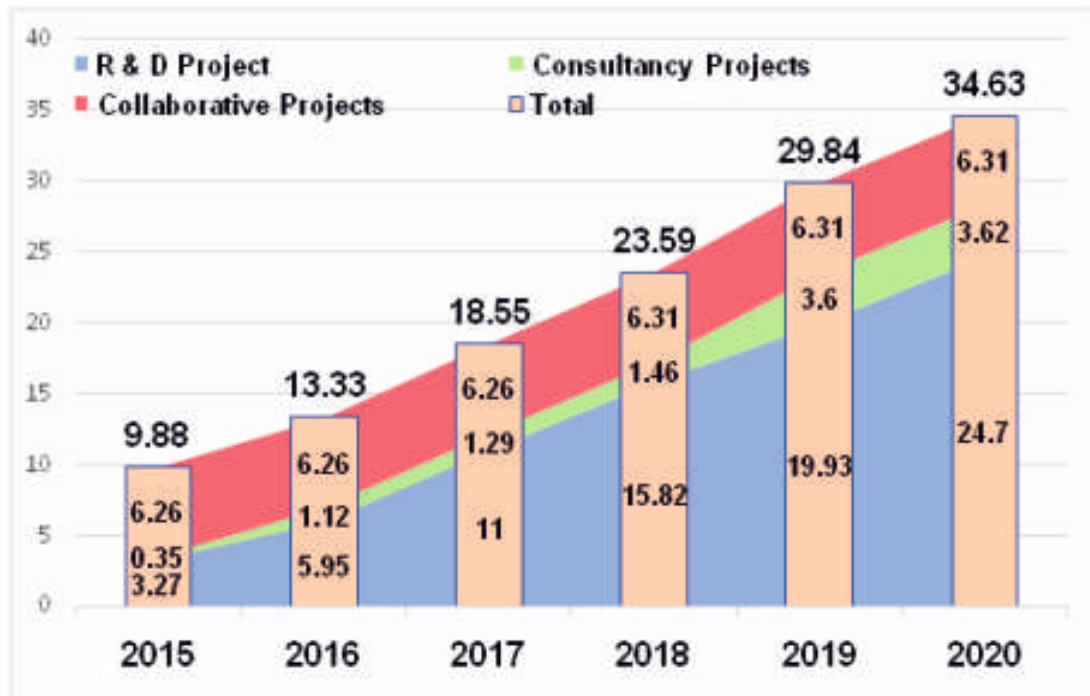


### Funded R & D Projects @ AUH

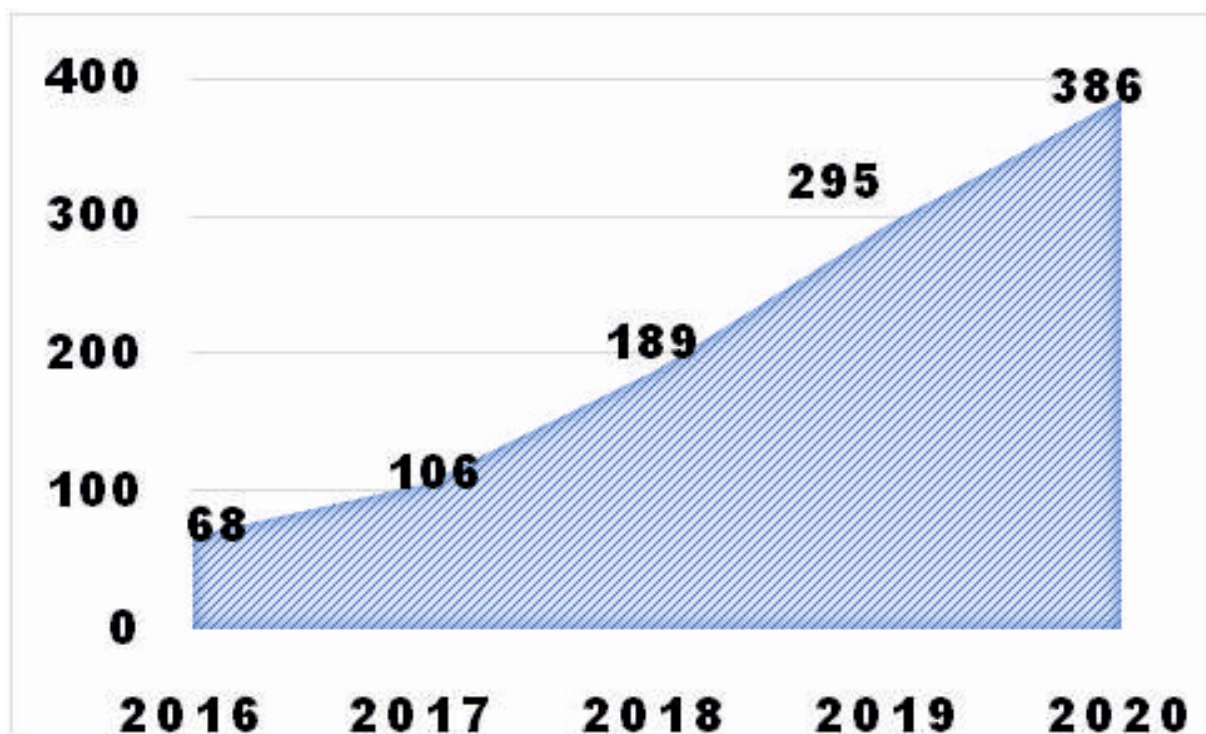




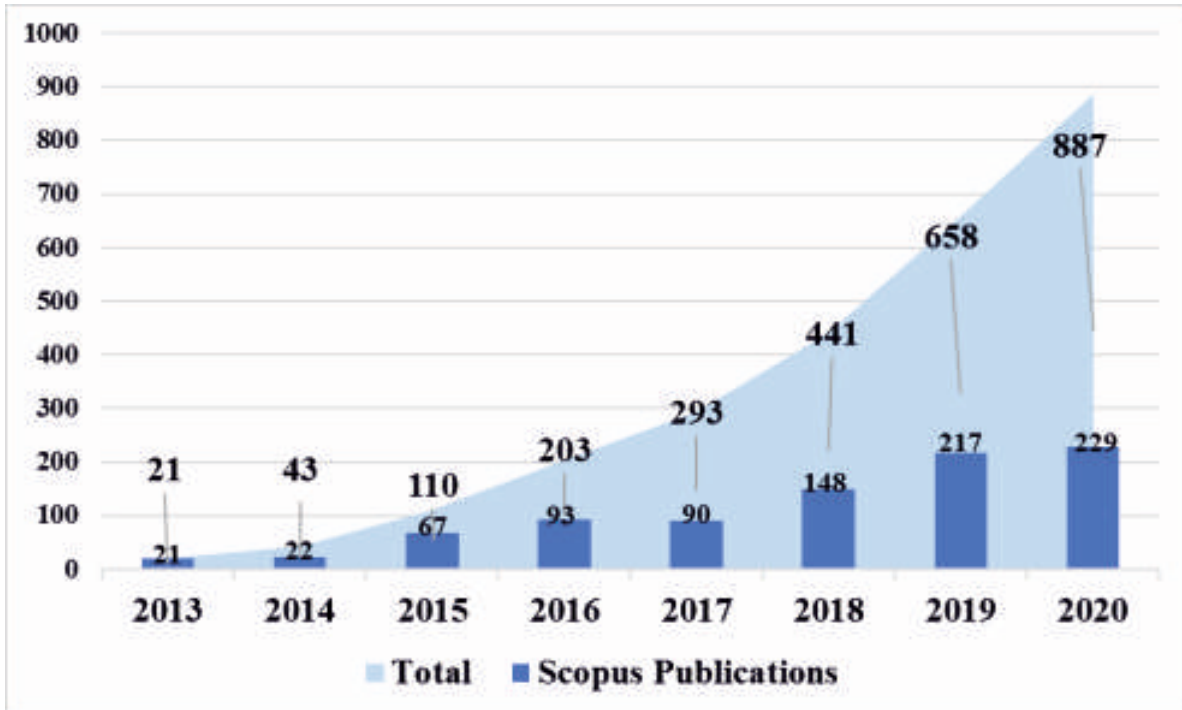
### R & D Projects Funds @ AUH



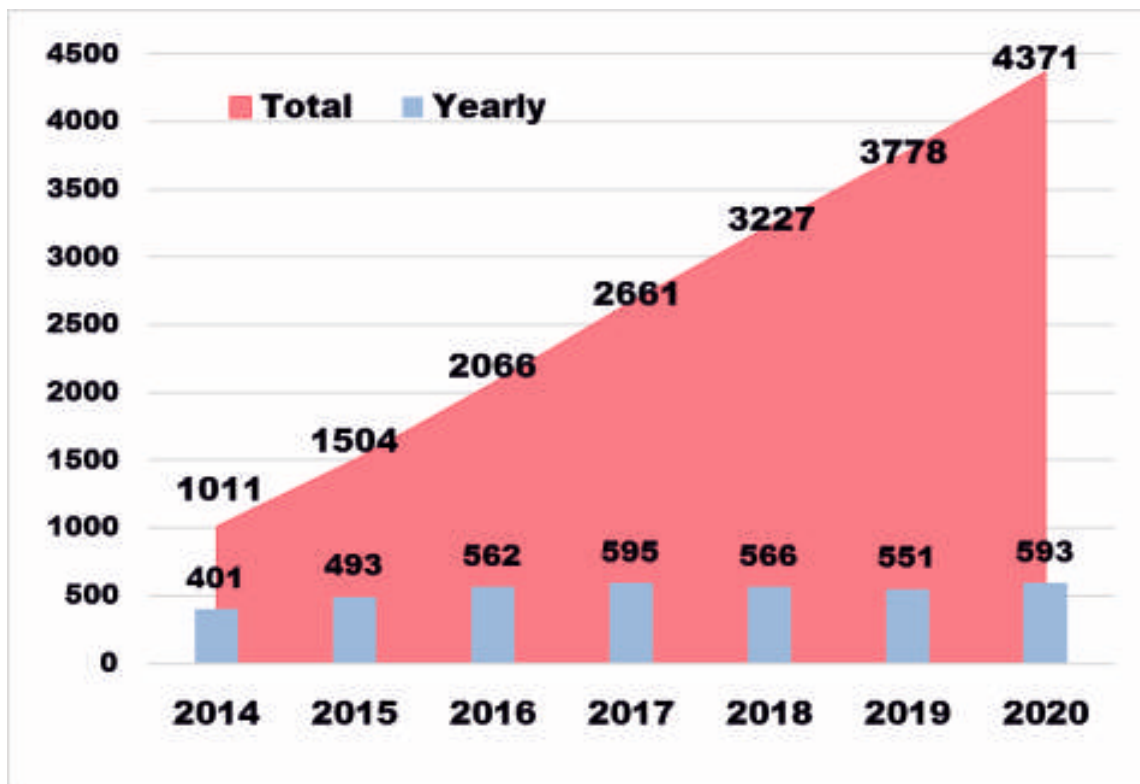
### R & D Projects Submitted



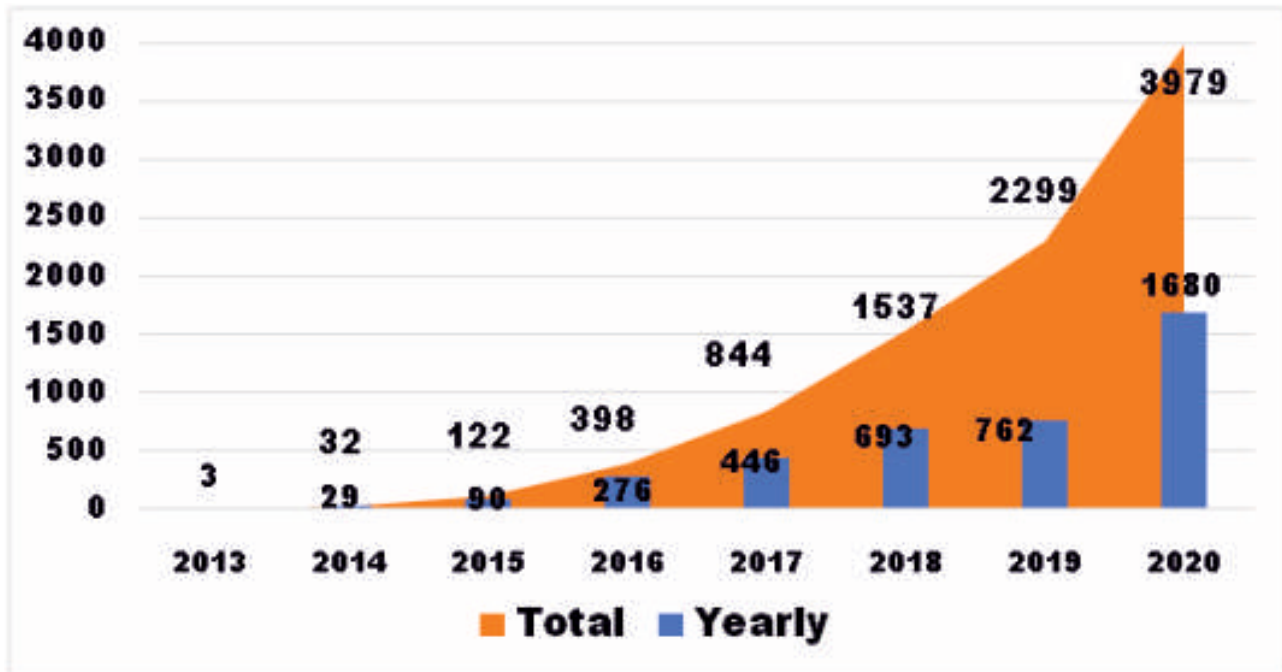
### Scopus Publications



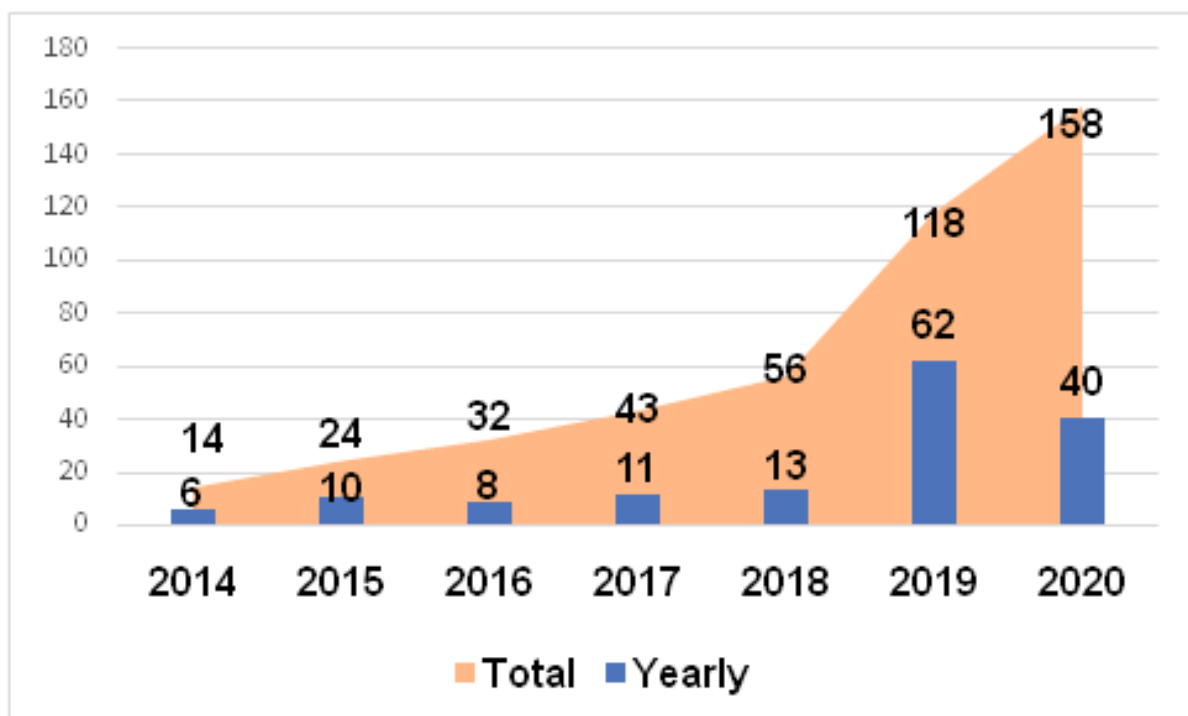
### Total Publications



## Citation Overview



## Patents Filed@ AUH



## List of Funded R & D Projects @ AUH

Sr. No.	Year	Title of Project	Name of Institute	Name of Faculty	Funding Agency	Amount
1	2012	To decipher therapeutic Potential of sesamol and peryllol alcohol as antifungal agents against candida albicans	AIB	Dr. Saif-PI	SERB-DST	1620000
2	2012	Comparative characterization of fatty acidome for latent sensitive and resistant MTB strains	AIB	Dr. Zeeshan Fatima -PI	DST-SERB	1818000
3	2012	Combating MDR in Pathogenic yeast Candida albicans	AIB	Dr. Rajendra Prasad	DBT	13547000
4	2013	"To study the effect of iron homeostasis on mycobacterium tuberculosis drug extrusion pumps conferring multidrug resistance	AIB	Dr. Zeeshan Fatima-PI Co- Dr. Saif Hameed-PI	BRNS/BARC	2246000
5	2014	Carbon dioxide Fixation by Culturable and non culturable (Metagenomic-Approach) Microbial Community and role of microbe for calcite and biofuel production.	ASEES	Dr. Shaili Srivastava Nigam PI	DST	2000000
6	2014	"Role of Protein kinase signalling in androgen mediated gene response"	AIB	Dr. Gargi Bagchi, PI Prof. Rajendra Prasad Co. PI	DBT Bio-care Women Scientist Scheme (RGO)	4680000
7	2014	A Synergetic Study of Aerosols by Surface - Based Spectrophotometry and Twilight Photometry	ACOAST	PI- G.A Aher , Co-PI Prof. P.C.S. Devara	Indian Space Research Organization Bangalore	3297027
8	2015	Understanding the molecular Bases of resistance to septoria for wheat improvement in Ethiopia	AIB	Tilahun Mekonnen Negassa	NAM S & T Centre	2,70,000
9	2015	Silica coated porous zinc oxide nanostructure : A potential nanocomposite for development of slow release agrochemicals	AIB	PI Dr. Nitai Debnath	DST	2645000
10	2016	Identification of cAMP specific phosphodiesterase from Liesmanina donavani and its role in virulence	AIB	Dr. Krishna Murari Sinha	DBT	3249470
11	2016	Developments of Nanophosphors for solid state lighting-Electronic Structure and Luminescence study	ASAS	Dr. Ankush Vij	DAE-CSR INDORE	1315000
12	2016	"Development Of Multiferoic Magnetolectric Materials And Dilute Magnetic Semiconductors For Multifunctional Applications	ASAS	PI- Dr. ShaIndra Kumar	DST	1100000
13	2016	Role of Cyclic di-AMP in ribosome biogenesis, 16S rRNA methyltransferase (RsmD) function and drug resistance in Mycobacterium.	AIB	Dr. Krishna Murari Sinha.	SERB/DST EMR	3536000
14	2016	"Fund for Improvement of S&T infrastructure in University and Higher Education Institution (FIST) Programme-2016"	AIB	Prof. Rajendra Prasad	FIST - 2016	16500000
15	2016	Ion beam induced modifications in MgO based nanophosphors: Luminescence and related studies.	ASAS	Dr. Ankush Vij	IUAC New Delhi	603000
16	2017	Novel potential antifungal drug active against multidrug resistant yeast from the candida genus.	AIB	PI - Dr. Rajendra Prasad & Dr. Slawomir Milewski	Indo-Polish DST	2631000

17	2017	Developing rapid sensitive high throughput user friendly kit for routine detection of androgens and antiandrogens in water	AIB	Dr. Gargi Bagchi, PI Dr. Rajendra Prasad Co. PI	DST	3220400
18	2017	Insight into the mechanism of drugs transport mediated by multidrug transporters of candida-[14117]	AIB	Prof. Rajendra Prasad	DBT	7472400
19	2017	"Unraveling the Role of mTORC2 in Regulation of Sphingolipid Biosynthesis in Breast Cancer Progression"	AIB	PI-Dr Ujjaini Gupta & Co-PI Prof. Rajendra Prasad	DBT, Biocare	5453463
20	2017	Comparative sphingolipid profiling of breast cancer cell and tissue types for identification of potential metastatic biomarkers	AIB	Dr. Ujjaini Das Gupta	SERB	4715480
21	2017	Identify disease gene association using Text mining approach	AIB	Dr. Alok Srivastava	DBT	2988200
22	2017	Monitoring Pollutants, toxins and microbial community in the chambal river to predict its environment and social consequences	ASEES	Dr. Purnima Khanna	SERB	3330000
23	2017	Evaluation antimycobacterial potential of Unani drugs Qurs-e-Sartan Kafoori and Sharbat-eEjaz-A Mechanistic Approach	AIB	Dr. Zeeshan Fatima	AYUSH	4789970
24	2017	Fabrication of high performance thermally, wind and sound driven flexible nanogenerator for a wide range application	AINT	Dr. Brijesh Kumar	SERB	3866000
25	2017	Study of in depth genetic heterogeneity with respect to resistance and compensatory adaption of MDR Mtb clinically strains inside BM-Mesenchymal stem cells circulating in the North East Region (22952)	AIB	Prof. Rajendra Prasad	DBT	5020000
26	2017	Comprehensive Omics studies to understand the biology of drug resistant Mycobacterium tuberculosis clinical isolates from Arunachal Pradesh	AIB	Dr. Zeeshan Famita	DBT	1190000
27	2018	Development of an Immunosensor for Detection of Infectious Disease by NanoWire Field Effect Transistor coupled with Nanoparticles	AIB	Dr.Ranjita Ghosh Moulick	DST-SERB	4100000
28	2018	Kinetic Theory of Electrostatic Waves in Dusty Plasmas	ASAS	Dr. Jyotsna Sharma	SERB	1108585
29	2018	Indoor Air Quality Monitoring	ASET	Parveen Babu PI, Dr. RK Malik Co-PI	RAMBOLL, USA	1350000
30	2018	Development of Lead Free Piezoelectric materials for Energy Harvsting Applications	ASAS	PI- Dr. ShaIndra Kumar	UGC- DAE, CSR	1350000
31	2018	Alternate splicing in clinical drug resistance in pathogenic candida.	AIB	PI- Prof. Rajendra Prasad Co-PI Dr. Ravi Dutta Sharma & Dr. Alok Kr. Mandal (JNU)	DST (EMR)	2470000
32	2018	Combating topical & medical device related fungal infections using engineered Anti-fungal hydrogels	AIB	PI Dr. Avinash Bajaj (RCB) Co - PI Prof. Rajendra Prasad & Dr. Ujjaini Dasgupta	DBT	8326400
33	2018	Unravelling the links between Bioenergetics caonstraints, cell wall integrity and multidrug resistance in fungi.	AIB	Prof. Rajendra Prasad & Dmitry Knorre Russia Co PI - Dr. Naseem Akhtar (ICGEB)	DST - RFBR Joint Call	2644400

34	2018	Mechanism, evolution and pharmacology of multidrug resistance in the emerging fungal pathogen <i>Candida auris</i> among Indian cohort of patients	AIB	Prof. Rajendra Prasad	ICMR	7199340
35	2018	Evaluation of the Nrf2 anti-oxidant response element (ARE) pathway as a promising target for alleviating chemoresistance in treatment of Acute Lymphoblastic Leukemia (ALL)"	AIB	Dr. Munindra Ruwali,	SERB-TARE	1500000
36	2018	A Computational Software to find biomarkers using alternative splicing as a tool	AIB	PI- Dr. Ravi Datta Sharma, Co-PI Arnab Mukhopadhyay & Dr. Alok Srivastava	DBT	1996063
37	2018	Nanotechnology for Healthcare and Environment - Exploring New Horizons	ASAS	Prof. AK Yadav (ASAS Dept.)	FIST-2018	10000000
38	2018	Mediating Multilingualism - (in a local community context) Phase I	ACLIS	Prof. Udaya Narayana Singh	University of Highlands & Islands, Scotland, UK	1180920
39	2018	One-Asian Community Theory	ASL	Dr. Santosh K. Gupta	One Asia Foundation, Tokyo, Japan	5307375
40	2019	Identify Disease gene association using Google's Tensor Flow	AIB	Dr. Alok Srivastava	ICMR	3305700
41	2019	Identifying the role of P53 regulated long non-coding RNAs (LncRNAs) by Crispr/Cas9 in ovarian cancer	AIB	Dr. Amit Kumar Pandey	ICMR	2992523
42	2019	DNA biosensor for the diagnosis of Leptospirosis	AINT	Dr. Ankur Kaushal	ICMR	1239000
43	2019	Electrochemical DNA sensor for the diagnosis of Scrub Typhus	AINT	Dr. Ankur Kaushal	DST, SYST.	1869560
44	2019	Fabrication of the portable low cost point-of-care optical device for the screening of thalassemic carrier	AIB	Dr. Ranjita Ghosh Moulick	DST	2419000
45	2019	Understanding Wnt Pathway and LncRNAs interaction for the identification of novel therapeutic targets in triple-negative breast cancers	AIB	Dr. Amit Kumar Pandey	DST	5162998
46	2019	Unraveling the molecular mechanism of lncRNAs involvement in Glioblastoma	AIB	Dr. Amit Kumar Pandey	DST-RSF	7174032
47	2019	A nanobionic approach for enhancement of plant photosynthesis and growth by augmenting chloroplast mediated photon absorption	AIB	Dr. Sumistha Das & Dr. Nitai Debnath	DST-Nanomission	4550000
48	2019	मैथली भाषाकइतिहास	ACLIS	Prof. Udaya Narayana Singh	मैथली - भोजपुरी अकादमी, दिल्ली	75000
49	2019	Mitigating the impact of antifungal resistance in the emerging pathogen <i>Candida auris</i> by piggybacking its peptide permease as an antifungal delivery system	AIB	Dr. Atanu Banerjee	SERB	3232313
50	2019	Developing small molecule inhibitors to target non-genomic androgen signaling and elucidating the role of GPR56 in Prostate Cancer	AIB	Dr. Gargi Bagchi	DST-SERT	5900000

51	2019	Experimental validation of pre-identified candidate genes regulating protein storage in chickpea seeds	AIB	Dr. Kaustav Bandyopadhyay	SERB	3199435
52	2020	Investigating of the role of LncRNAPANDAR in the progression and metastasis of ovarian cancer	AIB	Dr. Amit Pandey	ICMR EMR	3000000
53	2020	System level meta-analysis of Type 2 Diabetes to identify key regulator	AIB	Dr. Alok Srivastava	ICMR	7000000
54	2020	DHR-Identification of Sphingolipid-based Biomarkers for Triple Negative Breast Cancer (TNBC) and Luminal A Patients and their Clinicopathological Correlation Proposal id (GIA/2019/000170/PRCGIA)	AIB	Dr. Ujjaini Dasgupta	ICMR	4700000
55	2020	A low cost portable microfluidics embedded on chip RT-PCR and microelectrode array coupled point-of care optoelectronic device for large scale screening of emerging viral disease like SARS COV2	AIB	Jaydeep Bhattacharya, Ravi Tandon, Dr. Ranjita Ghosh Moulick, Sameer Gulati, Subrata Sarkar and Souvik Pal ,	BIRAC, DBT, Government of India, New Delhi	9000000
56	2020	PG Teaching in Biotechnology (M.Sc. in Biotechnology) approved by DBT for GAT-B national based admissions,	AIB	Dr Rajendra Prasad	DBT for GAT-B national based admissions	Information awaited
57	2020	Fabrication of Realtime in planta biosensors for presymptomatic detection of heavy metal toxicity	AIB	Dr. Ranjita Ghosh Moulick and Kaustav Bandyopadhyay	DBT, Government of India, New Delhi,	6000000
58	2020	To study the dynamics of sickling inside blood capillary mimicking microfluidic system to fabricate a portable point-of-care electronic device for the detection of sickle cell disease	AIB	J. Bhattacharya, R. Ghosh Moulick and R. Chhabra	ICMRASET	1000000
59	2020	Human lacrimal gland regeneration: a study of the existing technological advancements and development of next generation solutions by tissue engineering and regenerative medicine,	ASET	Dr. Vimal Kishor Singh	SERB	4367888
60	2020	Industry Research Project entitled: Development of rare earth ions doped borate nanophosphors for solid state lighting and radiation dosimetry devices, sponsored by RI Nanotech India, JRF recruitment pending due to lockdown	ASAS	Dr. Ankush Vij	RI Nanotech India	250000
61	2020	Differential Inhibition of Visfatin-PAK4 as a Novel Strategy in Esophageal Squamous Cell Carcinoma for Therapeutic Purpose	ASCI	Manoj K Kashyap, Dr. Suresh Kr. Kalangi, and Tessa Maliekal	ICMR	4500000
62	2020	Novel drug molecule discovery from Cannabis sativa and their therapeutic use as nanomedicine in pain management and non-healing ulcers had been approved	ASCI	Dr. Suresh Kr. Kalangi	StemMax Pvt. Ltd. India	4000000
63	2020	Identification of biomarker candidate for early diagnosis of myocardial reperfusion injury and occurrence centralizing GSK3 $\beta$ using metanalysis	AIP	Dr. Arun Kumar, Dr Satish Sardana	ICMR EMR	4900000
64	2020	Developing on-spot diagnostic kit for COVID-19 based on RT-LAMP technique	AIB	Dr. Saif Hameed Dr. Zeeshan Fatima Dr. Munindra Ruwali	BRNS-BARC, Mumbai	1656000

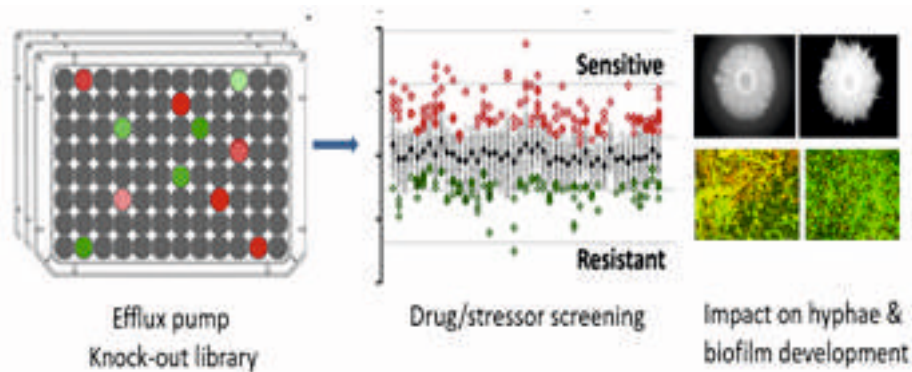


*Insights into the efflux pump arsenal of the emerging pathogen *C. auris* and its implication in high order of antifungal resistance and virulence*

**Prof. Rajendra Prasad, AIB/AIISH**

**Co-PI-** Prof. Rajendra Prasad  
 Prof. Andrew M. Lynn(JNU)

**Funding Agency - DBT**  
**Sanctioned Amount – INR 5800000 INR**



### Outcome/Publication

- Prasad et al Biochimica et Biophysica Acta (BBA) - Molecular and Cell Biology of Lipids, 2020,
- Prasad et al (2019). Front. Microbiol. 10:1445. doi: 10.3389/fmicb.2019.01445
- FEMS Yeast Res. 2020 Sep 1;20(6):foaa045. doi: 10.1093/femsyr/foaa045





*Unravelling the links between Bioenergetics constraints, cell wall integrity and multidrug resistance in fungi.*

**Prof. Rajendra Prasad, AIB/AIISH**

**CO PI** – Dmitry Knorre  
 M V Lomonosov Moscow State  
 University Russian Federation

**Funding Agency** - DST-Indo-Russian  
**Sanctioned Amount** - 1322200 INR

#### SUMMARY

The overexpression of pleiotropic drug resistance (PDR) transporter genes in pathogenic fungi decrease the efficiency of antifungal compounds (Shukla et al. 2011; Coste et al. 2006). However, the activity of these transporters is not free for the cells from bioenergetic point of view. For instance, the catalytic cycle resulting in drug extrusion by a major multiple drug transporter Pdr5p of *Saccharomyces cerevisiae*, belonging to ABC superfamily of proteins, is coupled with ATP hydrolysis (see for review (Golin&Ambudkar 2015)). Accordingly, energy deprivation can prevent the extrusion of the xenobiotics from the cytoplasm. A standard assay for MDR-pumps activity includes a step of energy deprivation to ensure maximum absorption of the MDR-substrates by the cells (Kolaczowski et al. 1996). Moreover, it was shown that *Saccharomyces cerevisiae* cells with inactivated pleiotropic ABC-transporters show increased ATP concentration and reach higher than the wild type stationary phase cell density (Krasowska et al. 2010). Recently, the large-scale drug screening has revealed that mitochondrial inhibitors potentially can prevent acquisition of azole tolerance in pathogenic fungi (Vincent et al. 2016).

Conversely, the loss of mitochondrial DNA or the deletion of nuclear encoded genes essential for mitochondrial functioning (e.g. FZO1) upregulates drug resistance (Hallstrom & Moyer-Rowley 2000; Traven et al. 2001; Panwar & Moyer-Rowley 2006). This effect requires Pdr3p transcription factor and the components of mitochondria-to-nucleus retrograde signaling pathway RTG1 and RTG2 (Hallstrom & Moyer-Rowley 2000). Together, this suggests a complex interplay between the drug resistance and energy conservation mechanisms. Importantly, in *Saccharomyces cerevisiae* mitochondrial retrograde signaling pathway activated by mitochondrial dysfunction converge with CW integrity pathway at the level of Lst8, the component of TOR signaling pathway (see (Butow&Avadhani 2004)). Indeed, the extrusion of xenobiotics without remodeling of cell wall (CW) could be inefficient. Cell wall can act as additional barrier or adsorbent for xenobiotics. Notably, CW governs specific functions and serves as a specific drug target for human pathogenic *Candida*. CW integrity is ensured by several genetically regulated signalling cascades. Recently, CW defects have been associated to dysfunctional mitochondria, defective phospholipid homeostasis and multidrug resistance (MDR) frequently encountered in clinical isolates. Impaired mitochondrial function could lead to altered lipid homeostasis, affecting the activity of plasma membrane localized CW components. Mitochondrial function (FZO1) are shown to influence CDR1 efflux pump activity, Hog1-mediated oxidative stress pathway, iron homeostasis, and ergosterol levels in *Candida albicans* (Thomas et al, 2013). Therefore, aspects that impact CW integrity, mitochondrial dysfunction, lipid homeostasis and antifungal tolerance are of immense therapeutic interests (Singh et al 2012).

We proposed several lines of experiments to unravel the regulatory circuits of drug resistance. We expect that these experiments can reveal the increased cost of MDR system under energy-limited conditions.

#### Outcome/Publication

- Galkina, K.V., Finkelberg, J.M., Markova, O.V. et al. Protonophore FCCP provides fitness advantage to PDR-deficient yeast cells. *J BioenergBiomembr* (2020). <https://doi.org/10.1007/s10863-020-09849-1>

**Visits - India to abroad- Dr. Rajendra Prasad, Dr. Atanu Banerjee (2019)**

**Abroad to India- Dr. Dmitry Knorre, Ms. Aglaia Azbarova (2019)**



*Mechanism, evolution and pharmacology of multidrug resistance in the emerging fungal pathogen Candida auris among Indian cohort of patients*

**Prof. Rajendra Prasad, AIB/AIISH**

**Co-PI** - Prof. Rajendra Prasad, Prof. Kaustuv Sanyal,  
 JNCASR, Bangalore

**PI**- Dr. Arunaloke Chakrabarti (PGIMER),  
**SRF**- Praveen Kumar, Project Asst.- Rajesh

**Funding Agency** - ICMR  
**Sanctioned Amount** - 2662720 INR

## HIGHLIGHTS

Candida auris is a globally emerging fungal pathogen, and its resistance to the three major classes of antifungal drugs is greatest concern for clinicians and medical mycologists. By combining expertise of three different laboratories, we propose a) to identify genomic and transcriptomic changes linked to drug resistance (JNCASR), b) to employ a population-based investigation of the evolution of drug resistance (AMITY-Gurgaon) and c) to study pharmacological properties of the drugs against C. auris (PGIMER).

## Outcome/Publication

- **Prasad et al**, Biochimica et Biophysica Acta (BBA) - Molecular and Cell Biology of Lipids, 2020
- **Prasad et al** Front. Microbiol. 10:1445. doi: 10.3389/fmicb.2019.01445



*Novel potential antifungal drug active against multidrug resistant yeast from the Candida genus*

**Prof. Rajendra Prasad, AIB/AIISH**

**Co-PI-** Sławomir Milewski Gdansk  
 Technical University, Poland

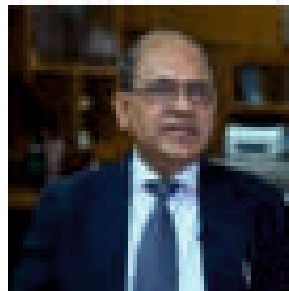
**Funding Agency** - DST-Indo-Polish  
**International Research Grant**  
**Sanctioned Amount** - 2631000 INR

## HIGHLIGHTS

Our main focus is to explore and develop new inhibitors from various sources, which could block growth of Candida cells. It is planned to screen the conjugates of inhibitors of GlcN-6-P synthase developed by Polish Group. These Compounds, including a Glutamine analog known as FMDP, which exhibits antifungal activity albeit, low potency due to its poor uptake by fungal cells. On the other hands, its antifungal in vitro activity was enhanced as its di-and treptides conjugates. It is proposed to evaluate FMDP –oligopeptides conjugates for their antifungal activities against Candia Spices. The novel strategy is based on conjugates of FMDP with Hydrophobic nanocarriers other than oligopeptides , stable in serum , ensuring efficient internalization in fugal cells and release of FMDP inside the cells.

## Project Visits

Prof.Rajendra Prasad, Ms. Garima Shahi, Prof. Sławomir Milewski, Prof Maria milewska , Dr. Piotr Szweda



*resistance and compensatory adaption of MDR Mtb clinically strains inside BM-Mesenchymal stem cells circulating in the North East Region*

**Prof. Rajendra Prasad, AIB/AIISH**

**PI-** Prof. Rajendra Prasad  
Prof. Rakesh Bhatnagar, Dr. Bikul Das,  
Dr. Sanjukta Patra, **JRF**-Amandeep Saini

**Funding Agency** - DBT  
**Sanctioned Amount** - 24811603 INR

## HIGHLIGHTS

Tuberculosis remains a major health concern in Northeastern (NE) region. In depth analysis of *M. tuberculosis* (Mtb) strains prevalent in NE region could provide vital information towards its diagnosis and prognosis. We have found presence of dormant Mtb in the sputum samples and bone marrow mesenchymal stem cells (BM-MSCs) in the NE region patients. In this proposal, we aim to perform whole genome sequencing studies on Mtb from sputum samples and BM-MSCs to discover novel mutations in Mtb strains prevalent in the region as well as to explore stem cell niche for MDR Mtb. Using these datasets, we will carry out resistome identification, characterization and drug screening for novel downstream targets involved in drug resistance, and compensatory mutations of Mtb strains identified in the NE region for therapeutic application. This study will provide novel therapeutic insights for MDR-Mtb in NE and the role of BM-MSCs in MDR evolution and novel ways to target it.



*Alternate splicing in clinical drug resistance in pathogenic candida*

**Prof. Rajendra Prasad, AIB/AIISH**

**Co-PI- Dr. Ravi Dutta Sharma**

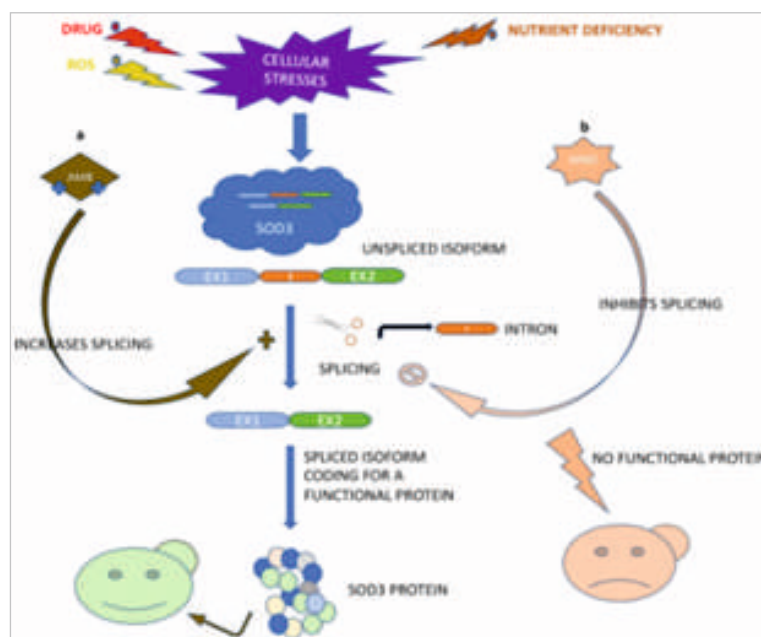
**Funding Agency - DST  
Sanctioned Amount - 2470000 INR**

**Outcome/Publication**

Prasad et al

mSpsphere2020 Aug 12;5(4):

e00608-20.doi: 10.1128/mSphere.00608-20





*Suryamitra Skill Development Program*

**Prof. Dr Padmakali Banerjee, AUH**

**Co-PI-** Prof. Dr Subhra Das, ASET

**Funding Agency** - National Institute of Solar Energy  
**Sanctioned Amount** - 13,02,300 INR

**PROJECT HIGHLIGHTS**

Suryamitra Skill Development Program is a Consultancy project funded by National Institute of Solar Energy, an autonomous body of Ministry of New & Renewable Energy. The objective is to create trained manpower in the field of solar PV installation, commissioning and O&M with entrepreneurship skills in the field of solar energy.

**MAJOR ACHIEVEMENTS**

- **Trained 118 ITI/Diploma** holders under Suryamitra Skill Development Program.
- Created job opportunities for **80% trained Suryamitras** in Solar Companies.
- Created **3 successful Entrepreneurs** who have become the future employers.
- **Participated in ILO Skill Challenge 2020.**

**VISITS IF ANY**

- Dr Subhra Das represented Amity University Haryana for a meeting on **Consultation of Industry and Training Institutes for Development of “Solar PV Technicians Training program for ISA Member Countries”** organized by International Solar Alliance at NISE on 20th May 2019.
- Dr Subhra Das participated and presented AUH experience of Suryamitra Skill Development in a meeting organized by Secretary, Ministry of New & Renewable Energy at CGO Complex Lodhi Road, New Delhi on 5th July 2018.



*Indo German Virtual Workshop  
Renewable Energy & Smart Energy Systems*

**Dr. S. N Sridhara, ASET**

**Co-PI-**

Prof. Dr Bertram Lohmueller, Steinbeis University Berlin, Germany Members from AUH- Prof. Dr Subhra Das, ASET, Dr Rajesh Arora, ASET Dr Ranjana Arora, ASET

**Funding Agency IGSTC**

**Sanctioned Amount** - Not yet finalized. Received mail for organizing Virtual Workshop

**PROJECT HIGHLIGHTS**

The workshop will cover the following areas of Renewable Energy:

- Solar Thermal, Photovoltaic & Hybrid Technology, Energy Storage
- Energy from Biomass & Bio-fuels
- Waste heat recovery, Fuel cells, Hydrogen cells
- Wind Energy & Geothermal Energy
- Efficient Energy Appliances and Technologies
- Risk Management
- Renewable Energy Policy for RE growth
- Smart Energy Solutions & its integration in RE

**RESEARCH PUBLICATIONS & PATENTS**

This will help in developing strong relationship with German partner for future research collaboration.

**Contribution of Dr Subhra Das-** Collaborating with Prof. **Dr Bertram Lohmueller**, Steinbeis University Berlin, Germany for proposal submission & preparing the concept of the proposal.

**VISITS IF ANY**

No, presently in virtual Workshop mode no travel is allowed.



*Waste water treatment by using nanotechnology for rejuvenation of Bilaspur Pond*

**Prof. Atul Thakur**

**Co-PI-** Prof P. B. Sharma  
**JRF-** Jiten

**Funding Agency** - Gurujal, Ministry of Jalshakti  
**Sanctioned Amount** – 4400000 INR

**PROJECT HIGHLIGHTS**

- To develop magnetic nanomaterials for water purification.
- To set up STP based on nanotech powders.
- To run STP on clean and green energy.
- To provide safe touch water for the community.



**RESEARCH PUBLICATIONS & PATENTS**

1. Photocatalytic activity of cobalt substituted zinc ferrite for the degradation of methylene blue dye under visible light irradiation, Deepika Chahar Shilpa Taneja, Shalini Bisht, Shubhi Kesarwani, Preeti Thakur Atul Thakur, P.B. Sharma, Journal of Alloys and Compounds, Volume 851, 15 January 2021, 156878, IF=4.65
2. Recent advances in synthesis, characterization, and applications of nanoparticles for contaminated water treatment- A review, Pinki Punia, Manish Kumar Bharti Sonia Chalia, Rakesh Dhar, Blaise Ravelo, Preeti Thakur Atul Thakur, Ceramic International, Elsevier, IF=3.83
3. Potential of Magnetic Nanoferrites in Removal of Heavy Metals from Contaminated Water: Mini Review, Manish Kumar Bharti, Sakshi Gupta, Sonia Chalia, Isha Garg, Preeti Thakur & Atul Thakur, Journal of Superconductivity and Novel Magnetism, IF=1.244

**PATENTS**

1. Dr. Atul Thakur, Dr. Preeti Thakur, Deepika Sindhu, Shubhi Keswani, Pritam Babu, A method for cobalt substituted zinc ferrite assisted photocatalytic degradation of methylene blue CRN3948, Date of filing 01.05.2020, Patent application no 202011018761.
2. Dr. Atul Thakur, Dr. Preeti Thakur, Shalini Bisht, Treatment of methylene blue using multiwalled carbon nanotubes CRN3766, Date of filing 10.12.2019, Patent application no 301911051085.





*An Antimicrobial Face-Mask Using Nano-particle Coating (patent application No\202011017740)*

**Prof. Atul Thakur**

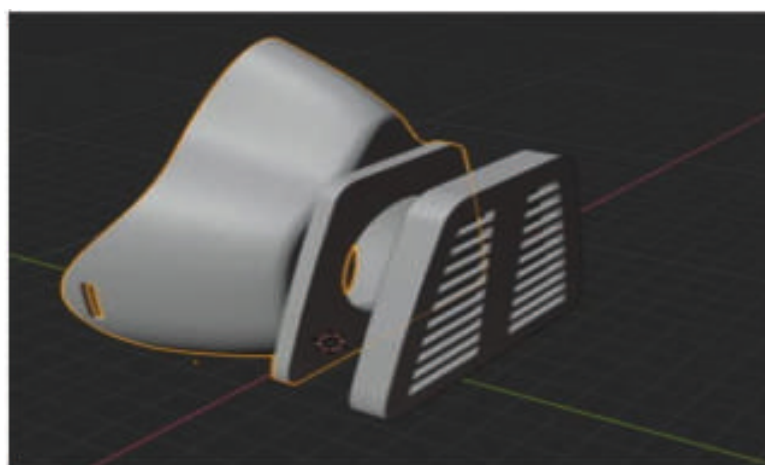
**Co-PI-** Prof. P. B. Sharma,  
Prof. Preeti Thakur

**Funding Agency** – TIDE 2.0 MeTY G3C  
**Sanctioned Amount** – 700000 INR

#### PROJECT HIGHLIGHTS

In-house manufacturing of N95 masks / PPE Technology having enhanced properties using 3D printing/ molding technique to meet current high demands.

- Antimicrobial
- Hydrophobic
- Skin-friendly
- Economic
- Reusable
- Recyclable



#### RESEARCH PUBLICATIONS & PATENTS

Preeti Thakur, Atul Thakur, Pritam Babu Sharma, Dinesh Kumar “A METHOD FOR PREPARING NANO-COMPOSITE ANTIMICROBIAL POLYMERS FOR MANUFACTURING RESPIRATOR MASK” Application No 202011031429, date of Filing 22-07-2020



*TECHNOLOGY INCUBATION & DEVELOPMENT OF ENTREPRENEURS  
(TIDE 2.0), Ministry of Electronics & Information Technology*

**Prof (Dr) Vikas Madhukar**

Amity University Haryana has been shortlisted for the set-up of Technology Incubation & Development of Entrepreneurs (TIDE 2.0) Incubation Centre under TIDE 2.0 as Group 3S Centre.

**OBJECTIVE:**

The objective of above scheme is to promote tech entrepreneurship through financial and technical support to incubators engaged in supporting ICT Startups using emerging technologies such as IoT, AI, Block-Chain, Robotics etc, in pre-identified areas of social relevance.

The scheme will be implemented through 51 incubators across India and hand holding close to 2000 tech start-ups over a period of 5 years. The scheme envisions creating a holistic ecosystem to support technology startups and incubation centers through identifying and creating necessary linkages.

**FINANCIAL SUPPORT FOR TIDE CENTER:**

Each TIDE center would be given financial support as Grant-in-aid of up to Rs 155 lakhs – payable in instalments. These funds can be used for improvement in infrastructure - up to Rs. 30 lakhs and for providing financial support to the incubating companies – Rs 125 Lakhs (@ Rs 25 lakhs per company). The grants under the proposed scheme would be subject to the enclosed terms & conditions. MeitY would constitute a Project Review and Steering Group (PRSG) for the Scheme. Release of funds to the HI/ TIDE will be done based on the recommendations of PRSG.

**SUPPORT FOR THE INCUBATED COMPANIES:**

1. The TIDE Centre will provide operating space to the selected companies on rent for a period of up to 2 years (extendable by one year).
2. Each company selected for incubation would get financial support, in the form of soft loan, of up-to Rs. 25 lakhs over two (or three) years period (subject to satisfactory performance). The amount of loan would be up to a maximum of 80% of the project cost of the incubating company. The loan can be used for equipment and consumables essential for the implementation of the project, subsistence allowance of the promoters, staff salaries and other contingencies.
3. At the end of two (or three) years, the company will have to return half of the financial support given to the company as per institute's policy and the remaining 50% can be given as equity to the TIDE centre, which can be encashed at the time of valuation.

**Recently following two Startups funding approved by AII, AUH under TIDE-2.0 MIEITY G3C**

1. Antimicrobial Face-Mask Using Nano-particle Coating (patent application No\202011017740)'; by Dr Arvind Chhabra
2. 3D Manufacturing of N95 Mask having Inherent Antimicrobial Properties by Dr Atul Thakur



*Nanotechnology For Healthcare And Environment -  
Exploring New Horizons (DST-FIST)*

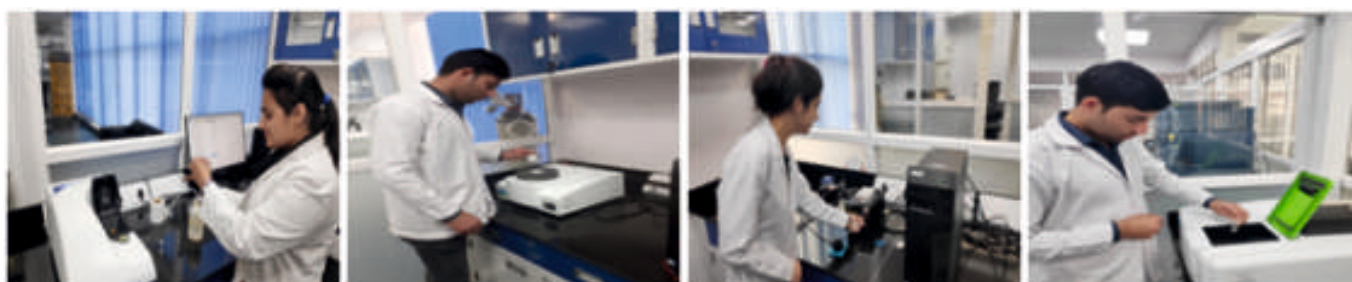
**Prof. A. K. Yadav, ASAS**

**Funding Agency** - Department of Science and Technology,  
Government of India & Amity University Haryana  
**Sanctioned Amount** - 8400000 INR

**PROJECT HIGHLIGHTS**

Funds for Infrastructure in Science & Technology (FIST) - Physical Sciences

- Hybrid Materials and Metal Nanoparticles for Water Purification
- Nanofibrous Mats and Polymeric Nanoparticles for Diabetic Wound Dressings, Novel Nanocarriers for Anti-Cancerous Applications
- Nanofluids for HVAC (heating, ventilation and air-conditioning) Systems for Infant Incubators
- Liquid Crystals, Materials for Solar Energy Harvesting, Magnetic and Spintronics Materials, Phase Change and Dielectric Materials
- Nanophosphors for Light Emitting Diodes and Radiation Dosimetry
- Modelling and Simulation



FIST- sponsored Material Research Lab provides latest and advanced analytical instruments such as **Particle Size & Zeta Potential Analyzer, Thermal Analyzer, Modular Spectrometer and Double Beam UV-Vis Spectrophotometer** for Nanomaterial characterization to boost our on-going and proposed research in Material Science.

**RESEARCH PUBLICATIONS**

Over 20 Papers in SCI/Scopus indexed journals

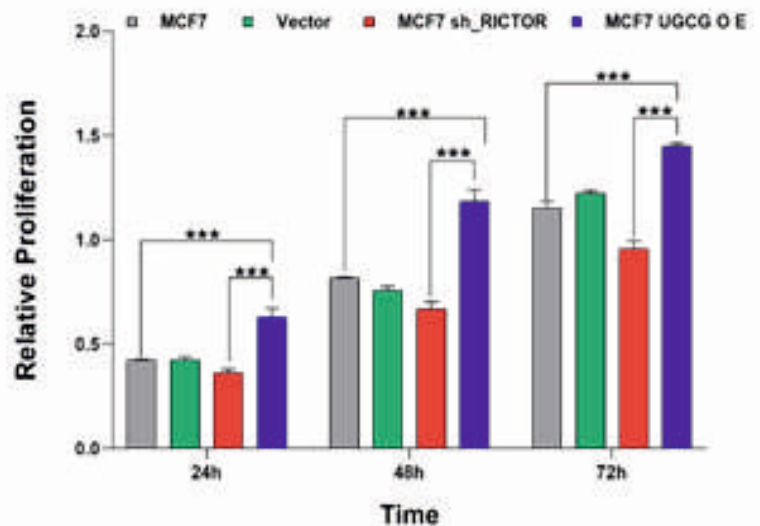


**Co-PI- Dr. Rajendra Prasad  
JRF-Nihal Medatwal**

**Funding Agency - BioCARE, DBT  
Sanctioned Amount - 54.5 lakhs**

## SUMMARY

- Analyzing the effect of mTORC2 on sphingolipid biosynthesis in breast cancer cell lines using qualitative and quantitative profiling of different sphingolipid species
- Validation of mTORC2 mediated sphingolipid regulation and its effect on cell proliferation, migration and invasion
- UGCG can be manipulated to mimic mTORC2 inhibition
- Understanding the role of sphingolipid mediated reprogramming of metabolism in cancer cells
- Manipulation of sphingolipids to mimic mTORC2 inhibition as a breast cancer therapy



*UGCG can be manipulated to mimic mTORC2 inhibition*

## OUTCOME/PUBLICATION

mTORC2-mediated regulation of sphingolipid biosynthesis is involved in breast cancer progression, Kajal Rajput, Nafees Mohd. Ansari, Nihal Medatwal, Animesh Kar, Sudeshna Datta, Arnab Mukhopadhyay, Avinash Bajaj, Ujjaini Dasgupta\* (manuscript in preparation)



*Comparative Sphingolipid Profiling of Breast Cancer Cell and Tissue Types for Identification of Potential Metastatic Biomarkers*

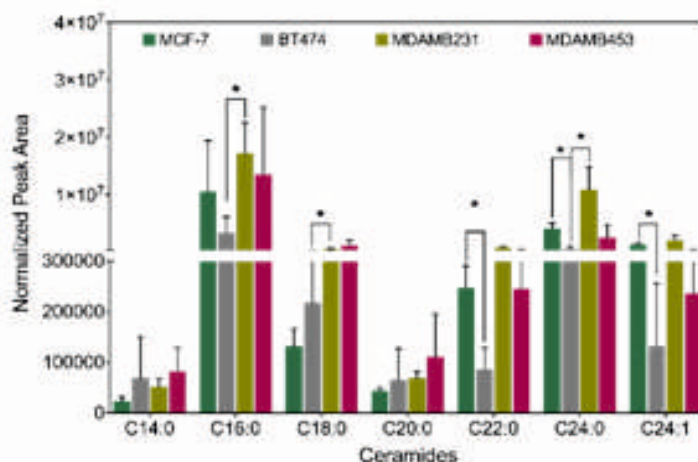
**Dr. Ujjain Dasgupta, AIISH & AIB**

**Co-PI-** Dr. SVS Deo  
**JRF-** Pankaj Sharma

**Funding Agency** Early Career Research Award, SERB, DST.  
**Sanctioned Amount** – 4710000 INR

**SUMMARY**

- Sphingolipid profiling of breast cancer cell types and evaluation of the impact of sphingolipid manipulations on their cell proliferation, migration, and invasion properties
- Clinical correlation of stage specific sphingolipid profiles in breast cancer tissue
- Unique sphingolipid profile in breast cancer cell lines
- Correlation of in vitro data with clinical data and prognostic sphingolipid signatures in breast cancer



*Unique sphingolipid profile in breast cancer cell lines*

**OUTCOME/PUBLICATION**

- Pal S., Medatwal N., Kumar S., Kar A., Komalla V., Yavvari P.S., Mishra D.K., Malakar D., Pillai M., Srivastava A., Sharma R.D., Sengupta S., Dasgupta U.,\* and Bajaj A.\* A localized chimeric hydrogel therapy targets tumor microenvironment through alteration of sphingolipid metabolism. ACS Cent. Sci. 2019, 5, 10, 1648-1662 (IF 12.837)
- Medatwal N., Ansari M.N., Kumar S., Pal S., Jha S.K., Verma P., Rana K., U. Dasgupta\* & A. Bajaj\*. Hydrogel-mediated Delivery of celastrol and doxorubicin induces synergistic effect on tumor regression via upregulation of ceramides. (Nanoscale, 2020, IF- 6.895). (\* corresponding author)

**PATENT APPLIED**

Ujjaini Dasgupta and Ravi Datta Sharma, "A method providing spliced transcripts of Ceramide synthase 2 gene to alter the level of ceramides to affect tumor regression" CRN3846, Patent application no. 202011011239



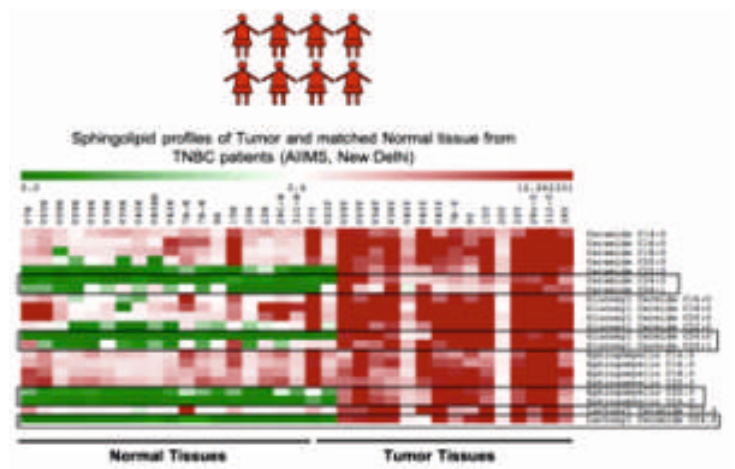
*Identification of Sphingolipid-based Biomarkers for Triple Negative Breast Cancer (TNBC) and Luminal A Patients and their Clinicopathological Correlation*

**Dr. Ujjain Dasgupta, AIISH & AIB**

<p><b>Co-PI- Dr. SVS Deo</b></p>	<p><b>Funding Agency - DHR, ICMR</b>  <b>Approved Amount – 56,00,000 INR</b></p>
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**SUMMARY**

- Qualitative and quantitative profiling of sphingolipids in Triple-Negative Breast Cancer (TNBC) and adjoining Normal tissues
- Qualitative and quantitative profiling of sphingolipids in Luminal A Tumors and its Comparison with TNBC Tumors
- Clinical Correlation of Sphingolipid Signature with Prognostic Factors, Response to Therapy and Recurrence-free Survival (RFS)



*Sphingolipid profiling from patient tumor tissue*



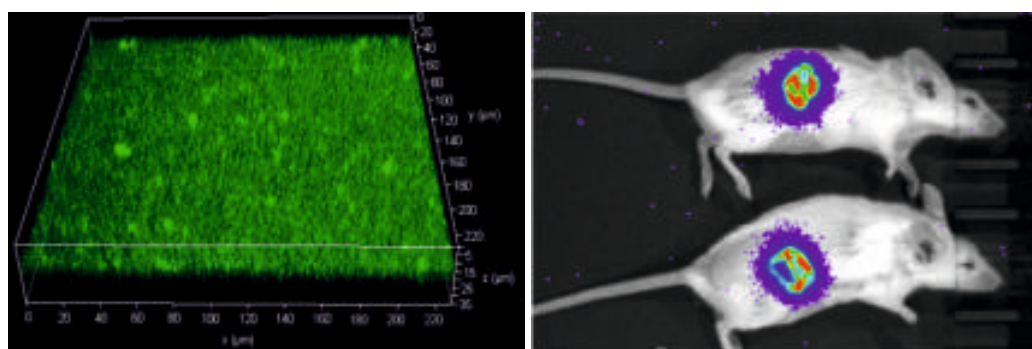
*Combating Topical and Medical Device Related Multidrug Resistant Fungal Infections Using Molecularly Engineered Anti-Fungal Hydrogels*

**PI-** Dr AvinashBajaj(RCB)  
 Prof. R. Prasad (AIB AUH)  
 Co-PI-Dr Ujjaini Dasgupta  
**JRF-** Sandeep Kumar, Kajal Rajput, Anshu

**Funding Agency** DBT  
**Sanctioned Amount** 18000000 INR

**SUMMARY**

- Synthesis of membrane-targeting amphiphiles and amphiphile-drug conjugates (ADCs)
- Deciphering the in vitro antifungal activities and mechanism of action of amphiphiles and ADCs
- Transcriptome and lipidome mapping to evaluate the Effect of Amphiphile and ADCs on Biofilms
- Standardization of biofilm and infection model
- Engineering of Formulations and their in vivo Antifungal Activities



*Standardization of biofilm and infection model*



*Identifying the role of p53 regulated long non-coding RNAs by CRISPR/Cas9 in Ovarian cancer.*

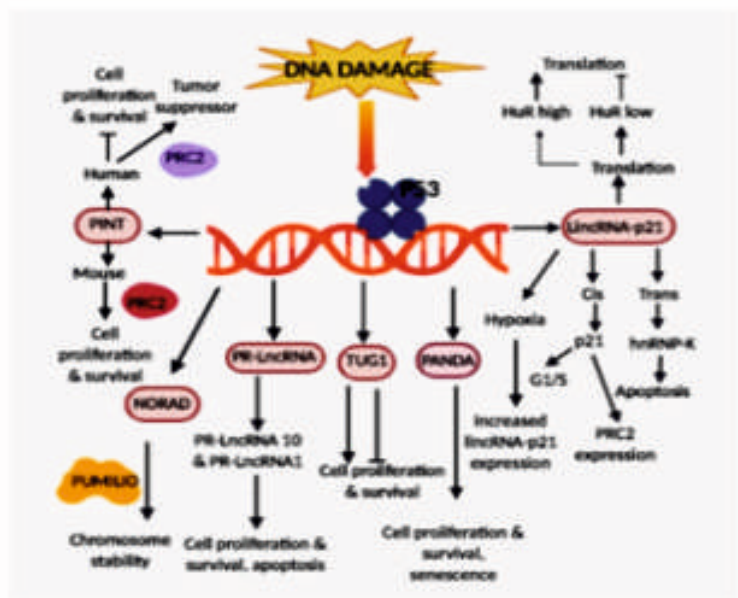
**Dr. Amit Kumar Pandey, AIB**

**Co-PI-** Dr. Alok Srivastava, AIB  
JRF- Sonali Pal

**Funding Agency** ICMR  
**Sanctioned Amount** 58 Lakhs

**SUMMARY**

- To identify p53 regulated long non-coding RNAs that are induced by cisplatin in ovarian cancer cell lines.
- To understand the pathway regulated by these long non-coding RNAs.
- Elucidating the biological mechanism by which the long non-coding RNAs modulate the DNA damage pathway in ovarian cancer.
- The altered expression of the p53 associated lncRNAs in the study can be used as a potential predictive marker for prognosis and response to the treatment. Moreover, these can be used as therapeutics targets for developing new strategies.



**OUTCOME/PUBLICATION**

Deciphering the Mounting Complexity of the p53 Regulatory Network in Correlation to Long Non- Coding RNAs (lncRNAs) in Ovarian Cancer. Sonali Pal, Manoj Garg and Amit Kumar Pandey, \*Cells 2020, 9(3), 527 (IF-5.35)





*Unraveling the molecular mechanism of lncRNAs involvement in Glioblastoma Unraveling the molecular mechanism of lncRNAs involvement in Glioblastoma*

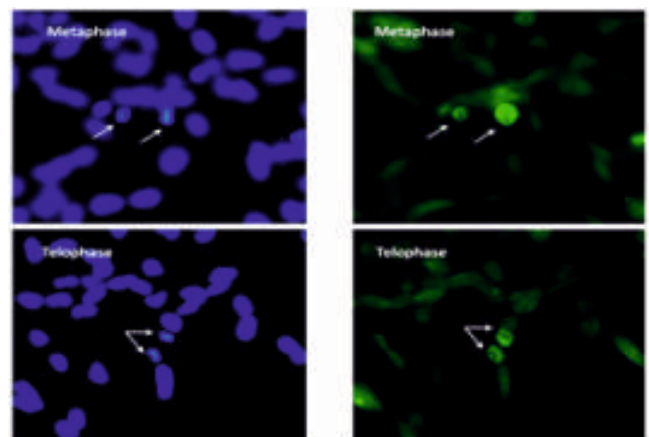
**Dr. Amit Kumar Pandey, AIB**

**Co-PI-** Dr. Marat Pavlyukov, Russia  
JRF- Bhupendra Yadav

**Funding Agency**  
DST-RSF, Indo-Russia International Research Grant  
**Sanctioned Amount** 10400000 INR

**SUMMARY**

- To design, synthesize and deliver RNA-inhibitors of LINC-ROR and new survivin-binding RNA to glioblastoma cells.
- To characterize the biological mechanism of LINC-ROR and new lncRNA in glioblastoma.
- Characterization of changes in transcriptional profile in cells with elevated or decreased function of lncRNAs.
- Identification of molecular partners of lncRNAs.
- lncRNAs as a miRNA sponge in glioblastoma.



*Figure: Detection of lncRNA in human glioblastoma stem cells using FISH. lncRNA visualization in interphase and mitotic (shown with arrows) cells*

**OUTCOME/PUBLICATION**

Long non-coding RNAs Associated with Glioblastoma: From Transcriptional Noise to Novel Regulators with a Promising Role in Therapeutics. Bhupender Yadav#, Sonali Pal#, Marat Pavlyukov, Yury Rubstov, Akul Goel, Manoj Garg, Amit Kumar Pandey\*. Submitted in Cancer Letters (IF-7.3)



*Understanding Wnt Pathway and LncRNAs interaction for the identification of novel therapeutic targets in triple-negative breast cancers*

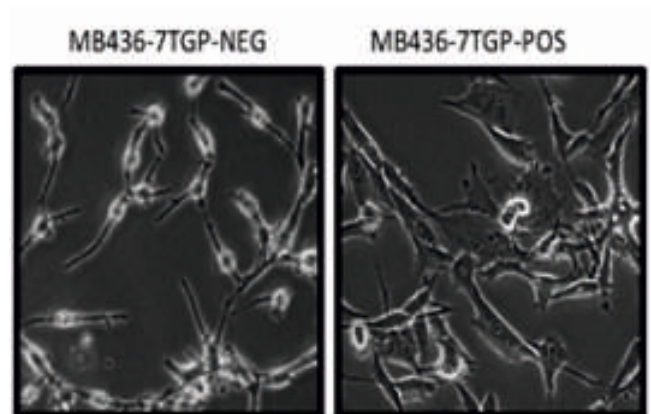
**Dr. Amit Kumar Pandey, AIB**

**JRF- Samarth Kansara**

**Funding Agency - SERB-DST  
Sanctioned Amount - 5200000 INR**

**SUMMARY**

To date, TNBC-targeted therapies have not been successfully developed. In parallel, WNT- targeting compounds against breast cancers are still currently in clinical trials. The advances in the development of sequencing technologies have allowed us to start characterizing the molecular landscape of TNBC. Although various genes involved in the Wnt pathway have been well characterized, several aspects of their function and regulation are not yet fully understood. It has been recently proposed that long non-coding RNAs (lncRNAs) are dysregulated in many cancers and may be linked to aberrant WNT activity.



*Figure: The figure depicts wnt activated 7TGP reporter cell line were generated by lipofectamine transfection of the 7TGP reporter plasmid*

**OUTCOME/PUBLICATION**

Mechanistic Involvement of Long Non-Coding RNAs in oncotherapeutics resistance in Triple-Negative Breast Cancer . Samarth Kansara , Vijay Pandey, Peter E. Lobie, Gautam Sethi, Manoj Garg and Amit Kumar Pandey\*, Cells 9 (6), 1511 (IF- 5.65)



*Evaluation of antimycobacterial potential of Unani drugs “Qurs-e- Sartan  
Kafoori and Sharbat-e-Ejaz – A mechanistic approach*

**Dr. Zeeshan Fatima, AIB**

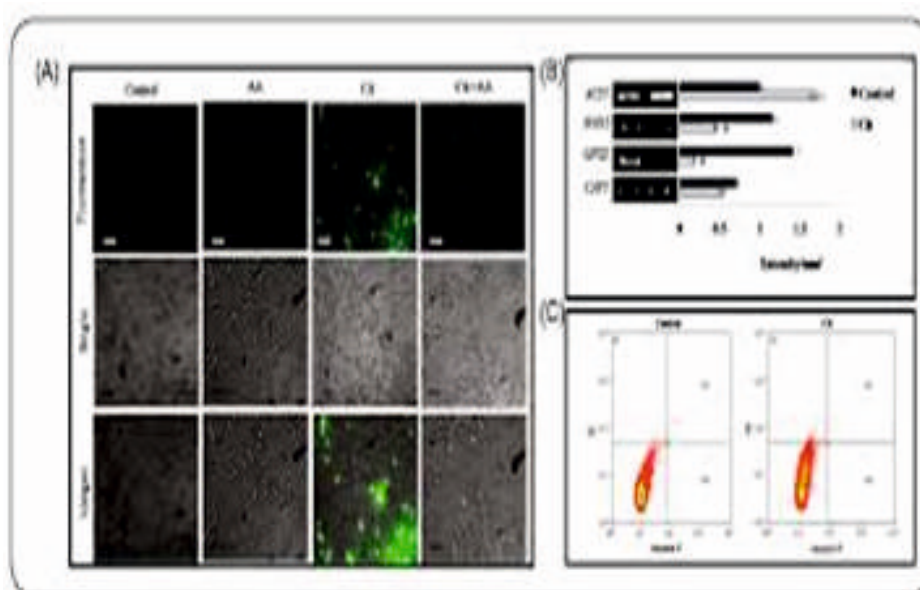
**Co-PI- Dr. Saif Hameed**  
**SRF- DyutiPukrait**

**Funding Agency - Ministry of AYUSH, New Delhi**  
**Sanctioned Amount - 4789970 INR**

**SUMMARY**

Tuberculosis(TB) cause by Mycobacterium tuberculosis (MTB)remains global emergency particularly affecting poor and developing countries with 8 to 10 million new cases, clamming around 2 million lives annually. Multidrug resistance (MDR) and the highly lethal extensively drug-resistant (XDR) TB are adding new challenges to present therapeutics.

Antimycobacterial therapy has become less effective with tremendous side effects rendering researchers struggle hard to find novel approaches to tackle this ever-growing problem. The failure of present therapeutic regiments renders the search for novel compounds capable of serving novel therapeutic option. Present era need is to look for natural alternative to be used either as drugs or adjunct to the drugs. Considering the importance of Ayurvedic, Unani, Homeopathy and other alternative system of medicines in current scenario, this project is to re-connect Unani drugs with modern medicine and elucidate the mechanism of action of traditional drugs for the management of TB .





*Comparative omics study to understand the biology of drug resistant Mycobacterium tuberculosis clinical isolates from Arunachal Pradesh*

**Dr. Zeeshan Fatima, AIB**

**JRF- Himanshu Sharma**

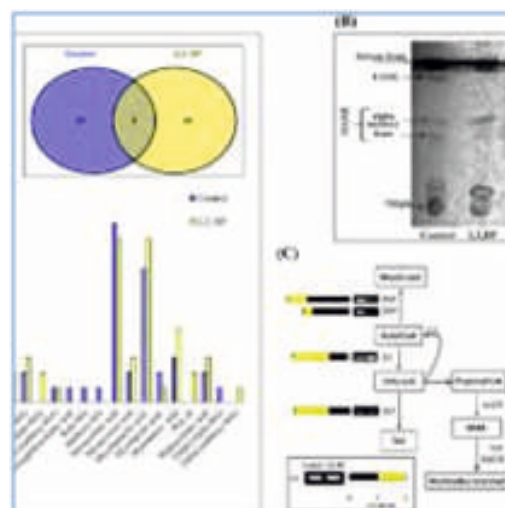
**Funding Agency - DBT, New Delhi  
Sanctioned Amount - 64,54,992 INR**

#### SUMMARY

Poor understanding of the basic biology of bacterium hampers development of much-needed drugs, vaccines, and diagnostic tests. High-throughput “omics” techniques have been applied to the study of MTB biology in recent years to address questions at the systems level. Genomic studies are increasing our understanding of MTB evolution and the development of drug resistance, while proteomics and lipidomics have enhanced our understanding of the real-time physiological status of bacilli in the host. Hence, this project will help understanding lipid biology in persistence, pathogenesis, and drug resistance of MTB.

#### OUTCOME/PUBLICATION

Zeeshan Fatima, Shiv Nandan and Saif Hameed (2020) “Understanding mass spectrometry based global Mycobacterial lipidomics.” *Curr. Mol. Med.* doi: 10.2174/1566524020666200206120840. (IF-2.2)





*Developing small molecule inhibitors to target non-genomic androgen signaling and elucidating the role of GPR56 in Prostate Cancer*

**Dr. Gargi Bagchi, AIB**

**Co-PI-** Dr.Imtaiyaz Hassan, Jamia,  
 Dr. Ravi Datta Sharma, AIB/AIISH  
**JRF-** Versha Dahiya

**Funding Agency - SERB-CRG**  
**Sanctioned Amount 4637000 INR**

#### SUMMARY

- To identify androgen-responsive genes that are also under GPR56 regulation by RNA-Seq
- To develop small molecule inhibitors against GPR56 and HSP90.
- To characterize the efficacy of these inhibitors in prostate cancer cell lines.
- Characterization of new molecular targets.

#### OUTCOME/PUBLICATION:

Non-genomic androgen signaling is an essential part of genomic signaling (Communicated to Journal of Steroid Biochemistry and Molecular Biology)

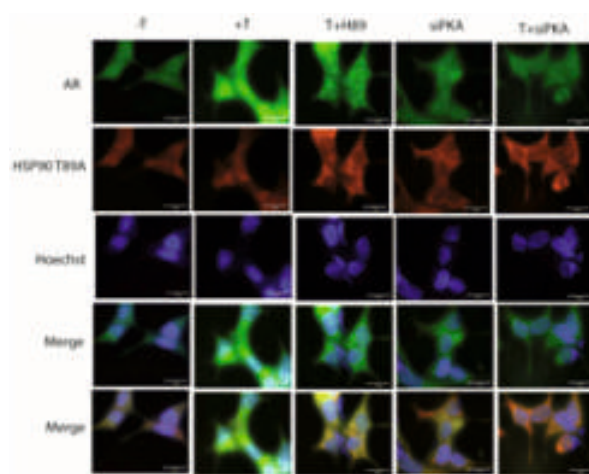


Figure 6

*Immunofluorescence using AR-GFP in LNCAP*



*Experimental Validation Of Pre-Identified Candidate Genes Regulating Protein Storage In Chickpea Seeds*

**Dr. Kaustav Bandyopadhyay, AIB**

**JRF- Oindrila Bhattacharjee**

**Funding Agency - DST-SERB  
Sanctioned Amount - 3190000 INR**

**SUMMARY**

Though a major portion of local and neighboring states population is said to depend on pulses as the source of dietary protein, seed protein content in chickpea (18%) lags far behind many other model legumes including phylogenetically close relative Medicago (35%), soybean (38%), and Lotus japonicus (45%).

Apart from many low key candidates, GWAS studies in chickpea have identified 6 interesting candidates. In this project, we will confirm their role in seed protein storage by mutant analysis, plant transformation, and RNAseq.

**OUTCOME/PUBLICATION**

None at the moment.



*A nanobionic approach for enhancement of plant photosynthesis and growth by augmenting chloroplast mediated photon absorption*

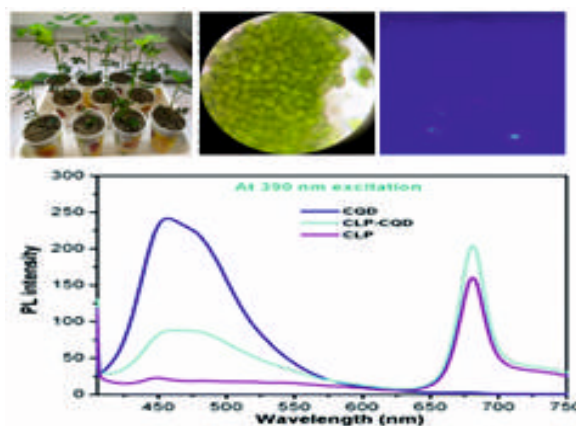
**Dr. Sumistha Das, AIB**

**Co-PI- Dr. Nitai Debnath, AIB**  
**JRF - Shikha Dhiman**

**Funding Agency - DST-Nano Mission**  
**Sanctioned Amount - 4550000 INR**

## SUMMARY

- Synthesis and physico-chemical characterization of optically active core shell nanomaterials.
- Figure: Carbon quantum dots or CQD (which are fluorescent in nature) incubate with chloroplast (CLP). Both CQD and CLP can absorb light in the same wavelength region and hence a single wavelength is able to excite both of them and boost electrons from CQDs to CLP and also CLP to the photosystem.
- Evaluation of the efficacy of the nanoshells will be both in isolated chloroplast and in vivo by assessing different steps of photosynthesis like Hill reaction, NADP and ferricyanide reduction, photophosphorylation, oxygen evolution, rubisco carboxylase activity etc.
- Evaluation of effect of these nanomaterials on seed germination and plant growth. Nano formulation spray will be developed for application on plant system.



*Figure: Carbon quantum dots or CQD (which are fluorescent in nature) incubate with chloroplast (CLP). Both CQD and CLP can absorb light in the same wavelength region and hence a single wavelength is able to excite both of them and boost electrons from CQDs to CLP and also CLP to the photosystem.*

## OUTCOME/PUBLICATION

Ghosh Moulick, R., Das, S., Debnath, N., Bandyopadhyay, K. (2020) Potential use of nanotechnology in sustainable and 'smart' agriculture: Advancements made in the last decade. Plant Biotechnology Reports. DOI 10.1007/s11816-020-00636-3.



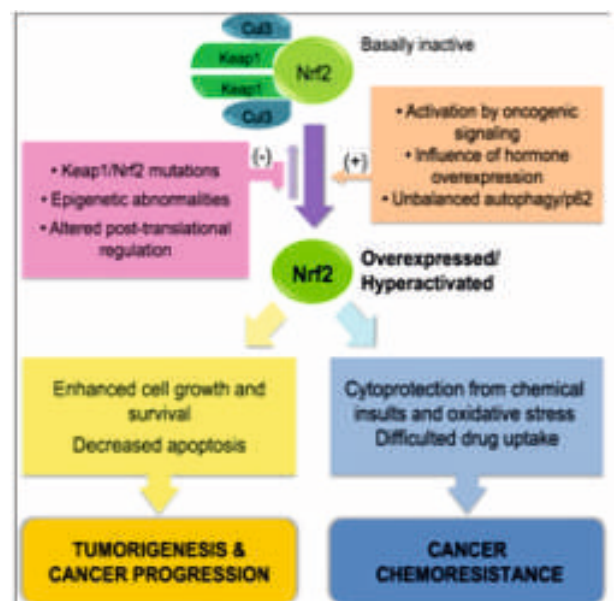
*Evaluation of the Nrf2 anti-oxidant response element (ARE) pathway as a promising target for alleviating chemoresistance in treatment of Acute Lymphoblastic Leukemia (ALL)*

**Dr. Munindra Ruwali, AIB**

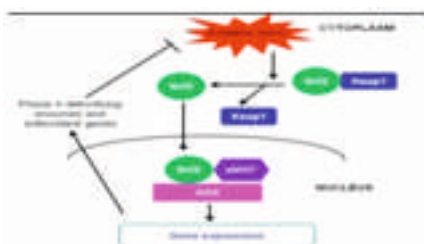
**Funding Agency - DST-TARE**  
**Sanctioned Amount - Rs. 18, 30,000 INR**

**SUMMARY**

- Acute lymphoblastic leukemia (ALL) results from malignant transformation and proliferation of lymphoid progenitor cells in the bone marrow, blood and extramedullary sites.
- Drug resistance is the major cause of the treatment failure which might be caused by the persistence of leukemic stem cells, altered expression of drug influx and efflux transporters, altered cell cycle check points, and increased antioxidant defense systems.
- Targeting the antioxidant defense pathways may be an effective strategy for eliminating cancer cells.
- Role of Nrf2 in Cancer Chemoresistance
- Constitutive overexpression of NF-E2 related factor 2 (NFE2L2 or Nrf2), the master regulator of antioxidant pathway genes involved in scavenging and detoxification of reactive oxygen species (ROS), results in chemoresistance.



*Role of Nrf2 in Cancer Chemoresistance*



**OUTCOME/PUBLICATION**

- Nrf2-ARE may be a useful biomarker to predict chemotherapy resistance in ALL.
- Targeting Nrf2-ARE pathway may prove to be useful to overcome chemotherapy failure in ALL.





*Developing on-spot diagnostic kit for COVID-19 based on RT-LAMP technique*

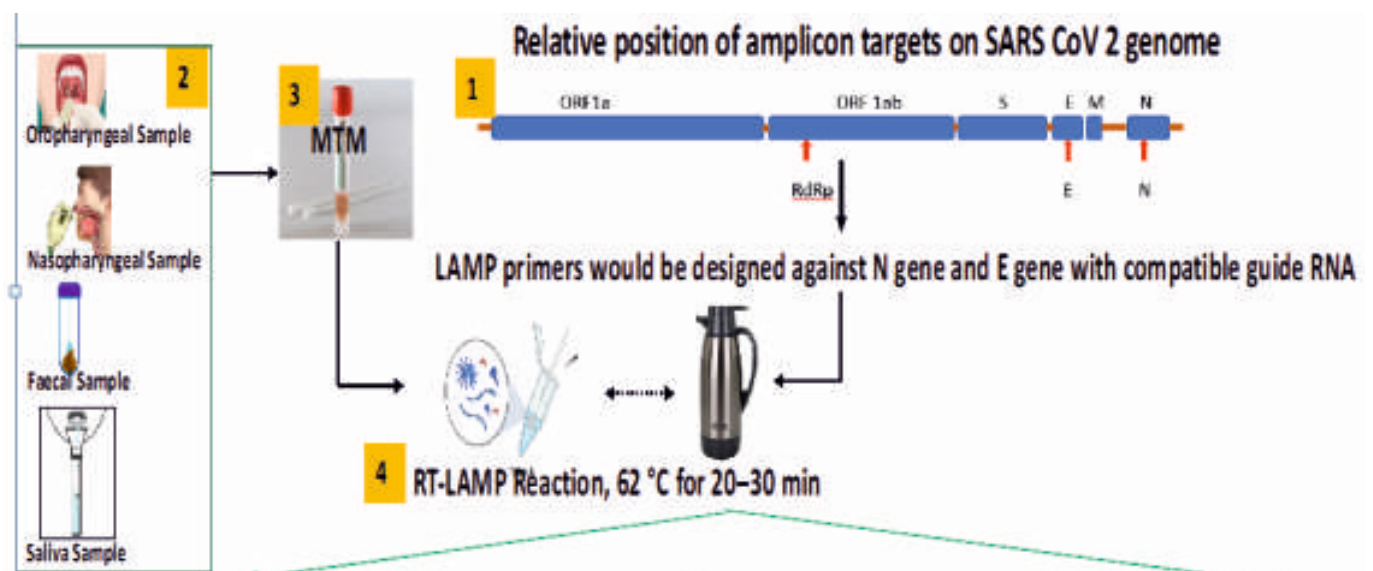
**Dr. Saif Hameed, AIB**

**Co-PI-** Dr. Zeeshan Fatima, Dr. MunindraRuwali  
**JRF-** To be appointed

**Funding Agency** BRNS-BARC, Mumbai  
**Sanctioned Amount -** 1656000 INR, 2020-2021

**SUMMARY**

- To develop on spot diagnostic kit for COVID-19 testing.





*Understanding the membrane dynamics and host-pathogen interaction in response to magnesium deprivation in Candida albicans*

**Dr. Saif Hameed, AIB**

**SRF - Sandeep Hans**

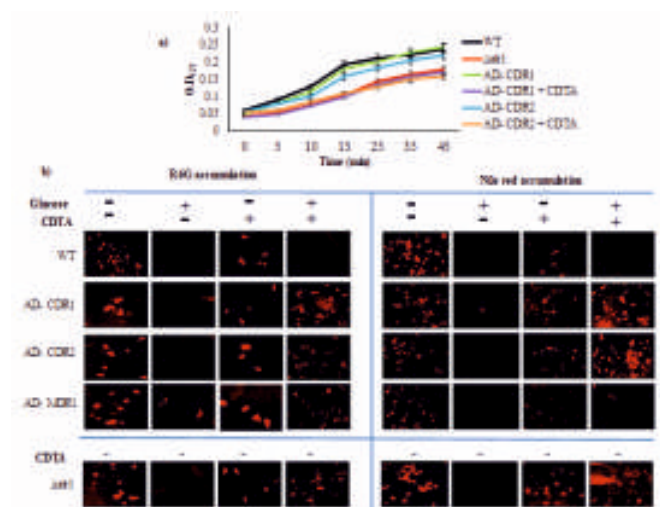
**Funding Agency - ICMR, New Delhi  
Sanctioned Amount – 1320000 INR, 2019-2022**

### SUMMARY

- To study lipidome profile under magnesium deprivation.
- To study host pathogen interaction.

### OUTCOME/PUBLICATION

- Sandeep Hans, Zeeshan Fatima, and Saif Hameed(2020) "Understanding membrane dynamics in Candida albicans under magnesium deprivation reveals new compositional insights." Med Mycol (under review).
- Sandeep Hans, Zeeshan Fatima, and Saif Hameed(2020) "Insights into the modulatory effect of magnesium on efflux mechanisms of Candida albicans." Biometals (under review).





*Fabrication of the portable lowcost point-of-care optical device for the screening of thalassemic carrier*

**Dr. Ranjita Ghosh Moulick, AIB/AIISH**

**PI (JNU) -**  
Dr. Jaydeep Bhattacharya

**Funding Agency** DSP TDP  
**Sanctioned Amount** - 3600000 INR (2 years)

#### **SUMMARY**

- India contributes to 10% of world's thalassemia major child birth
- Beta thalassemia carrier are clinically asymptomatic and thus remain undiagnosed
- HPLC, is the most popular method for diagnosis, requires expertise and is time consuming
- The project aims to fabricate a portable low-cost optical device for large scale screening of thalassemia carrier

#### **OUTCOME/PUBLICATION**

Deciphering the interaction of Copper nanoparticles with HbA0 (under preparation)



*Fabrication of the portable lowcost point-of-care optical device for the screening of thalassemic carrier*

**Dr. Alok Srivastava, AIB/AIISH**

**Co-PI - Prof. Allam Appa Rao**  
**JRF : Sushrutha Raj**

**Funding Agency DBT**  
**Sanctioned Amount - 2988000INR**

**SUMMARY**

To identify genes related to different association class for the disease Alzheimer using the abstract data available in PubMed using Machine learning approach.

**OUTCOME/PUBLICATION**

Sushrutha Raj, Anchal Vishnoi, Alok Srivastava. GOLD standard dataset for Alzheimer genes. Data in Brief, Volume 30, June 2020, 105439.

*Fabrication of the portable lowcost point-of-care optical device for the screening of thalassemic carrier*

**Dr. Alok Srivastava, AIB/AIISH**

**Co-PI - Prof. Allam Appa Rao**  
**JRF : Sushrutha Raj**

**Funding Agency DBT**  
**Sanctioned Amount - 2988000INR**

**SUMMARY**

To identify genes related to different association class for the disease Alzheimer using the abstract data available in PubMed using Machine learning approach.

**OUTCOME/PUBLICATION**

Sushrutha Raj, Anchal Vishnoi, Alok Srivastava. GOLD standard dataset for Alzheimer genes. Data in Brief, Volume 30, June 2020, 105439.



*Identify disease gene association using Google tensor's flow*

**Dr. Alok Srivastava, AIB/AIISH**

**Co-PI - Dr. Amit Kumar Panday**  
AIISH/AIB

**Funding Agency DBT**  
**Sanctioned Amount - 2686000 INR**

**SUMMARY**

To identify disease gene association using neural network framework Google's tensor flow, weight genes to different association classes of all the data available in PubMed.

*System level meta analysis of Type 2 Diabetes to identify key regulator.*

**Dr. Alok Srivastava, AIB/AIISH**

**Co-PI - Dr. Soumyadeep Nandi**  
AIISH/AIB

**Funding Agency DBT**  
**Sanctioned Amount - 7831000 INRs**

**SUMMARY**

To identify genes associated with Type 2 Diabetes and perform the meta analysis of the system, to identify the key regulator in the T2D system.



*Development of an integrated multiomics analysis platform, and its application to elucidate the differential process of silk colouration, In the Muga silkworm Antheria assamensis Helfer*

**Dr. Soumyadeep Nandi, AIISH**

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**Co-PI** - JNU: Andrew Lynn,  
NIPGR: Subhra Chakraborty

**Funding Agency** DBT  
**Sanctioned Amount** - 1,05,00,000 INR

#### **SUMMARY**

- To understand the mechanism of incorporation of color to silk by the silkworm.
- Investigate the mechanism from different perspective, transcriptomics, metabolomics, and proteomics
- Build an integrated analysis platform to combine data from different platforms



*Mitigating the impact of antifungal resistance in the emerging pathogen *Candida auris* by piggybacking its peptide permease as an antifungal delivery system*

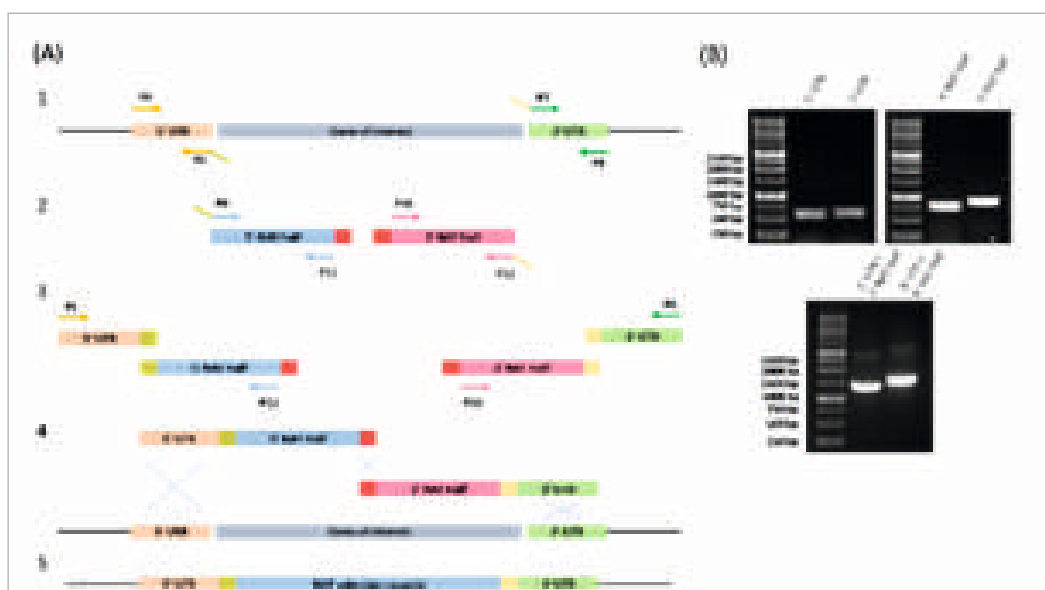
**Dr. Atanu Banerjee, AIB**

**JRF - Ms. Rosy Khatoon**

**Funding Agency - SERB-DST  
Sanctioned Amount 3200000 INR**

**SUMMARY**

- Construction of Ptr22 hyperexpression system and PTR22 deletion mutant.
- Deciphering the peptide specificities of Ptr22 using fluorescence-based transport and growth assays.
- Fig. Construction of deletion mutants of PTR genes
- Testing the antifungal efficacy of the high-affinity peptide derivatives in clinical isolates of *C. auris*.



*Fig. Construction of deletion mutants of PTR genes*



*Role of Cyclic di-AMP in ribosome biogenesis 16S, rRNA methyltransferase (RsmD) function and drug resistance in Mycobacterium*

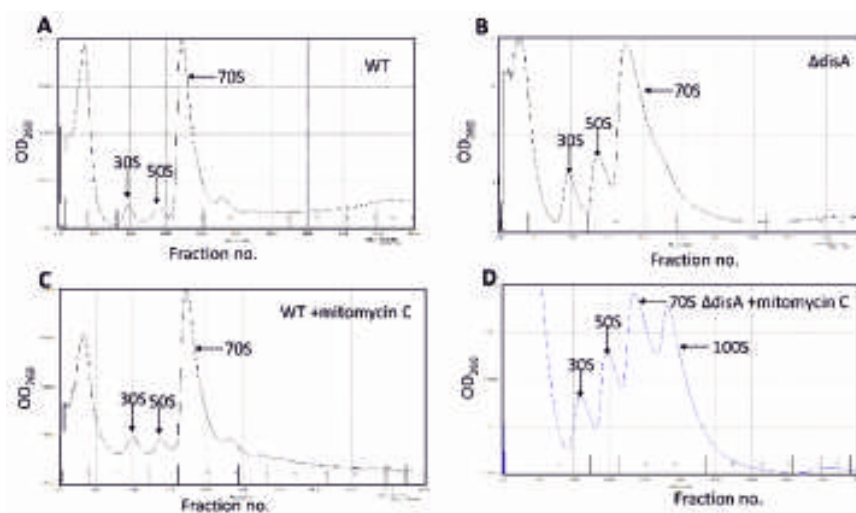
**Dr. Krishna Murari Sinha, AIB/AIISH**

**JRF - Sudhanshu Mudgal**

**Funding Agency SERB, Core Research Grant  
Sanctioned Amount 35,36000 INR**

**SUMMARY**

- To understand the effect of cyclic di-AMP on ribosome biogenesis in Mycobacterium.
- Effect of cyclic di-AMP on the activity of rRNA methyltransferase, RsmD.
- Evolution of drug resistant strains in cyclic di-AMP mutant ( $\Delta$ disA) mycobacterial cells.



*Fig. Ribosome profiling of*

**OUTCOME/PUBLICATION**

Manuscript under preparation





*Human lacrimal gland regeneration: a study of the existing technological advancements and development of next generation solutions by tissue engineering and regenerative medicine techniques*

**Dr. Vimal Kishor Singh**

**JRF - UMANG BERRY**

**Funding Agency - SERB-Empowerment and Equity Opportunities for Excellence in Science  
Sanctioned Amount – 4367888 INR**

**PROJECT HIGHLIGHTS**

- Studying the gene expression profiling in diseased and normal tissue to define targets useful in the ex vivo generation of lacrimal functional unit component/ cells
- Establishment of methods for iPSCs derived differentiation of human lacrimal acinar cells
- Generation of transplantable Lacrimal Functional Unit components to restore tear film and ocular surface integrity by tissue engineering approaches.



**RESEARCH PUBLICATIONS & PATENTS**

1. Ocular surface disorders, dry eyes and other chronic inflammatory disease: current strategies for their clinical management, regeneration and reconstruction approaches. Vimal et al., 2020 (Submitted)

**PATENTS:**

1. Title: A SYSTEM AND METHOD FOR PREPARING BLOOD CELLS (RBCS)” inventors: Dr. Vimal Kishor Sin Granting agency: The Indian Patent Office, Patent Application No. 201911027393 filed in India on 9/07/2019, Status of the application. CAP
2. Title: A SYSTEM AND METHOD FOR USING CORDYCEPS SINENSIS, IN THE EX VIVO ERYTHROPOIESIS AND A PLATELET FORMATION BY USING HSCS)” inventors: Dr. Vimal Kishor Singh, Granting agency: The Indian Patent Office, Patent Application No. 201911035008 filed in India on 30/08/2019, Status of the application. CAP



*A computational software to find biomarkers using alternative splicing as a tool*

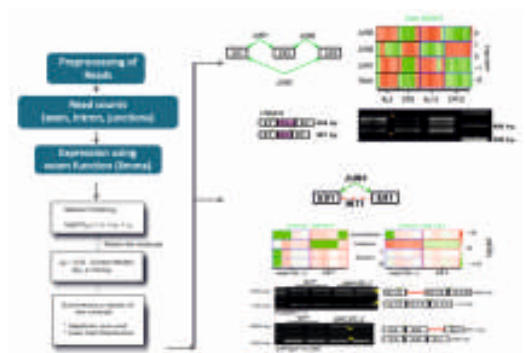
**Dr. Ravi Datta Sharma, AIB, AIISH**

**Co-PI** - Dr. Arnab Mukhopadhyay, Scientist,  
 NII, New Delhi, Dr. Alok K Srivastava  
**JRF** - Harsh Sharma

**Funding Agency** - DBT, India  
**Sanctioned Amount** - 1996000 INR

The alternative processing of premature mRNA to generate multiple isoforms is a well conserved mechanism to increase complexity of the transcriptome and consequently, the diversity of proteins in multi-cellular organisms. In this project, we propose an open source software R package that includes methods to find; most common splicing events, the number of isoform expressed in particular condition, construction of isoform structure using information of meta features, estimation of isoform abundance, and network analysis of AS genes that would enable finding of novel splicing regulators, using RNA-Seq data, of diseases and their prevention strategies to assure healthy longevity, and identification of personalized medicine.

**OUTCOME/PUBLICATION**



*Fig. Analysis pipeline for finding alternative splicing events using RNA-Seq data*



*Insights into the efflux pump arsenal of the emerging pathogen *C. auris* and its implication in high order of antifungal resistance and virulence*

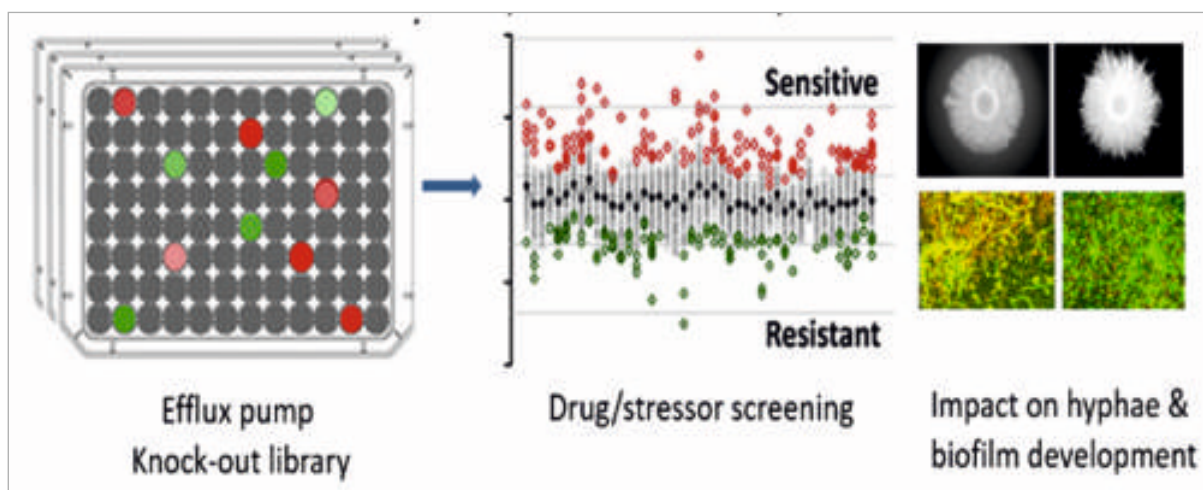
**Dr. Atanu Banerjee, AIB**

**Co-PI - Prof. Rajendra Prasad  
Prof. Andrew M. Lynn (JNU)**

**Funding Agency - DBT  
Sanctioned Amount 5800000 INR**

### PROJECT HIGHLIGHTS

- Construction of mini-library of disruptants of select ABC (belonging to PDR sub-family) and MFS (belonging to DHA1 family) transporters in *C. auris* employing in house fusion PCR and/or new CRISPR-Cas9 based gene disruption strategies.
- Drug Susceptibility profiling and drug transport measurements of deletants of *C. auris* to map the substrate repertoire of select *C. auris* ABC/MFS transporter proteins.
- Impact of ABC/MFS gene deletions on the pathogenesis of *C. auris*.
- The transcriptomic landscape of select transporter deletants to unravel alternative roles and crosstalk with signaling cascades involved in antifungal resistance.



*Fig. Screening of efflux pump deletion mutants to reveal their role in antifungal resistance and virulence traits*



*Mediating Multilingualism - in a local community context (A sharing of innovation and expertise between Scotland, Ireland, and India)*

### Prof. Udaya Narayana Singh

**Chief-PI-** Prof. Conchúr Ó Giollagáin,  
Lang Sc. Instt, UHI, Scotland (UK)  
**Associate-** Esha Jainiti, ASCO  
**Assistant-** Dr Gulab Chand, ACLiS

**Funding Agency -** SOILLSE Network, University of  
Highlands & Island, UK - International Grant  
**Sanctioned Amount** 13,000 + 9,000 GBP

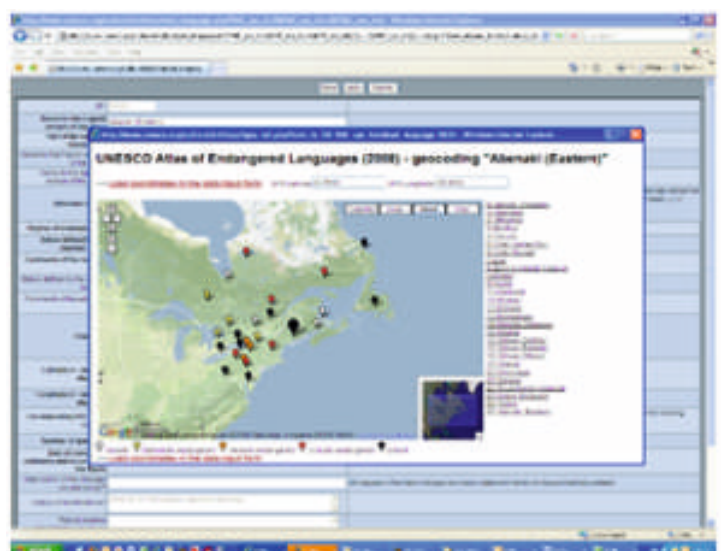
#### PROJECT HIGHLIGHTS

- To create synergies between Soillse (a network of 8 UK institutions), Island Voices (a EU-funded Innovation project) and Clilstore (for online resources) with inputs from endangered languages.
- To create open access video ethnography of selected endangered speech communities in India.
- World Atlas of Endangered Languages, UNESCO 2009
- Since Global Challenges Research Fund encourages UK HEIs to turn their attention to research that primarily benefits the developing countries, the idea is to learn from the network to apply on Indian languages data.
- This flows directly from Udaya Narayana Singh's work for UNESCO World Atlas of Endangered languages and earlier UGC-CFEL Project. It will test the methodologies developed by me earlier.

#### RESEARCH PUBLICATIONS

Singh, Udaya Narayana (with Rajib Chakraborty, Bidisha Bhattacharjee & Arimardan Kumar Tripathy. 2018. Languages and Cultures on the Margin: Guidelines for Fieldwork on Endangered Languages. Centre for Endangered Languages, Visva-Bharati.

- Singh, Udaya Narayana. 2017a. 'Manifesto of the Unwritten World: The Curse of Dialects.' In Anvita Abbi, ed. Unwritten Languages of India. New Delhi: Sahitya Akademi. 106-116.
- Singh, Udaya Narayana. 2017c. 'View from Below: Utopia and Change'. (Jointly with Rajarshi Singh) In Atul Thakur, ed. India Now and In Transition. Niyogi Books. 409-22.
- Singh, Udaya Narayana & Rajarshi Singh. Forthcoming. The Other India: View From Below. Sahitya Akademi.





*One Asia Foundation Project: 2nd Year- 2020  
 Course titled: One-Asian Community Theory" II*

**Dr. Santosh K. Gupta, ASL**

**Co -PI-** Ms. Hong Jung-hwa

**Funding Agency**

One Asia Foundation, Japan - International Grant  
**Sanctioned Amount:** USD 75,000 (2019-2021), USD  
 20,000 (2nd Year-2020)

**PROJECT HIGHLIGHTS**

The course titled "One-Asian Community Theory" aims to help undergraduate students, graduate students and researcher to gain better understanding of culture, society and religion of East Asia, South East Asia, and South Asia and consider how they are relevant for understanding the modern transformation in contemporary period.

- This course is designed to underline the potent topics in which participants will take active roles in their learning process. This course not only focuses on group collaborations but also on presentation and discussion.
- USD 3,000 scholarship for students
- One Asia Foundation Certificate

**Note:** The project is on hold due to Covid-19 pandemic.

**RESEARCH PUBLICATIONS**

- Gupta, S.K. "Significance of Buddhist Diplomacy for Sustainable Development in Modern Asia," in Mindful Leadership for Sustainable Peace, ed. Thich Nhat Tu (Hong Duc Publishing House, Vietnam, 2019).
- Gupta, S.K. "Indouijaegabulgyoundong: hyeonjaesanghwang-gwamilaejeonmang [Lay Buddhist Movement in Modern India: Present Condition and Future Prospect]," Journal of Dharma Dissemination Studies, South Korea, 12, 2018.
- Gupta, S.K "Indo KodaeeJeongchiwaikyoron: Kautilya [Politics and Diplomacy in Ancient India: Kautilya]," in Sinkwalngan [God and Mankind], ed. Asia Cultural Center (Kwangju, South Korea, 2018).
- Gupta, S.K. "Indo hindukyowaSindul [Myth and God in India]," in Transmission and Inter-exchange, ed. Asia Cultural Center (Kwangju, South Korea, 2018).



### *Kinetic Theory of Electrostatic Waves in Dusty Plasmas*

**Dr. Jyotsna Sharma, ASAS**

**JRF-** Ms. Anshu Dahiya

**Funding Agency** SERB-DST, India  
**Sanctioned Amount:** 21,08,480 INR

**ABSTRACT:** The dust species will be assumed to be in the plasma and hence dust dynamics will be modeled through generalized hydrodynamic momentum equations for electrostatic waves in plasma containing dust grain particles. The kinetic theory will be applied for the analysis of the dispersion relations of different wave modes present in the dusty plasmas. MATLAB, Mathematica and C++ softwares (whichever is applicable for a particular wave mode) will be used for the numerical calculations. The results will be derived and compared with the existing experimental results and theoretical observations. Moreover, the results will be communicated for publications in International Journals. we will develop a theoretical model of the excitation of lower hybrid waves and ion cyclotron waves by injecting electron beams & spiraling ion beams in a magnetized plasma cylinder containing dust grains.

There, the assumed plasma species will be electrons, dust particles and positive ions. The electron beam propagating through the plasma cylinder excites the lower hybrid waves. The nonlinear equations (using kinetic theory) will be solved. The unstable frequency and growth rate of the unstable modes for the present case will be studied. The effect of dust grain particles on the growth rate of the unstable modes will be discussed. By using the existing typical experimental parameters, numerical calculations will be done with the help of MatLab. The graph plotting will be done with the help of softwares Cygwin and GNU. The results obtained will be compared with the existing experimental results and the applications of the present work in the environment will be discussed in the end.

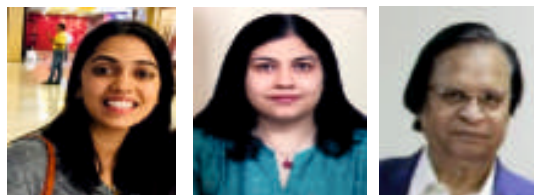
#### **PUBLICATIONS:**

- S. kumar, Jyotsna Sharma, Prashant Sharma et al., “Observations of drift wave parametric instabilities in an electron cyclotron resonance ion source” Plasma Physics and Controlled Fusion, 62, 105013 (August 2020), <https://doi.org/10.1088/1361-6587/aba8d8>, I.F.: 2.87.
- S. kumar, Jyotsna Sharma, Prashant Sharma et al., “Experimental investigation of plasma instabilities by Fourier analysis in an electron cyclotron resonance ion source”, “Physical Review Accel. Beams” vol. 21, Issue 9, 093402, ISSN 2469-9888 (online) 14th September 2018.
- Anshu, S. C. Sharma and Jyotsna Sharma, “Lower hybrid waves excitation by a relativistic electron beam in a magnetized dusty plasma: kinetic theory” 46th EPS Conference on Plasma Physics, P2.3016, Jan, 2020. <http://ocs.ciemat.es/EPS2019PAP/pdf/P2.3016.pdf>
- Shatendra Sharma and Jyotsna Sharma, “Study of high frequency instabilities in ECR ion source plasma”, presented in International Conference “ICPP 2018” at Vancouver, Canada, June 4-8, 2018.
- Jyotsna Sharma and Shatendra Sharma, “Study of x-ray emission from atmospheric arc plasma in magnetic field”, presented in International Conference “ICPP 2018” at Vancouver, Canada, June 4-8, 2018.
- Jyotsna Sharma and Sarvesh Kumar, Diagnostics Of Plasma Instabilities via Ion Beams in Particle Accelerators, 12th International Conference on Plasma Science and Applications (ICPSA-2019) during 11th -14th November, 2019.

# PATENTS

## INVENTION

# A SYSTEM AND METHOD OF DETECTION OF ANDROGENS AND ANTI-ANDROGENS IN WATER WITH SEAP ASSAY



### INVENTORS

**Gunjan Dagar, AUH**  
**Gargi Bagchi, AUH**  
**Rajendra Prasad, AUH**

*Patent Application No. 202011007726 filed in India on 24/02/2020*

**Abstract of Invention:** The present invention is related to a reporter assay for the detection of androgens and anti-androgens in water. Chemicals such as pesticides, household waste, industrial waste, and plastics often find their way in to the water and interfere with the hormonal balance of the body. For detection of these chemicals a reporter assay system has been generated. This includes a stable cell line created by integrating plasmids that contain the androgen receptor, androgen response element (3XHRE) and Co-Activators (GRIP1, CARM1, p300 and mZaclb) with the SEAP (pSelect-Zeo-SEAP) (Invivogen) reporter gene. The optimal combination of AR and ARE along with 4 different co-activators were used to enhance transcription activity of the assay. In its current form, this assay allows the rapid, visual detection of androgens and anti-androgens in water at very low pM concentrations in a high-throughput format.

## INVENTION -

# A METHOD OF PREPARATION OF A LOW CALORIE AND CALCIUM RICH PLANT BASED MAYONNAISE



### INVENTORS

**Luxita Sharma, AUH**  
**Zarrin Ashraf, AUH**

*Patent Application No. 202011009069 filed in India on 03/03/2020*

**Abstract of Invention:** The present invention relates to a method of preparation of a low calorie and calcium rich plant based mayonnaise. The mayonnaise is prepared using (Plant) milk, oil, spices, xanthum gum, vinegar, salt and sugar in a specific ratio



## INVENTION

# TREATMENT OF METHYLENE BLUE USING MULTIWALLED CARBON NANOTUBES



## INVENTORS

**Dr. Atul Thakur, AUH**

*Patent Application No. 201911051001 filed in India on 12/10/2019*

**Abstract of Invention:** The present invention relates to a system and method of treatment of methylene blue using multiwalled carbon nanotubes. The present invention aims to evaluate the adsorption of MB using multi walled carbon nanotubes MWCNTs at different parameter. The MWCNT can effectively remove MB from wastewater. Experiments were performed as a function of contact time, adsorbent dose and contact time. The effect of adsorbent dose (1 to 3mg per 20ml), pH (4 and 7) and contact time (0 to 90 mins) were analyzed. The removal amount of MB increase with increase in contact time and reached equilibrium within 60 mins. The experimental result showed that maximum removal of methylene blue i.e. 75% could be attained at 4pH for 3mg/20ml of adsorbent dose of MWCNT

## INVENTION

# A METHOD TO CULTURE AND IDENTIFY FUSARIUM SOLANI CAUSING STEM ROT AND WILT OF LUCKY BAMBOO (DRACAENA SANDERIANA)



## INVENTORS

**Dr. Narendra Kumar, AUH**

*Patent Application No. 201911051003 filed in India on 12/10/2019*

**Abstract of Invention:** The present invention relates to a method to culture and identify Fusarium solani causing stem rot and wilt of lucky Bamboo (Dracaena sanderiana). The present invention provides a method to culture and identify Fusarium solani causing stem rot and wilt of lucky Bamboo (Dracaena sanderiana). The fungal pathogen Fusarium was observed and isolated from the collar, roots, stems.

## INVENTION

# A CELL-BASED ASSAY USING HOUSE DUST MITE IN RAT MAST CELL LINE, RBL-2H3 TO MEASURE BIOMARKERS RELEVANT IN PULMONARY INFLAMMATION



## INVENTORS

**Rakesh Kumar Singh, AUH**

*Patent Application No. 201911051776 filed in India on 13/12/2019*

**Abstract of Invention:** The present invention relates to a system and method for measurement of inflammatory biomarkers (histamine &  $\beta$  hexosaminidase) in a mast cell line by using house-dust mite (HDM) as an stimulant.

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## INVENTION -

# A SYSTEM AND METHOD FOR THE PREDICTION OF COEFFICIENT OF CONSOLIDATION FOR DIFFERENT WASTE MATERIALS PRESENT IN LANDFILL SITES



## INVENTORS

**Naveen B.P., AUH**  
**Sivapullaiah P.V., AUH**

*Patent Application No. 201911051777 filed in India on 13/12/2019*

**Abstract of Invention:** The principal object of the present invention is to provide the system and method of consolidation for different waste materials present in landfill sites. Another object of the present invention is to provide a system and method to determine the coefficient of consolidation for fresh waste, dry waste and dumped waste by using rectangular hyperbola method.

## INVENTION

### A THERMOSENSITIVE MARKING PEN



#### INVENTORS

**Dr. Arun Kumar, AUH**

*Patent Application No. 202011000845 filed in India on 08/01/2020*

**Abstract of Invention:** The present invention relates to provides a thermosensitive pen, color changing temperature indicator. It provides with change in color which is proportional to the change in temperature and time which represent the true shelf-life of the specific products. It also gives an indication, when the product is nearing its shelf-life.

## INVENTION

### A METHOD OF SYNTHESIS OF YTTRIUM IRON GARNET (YIG) NANO-MATERIALS AS SOURCE OF CLEAN AND GREEN ENERGY



#### INVENTORS

**Prof. Preeti Thakur, AUH**

**Prof. Atul Thakur, AUH**

**Prof. Pritam Babu Sharma, AUH**

*Patent Application No. 202011001179 filed in India on 10/01/2020*

**Abstract of Invention:** The present invention relates to the method of synthesis of Yttrium Iron Garnet (YIG) nano-materials as source of clean and green energy. Green energy is the need of the hour to save our planet. Nanomaterials are used for the fabrication of the Hydroelectric Cell which in turns generates Green Energy. Hydroelectric Cell (HEC) developed can generate power using only a few drops of water. It produces electricity at room temperature. The YIG nano-materials ionize the water molecules at room temperature and then the ions are being collected at two different electrodes which in turn generate electricity.

## INVENTION -

# A SYSTEM AND METHOD FOR ACCUMULATIVE TUBE BONDING FOR SEVERE PLASTIC DEFORMATION



### INVENTORS

**Dr. Sanjeev Sharma, AUH**  
**Mr. Mohan Bodkhe, AUH**  
**Prof. Pritam Babu Sharma, AUH**  
**Dr. Abdel Hamid Ismail Mourad, AUH**

*Patent Application No. 202011002859 filed in India on 22/01/2020*

**Abstract of Invention:** The present invention relates to a system and method for accumulative tube bonding for severe plastic deformation. Tube bonding is the novel SPD metal working process that uses tensile forces to stretch metal. Severe plastic deformation (SPD) is known to be the best method for manufacturing bulk ultrafine grained and nanostructured materials with excellent properties. Different SPD methods were developed that is suitable for sheet and bulk solid materials. During the past decade, efforts have been made to create effective SPD processes suitable for producing cylindrical nanostructured tubes.

## INVENTION

# A SYSTEM AND METHOD OF SILVER NANOPARTICLE BASED DETECTION OF ADVANCED GLYCATION END PRODUCT



### INVENTORS

**Ranjita Ghosh Moulick, AUH**

*Patent Application No. 202011003883 filed in India on 29/01/2020*

**Abstract of Invention:** The present invention relates to a system and method of silver nanoparticles based detection of advanced glycation and product. In the method a varying colour is observed when AgNPs are synthesized using the templates of glycated Hemoglobin A0 (generated by in-vitro method and AGE formation is confirmed). It is observed that these templates easily synthesize AgNPs when mixed with the silver salts and the reducing agents. The colours differ from that of the control solutions indicating role of AGEs in synthesis of the nanoparticles. The AGE formation corresponds to the Surface Plasmon of the AgNPs formed. Thus AgNPs can be used as an easy, low cost optical indicator of AGEs.

### INVENTION

## **A LOW COST METHOD OF MASS CLONING OF PLANT {TYLOPHORA INDICA (BURM. F) MERRILL} USING LIQUID MEDIUM**



### INVENTORS

**Manju Anand, AUH**

*Patent Application No. 202011004806 filed in India on 04/02/2020*

**Abstract of Invention:** The present invention relates to an in vitro method of mass cloning of a valuable medicinal plant Tylophora indica (Burm. f) Merrill using liquid medium. The method provides an efficient, cost effective and reproducible protocol for the large scale propagation of Tylophora indica. The liquid micropropagation method reduces the cost of the process as well as ensures efficient direct uptake of nutrients which leads to better growth. Thus the present invention provides a low cost liquid medium devoid of agar which has been used for the in vitro propagation of Tylophora indica. Besides being cost effective, it was more efficient system as the number of shoots produced was more as compared to the solid medium.

### INVENTION

## **A MICROBIAL CONSORTIUM JAGGERY POWDER FOR BIOREMEDIATION PROCESS OF MINIMISE THE CHEMICAL LOAD OF LEACHATE SAMPLE**



### INVENTORS

**Sangeeta Kumari, AUH**  
**Naveen BP, AUH**

*Patent Application No. 202011007725 filed in India on 24/02/2020*

**Abstract of Invention:** Excessive chemical load in the environment creates havoc in this era. New advancement and demand of bioremediation microbes play a pivotal role in cleaning the environment as they biodegrade the pollutant to obtain carbon and energy, Biodegradation specifically refers to chemical breakdown or mineralization of materials facilitated by biological organisms or products. Effective microbial consortium (strains of bacteria & fungi) with jaggery powder (medium) used for the composting process isolates can be identified through their morphological, cultural and biochemical characteristics as well, 16SrDNA studies. The work on bioremediation of the leachate of solid waste by using various microbial consortium products like solutions of EM to accelerate the decomposition process with less toxic substances release to minimize the environmental pollution with less chemical load.

## INVENTION

# A NASAL STICK FOR LUNGS DETOXIFICATION AGAINST AIR POLLUTANTS



### INVENTORS

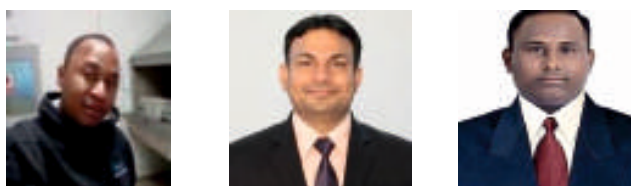
**Saurabh Bhatia, AUH**  
**Arun Sharma, AUH**  
**Celia Vargas, AUH**  
**Saurabh Maru, AUH**

*Patent Application No. 202011009701 filed in India on 06/03/2020*

**Abstract of Invention:** In modern society, air pollution is a major threat to our health. So far, poor air quality led to the 3.7 million premature deaths worldwide and still affecting millions of people every year. Current invention deals with the development of economic anti-air pollutant nasal inhaler stick to prevent the adverse effects of harmful pollutants. Invention involves the development of portable and cost effective nasal inhaler by using novel and unique combination of essential oils. This unique combination with different proportion resulted in the development of wonderful aroma with potential health benefits without any considerable toxicity. This health supportive inhaler is fabricated by using blend of different essential oils, organic cotton wick, and reusable inhaler. Blend of essential oils is prepared and clinically tested to offer potential pharmacological effects such as Antianxiety, Antistress, Antimicrobial, Anti inflammatory and Antidepressant with no toxicity. Blend is stable in both interphase (air and solid) in order to remain stable in an inhaler.

## INVENTION

# HIGH SPEED BLADE TYPE DRY GRINDING MACHINE TOOL



### INVENTORS

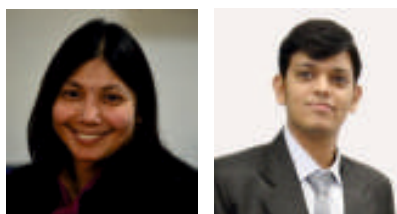
**Z. Lazarus Duri, AUH**  
**Rajesh Arora, AUH**  
**Naveen B.P., AUH**

*Patent Application No. 202011010830 filed in India on 13/03/2020*

**Abstract of Invention:** The present invention relates to the high speed blade type dry grinding machine tool. The high-speed blade crushing system is used for crushing/ pulverising stone or rock material. The invention provides low cost high blade speed type dry grinding machine is proposed in order to optimize the strength development. The invention was found to produce finer crushed product with lower residues. The dry grinding method is more efficient than the wet method. It requires less energy as compared to the wet process. The crushing speed of 2880 revolutions per minute was used instead of the 22 revolutions per minute which are currently being used in grinding mills.

## INVENTION

# AN A METHOD PROVIDING SPLICED TRANSCRIPTS OF CERS2 GENE TO ALTER THE LEVEL OF CERAMIDES TO EFFECT TUMOR REGRESSION



### INVENTORS

**Ujjaini Dasgupta, AUH**  
**Ravi Datta Sharma, AUH**

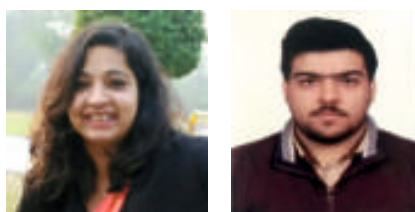
*Patent Application No. 202011011239 filed in India on 16/03/2020*

**Abstract of Invention:** An exon skipping event in Ceramide synthase 2 gene that codes for very long chain ceramides identified from breast tumor tissue samples can be used as a biomarker/diagnostic marker. The focus is to use it as a therapeutic intervention.

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## INVENTION

# AN AUTOMATED SYSTEM AND METHOD FOR MENTAL SCREENING



### INVENTORS

**Tanu Kukreja Bhayana, AUH**  
**Hardik Singh Ahuja, AUH**

*Patent Application No. 202011011637 filed in India on 18/03/2020*

**Abstract of Invention:** Automated Acoustic Mental Screening Test (AAMST) is a proposed method of projective assessment. The Screening test will produce audio cues for the respondent and will ask them to respond orally, various methods of qualitative analysis will automatically scan the narration for measuring multiple psychological attributes resulting in psychological profile of the respondent. This will not only be very accessible but will also be applicable to specially abled people who are vulnerable to psychological disorder. The method has the potential to encompass challenges of telephonic counselling and suicide prevention helplines. Needless to say, growing virtual platforms in view of the pandemic will also require such methods in future.

## INVENTION

# A SYSTEM AND METHOD FOR CHRYSOTILE ASBESTOS FIBER REINFORCED GEOPOLYMER BRICKS



## INVENTORS

**Zvikomborero Lazarus Duri, AUH**  
**Naveen BP, AUH**  
**Rajesh Arora, AUH**

*Patent Application No. 202011011892 filed in India on 19/03/2020*

**Abstract of Invention:** The present invention relates to a system and method for Chrysotile asbestos fiber reinforced geopolymer bricks. The asbestos fibre reinforced geopolymer cement bricks were found to have high compressive strengths, tensile strengths, corrosion resistance and resistance to acid attack. The geopolymer materials in our invention are specially prepared to optimise on material fineness, amorphous state, chemical composition (Alumina/Silicate) ratio and minimise on the curing temperature of the final asbestos fibre reinforced brick to room temperature. This results in high energy savings as the reaction processes are all achieved at 20 degrees Celsius once mixing of the pre prepared metakaolin and pozzolanic material is done.

## INVENTION

# A SYSTEM AND METHOD OF PREDICTIVE OPTIMISATION FOR GEOPOLYMER CEMENT PRODUCTION



## INVENTORS

**Zvikomborero Lazarus Duri, AUH**  
**Rajesh Arora, AUH**  
**Naveen BP, AUH**

*Patent Application No. 202011012583 filed in India on 23/03/2020*

**Abstract of Invention:** The present invention relates to a system and method of predictive optimisation for geopolymer cement production. The present invention provides a predictive optimisation system and method for the production of geopolymer cement from raw materials that include metakaolin and pozzolana. The system covers the required production processes for the raw material crushing, raw material grinding, pyro processing, finish grinding, and geopolymerisation process. It determines the required optimised process and quality operating parameters required to produce a predetermined finished geopolymer product strength and cost per unit. These predetermined product quality specifications are normally defined by the product technical standards. The system is to be used in the formulation of new geopolymer predictive cement standards.



## INVENTION

# A THERMOS FLASK WITH REVERSIBLE LIQUID CRYSTAL TEMPERATURE STRIP (LCT) ON CAP



### INVENTORS

**Dr. S.N. Sridhara**, Professor & Director, ASET, AUH

*Patent Application No. 202011013530 filed in India on 27/03/2020*

**Abstract of Invention:** The present invention relates to a thermos flask with reversible liquid crystal temperature strip (LCT) on cap. Thus the invention provides a temperature display for indicating the temperature of content in the flask. The temperature of liquid in the flask is indicated by the colour change of the LCT sticker attached to the bottom of the cap. The circular LCT sticker contains printed temperature readings on its top surface. The hotness of air passing through the passage and touching the bottom of plate changes the colour of LCT strip at appropriate place depending on the actual temperature. This is the indication of the temperature of liquid inside the flask. This device is less expensive and helps in identifying the temperature range of liquid in the flask container.

## INVENTION

# A SOILING MONITORING AND CLEANING DEVICE FOR SPV PANEL



### INVENTORS

**Kudzanayi Chiteka, AUH**  
**Rajesh Arora, AUH**  
**S. N. Sridhara, AUH**  
**Ranjana Arora, AUH**

*Patent Application No. 202011013536 filed in India on 27/03/2020*

**Abstract of Invention:** The present invention relates to provide a soiling monitoring and cleaning device for SPV panels. The soiling monitoring and cleaning device for solar photovoltaic (SPV) panels enhances output performance of solar photovoltaic (SPV) panels. The SPV panel is equipped with a lux meter to measure the input solar irradiance and an automatic cleaning wiper to dry clean the panels. The device can significantly enhance the performance of solar photovoltaic power plant and can be easily customized to the size of the installed SPV array. This can essentially calculate the percentage loss in power and revenue for the solar power plant. The device is highly useful as massive solar photovoltaic installations are taking place both in industries and residential areas for huge range of applications.

## INVENTION

### **EMERGENCY BATHROOM LATCH OPENER USING A SPRING DEVICE**



#### INVENTORS

**Rajesh Arora, AUH, Ranjana Arora, AUH  
Om Parkash, AUH, Tanuj Joshi, AUH**

*Patent Application No. 202011014571 filed in India on 01/04/2020*

**Abstract of Invention:** The present invention relates to a system and method for an emergency switch installed on the outside of the door which operates a retractable spring device fitted inside the existing bathroom door. According to the present invention, the latch is closed from inside the bathroom by applying a little pressure against a spring provided at the latch rod holder. The switch and retractable spring device are fitted by drilling a hole in the existing door. The latch cover is totally covered from inside. The latch will be closed by turning in only possible downward position by the insider. The present invention also provides a small breakable glass which can be easily replaced after emergency opening of the door without disturbing the complete design.

## INVENTION

### **A SYSTEM AND METHOD OF L-DOPA RESPONSE PREDICTION FOR PARKINSON'S DISEASE USING MACHINE LEARNING APPROACH**



#### INVENTORS

**Haziq Rahat Bullah, AUH, Ritika Agarwal, AUH  
Abhishek Prabhakar, AUH, Aman Jatain, AUH, Shalini Bhaskar Bajaj, AUH**

*Patent Application No. 202011015184 filed in India on 06/04/2020*

**Abstract of Invention:** The unresolved absence of any substantial biomarkers in the robust prediction of levodopamine response in Parkinson's disease, further makes the problem significantly impending. The present study intends to develop a robust prediction model to predict the L-Dopa drug response in PD using machine learning approaches. The current study comprised of 28 Parkinson's disorder subjects with conclusive preclinical and clinical assessments done in the Levodopa response trial study by the MJFF foundation for Parkinson's research. The task was identified as a classification task which further employed four supervised machine learning classification algorithm for data analysis. The decision tree (classification and regression trees) classification accuracy was 88.89% (area under receiver operating characteristics curve 0.9) for predicting levodopamine response. The presence or absence of the symptoms along with Unified Parkinson's Disease Rating Scale (UPDRS) scores and Hoehn and Yahr scale (H and Y) scores were recognized as the most distinguishing feature subset. The present research stipulates the indispensable prefatory encouragement to the adaptive advancement of decision trees as an illuminating technique that can facilitate in predicting the treatment response in Parkinson's disorder, however an extended effort is necessary to stipulate efficient predictive performance.

## INVENTION

### **AN INTEGRATED EYE MAKEUP KIT**



#### INVENTORS

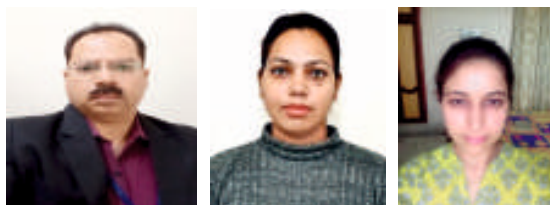
**Komal, AUH**  
**Poonam Sharma, AUH**  
**Shalini Bhaskar Bajaj, AUH**

*Patent Application No. 202011015462 filed in India on 08/04/2020*

**Abstract of Invention:** The proposed product is an integrated kit for complete eye makeup comprising eye liner, kajal pencil, mascara, eyebrow pencil, eye shadows, makeup remover, mirror, plucker and eye shadow brush. Adding make-up remover compartment with make-up kit enhances its utility. A container has multiple compartments for each of the mentioned utilities and a handy knob to lift it. It provides an integrated packaging solution that can be utilized by any cosmetic brand or manufacturer irrespective of the composition of their products. It will be cost-effective as there is no need to buy separately the eye make-up cosmetics and the organizer. It is an on-the-go, portable eye make-up kit whereas brush cleaning can be done at a later time (when at home and doing routine clean-ups). It is all-in-one solution for eye make-up which is not the case with the prior art. Proposed invention is spill-proof due to magnetic closures and is thus convenient to use while travelling. Its advantageous to use this kit as better and refined eye make-up can be achieved than using powdered palette as a solution. It can be carried in small handbags / sling bags which is not possible with the prior art because of the larger dimension of product. The present invention relates to a system and method for complete eye makeup.

## INVENTION

# AN ANTIMICROBIAL FACE MASK USING NANOPARTICLE COATING



## INVENTORS

**Arvind Chhabra, AUH**  
**Monika Vats, AUH**  
**Neha Kuhar, AUH**  
**Shatendra K. Sharma, AUH**

*Patent Application No. 202011017740 filed in India on 25/04/2020*

**Abstract of Invention:** We have developed a three-layered reusable, biodegradable, anti-microbial face mask. The middle layer is coated with nanoparticles exhibiting anti-microbial properties. The two layered scaffolds will house the middle layer, which could be used with washing or replaced with new filtration assembly. The face-masks that are in use today are either surgical masks that do not protect against infectious agents or are not reusable, and leave carbon foot print on the environment. Further, the masks thrown in trash by asymptomatic patients could further contribute in spread of the virus. The face mask we have developed is reusable, biodegradable, and has anti-microbial properties. It could also be upgraded to N95 grade and can be used to filter out particulate materials to protect against air pollutants.

## INVENTION

# AN INFECTIOUS AGENT/ CELLS/ BIOMARKER TRAP SYSTEM UTILIZING PATIENT-DERIVED HUMAN SAMPLES TO DEVELOP NEXT GENERATION DIAGNOSTIC KITS AGAINST INFECTIOUS DISEASES AND CHRONIC CONDITIONS



## INVENTORS

**Arvind Chhabra, AUH**

*Patent Application No. 202011019784 filed in India on 11/05/2020*

**Abstract of Invention:** The present invention relates to the field of diagnostic kits against infectious diseases and chronic conditions. The present invention in particular relates to a system and method for trapping infectious agent/cells/biomarker, utilizing patient-derived human samples to develop next generation diagnostic kits against infectious diseases and chronic conditions. DNA/RNA-based bio-marker-based identification assays or antigen-antibody reaction-based assays are commonly used for diagnosis of different diseases, including disease caused by infectious agents, such as viruses. Most antigen-antibody reaction-based assays detect infectious agent-specific antibody response generation in infected patients, however, generation of detectable antibody against a new pathogen (e.g. virus) take some time (7-14 few days on average, but more days in some individuals) to develop. Since some individuals may not produce good antibody response against the infectious agent (e.g. virus), depending upon the level of infection, these detection methods may provide false negative result. Such individuals, considered healthy, in fact can contribute to the spread the pathogen to other people. In sum, in the initial phase of infection, antibody-based assays may not tell accurately whether the individual is infected with the pathogen (e.g. virus) or not. PCR-based methods are considered more reliable for detection of viral particles, however, these methods require significant processing steps, and, result of the test can take 2-8 hrs, from the time of initiation processing of sample, depending upon sophisticated instrument availability and the technical expertise available. Our invention can help develop next generation diagnostic kits with greater specificity and efficacy.

## INVENTION

### A METHOD FOR SYNTHESIS OF BISMUTH DOPED NI-ZN FERRITES



#### INVENTORS

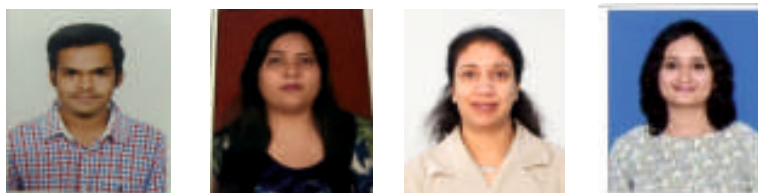
**Atul Thakur, AUH**  
**Preeti Thakur, AUH**  
**Shilpa Taneja, AUH**

*Patent Application No. 202011017917 filed in India on 27/04/2020*

**Abstract of Invention:** The present invention relates to a method for synthesis of bismuth doped Ni-Zn ferrites with the substitution of iron ions. Bismuth doped Ni-Zn ferrites of the composition  $Ni_{0.5}Zn_{0.5}Bi_xFe_{2-x}O_4$  with ( $x= 0.00, 0.02, 0.04, 0.06, 0.08, 0.1$ ) have been synthesized by the citrate precursor method. As the bismuth concentration increases from  $x=0.00$  to  $x=0.10$  X-ray density ( $\rho_x$ ) increases from 5.115 to 5.522 g/cm<sup>3</sup> and porosity decreases from 6 to 5 %. FTIR peaks confirmed the tetrahedral and octahedral modes of vibrations. In the band position of FTIR appearing at lower wave number 405 cm<sup>-1</sup> is due to tetrahedral vibrations, while higher wave number 580 cm<sup>-1</sup> is attributed to the octahedral complexes. I-V characteristics at 4V voltage were studied at room temperature for all samples. The DC resistivity measurements were made and samples were found highly resistive with DC resistivity values in the range 1.3056×10<sup>10</sup> Ω-cm to 6.3208×10<sup>10</sup> Ω-cm with different doping concentration of bismuth. The investigations on real and imaginary part of dielectric constant and dielectric loss tangent were carried out in the frequency range 10k Hz to 1 MHz at room temperature. Dielectric results showed that with an increasing frequency the value of real part of dielectric constant decreases from 11 to 5 and the value of dielectric loss tangent decreases from 0.4 to 0.32. AC conductivity of all the samples is found to increase with increase in frequency range 10 kHz to 1 MHz which is explained on the basis of Koop's Phenomenological theory.

## INVENTION

### AN ANTI TREMOR PEN



#### INVENTORS

**Kiran Somisetti, AUH, Charu Jain, AUH, Aarti Chugh, AUH, Nisha Charaya, AUH**

*Patent Application No. 202011018758 filed in India on 01/05/2020*

**Abstract of Invention:** An anti-tremor pen includes a mechanism which tries to reduce the effects caused by tremors while writing. The structure of the pen is as similar to normal pen which has an extra slot to incorporate the refill into it. Springs are used in between the outer structure and the slot to isolate vibrations. Minimal amount of weights are attached at the end to improvise balance. The device is simple and cost effective. The material used to manufacture the pen is divided into three categories. High grade plastic is used for outer structure; silicon material as grip which isolates vibrations and steel for weights. This device improves the writing skills of a person suffering from tremors.

## INVENTION

# A METHOD FOR COBALT SUBSTITUTED ZINC FERRITE ASSISTED PHOTOCATALYTIC DEGRADATION OF METHYLENE BLUE



### INVENTORS

**Atul Thakur, AUH**  
**Preeti Thakur, AUH**  
**Deepika Sindhu, AUH**  
**Shubhi Kesarwani, AUH**  
**Pritam Babu Sharma, AUH**

*Patent Application No. 202011018761 filed in India on 01/05/2020*

**Abstract of Invention:** The present invention relates to the synthesis of cobalt-zinc ferrite was performed successfully using citrate precursor method. Invention provides high degradation mechanism of methylene blue dye using prepared cobalt-zinc nanoferrites. The degradation efficiency gets enhanced with increase in the cobalt ion concentration from  $x=0.0$  to  $0.5$ . 77% of the methylene blue was removed from the aqueous solution by using cobalt zinc ferrite with concentration  $x=0.5$  in 1 hour under visible light. The removal of the methylene blue dye was observed to be 65%, 68%, 70%, 74%, 76% and 77% for the cobalt ion concentration  $x=0.0, 0.1, 0.2, 0.3, 0.4, 0.5$  respectively. Also, the samples were found to follow pseudo-first-order kinetics for the degradation of methylene blue. The results showed that cobalt zinc can be used as an effective photocatalyst for the degradation of methylene blue dye.

## INVENTION

# A MULTI-PURPOSE SOLAR ARTIFACT INTEGRATED WITH PHASE CHANGE MATERIAL



### INVENTORS

**Anant Patil, AUH**  
**S. N. Sridhara, AUH**  
**Rajesh Arora, AUH**  
**Ranjana Arora, AUH**

*Patent Application No. 202011018834 filed in India on 02/05/2020*

**Abstract of Invention:** The present invention relates to a system and method for multi-purpose solar artifact integrated with phase change material in which photo-voltaic panels are arranged in umbrella pattern to capture maximum solar radiations and generate electrical and heat energy. The system and method for solar artifact integrated with phase change material also consists of a sun tracking device and a two-way cleaning system. In order to protect the structure from rusting and environmental deterioration, composite FRP material is utilized in fabricating the structure. This significantly enhances their efficiency and can utilize the stored energy of phase change material in water heating, space conditioning or other preheating applications. So, the dual form of energy can be generated from this design i.e. electrical and heat energy which can be utilized in number of commercial and residential applications.

## INVENTION

### A BIO-SYNTHETIC HYDROGEL COMPOSITE AND ITS METHOD THEREOF



#### INVENTORS

**Deepa Suhag, AUH**  
**Swati Kaushik, AUH**  
**Deepa Ghosh, AUH**  
**Biswarup Basu, AUH**  
**Mehak Chauhan, AUH**

*Patent Application No. 202011019343 filed in India on 06/05/2020*

**Abstract of Invention:** The present invention in particular relates to a system and method for bio-synthetic hydrogel composite which can function as both wound dresser as well as cell carrier for accelerated and scar-free burn wound healing. Through this study, we have developed a chemical cross-linker free, non-toxic, biocompatible, Bamboo cellulose fibre-2-(dimethylamino) ethyl methacrylate (BCF-DMAEMA) hydrogel, via free radical aqueous copolymerization. The BCFs would impart the hydrogel with a mesh like network while DMAEMA would promote a meso-macroporous hierarchical structure, thereby generating a perfect ECM biomimic. Owing to the presence of BCFs, natural silica and antioxidants, this 3D scaffold would promote (1.) moisture retention, (2.) counter Multidrug resistance (MDR) and (3.) facilitate angiogenesis and collagen synthesis for (4.) scar-free burn wound healing by orchestrating and regulating the rate of angiogenesis and Transforming growth factors (TGFs), respectively.

## INVENTION

### A BREAST FEEDING DEVICE TO HELP WITH HYPOGALACTIA



#### INVENTORS

**Gunjan Sharma, AUH**  
**Ashish Kumar, AUH**  
**Arun Kumar, AUH**

*Patent Application No. 202011020872 filed in India on 18/05/2020*

**Abstract of Invention:** The present invention relates to a system and method for a breastfeeding device that can be attached to a human breast to feed formula milk to infants born to mothers' with hypogalactia and also helps smoothen the transition from breast feed to bottle feed. The present invention has an in-built feed control mechanism.



## INVENTION

# LOW-COST NANO-PATTERNING OF GRAPHENE TO SAFEGUARD FROM VIRUSES AND BACTERIA



### INVENTORS

**Brijesh Kumar, AUH**

*Patent Application No. 202011021718 filed in India on 23/05/2020*

**Abstract of Invention:** Graphene is being actively explored for biomedical applications, ranging from drug delivery, bio-sensing and imaging to antibacterial material. Currently, to safeguard human health with the ongoing coronavirus crisis, researchers and companies are exploring potential applications of graphene to fight against corona virus pandemic and one of them is making respiratory mask of graphene. To produce the mask of graphene for fighting against the corona virus pandemic, nano-patterning of graphene is required. Attempts to produce nano-patterns in the graphene have been made using different methods. These methods are of multiple steps, highly challenging, difficult, and expensive to the large scale production of graphene nano-patterns for use in respiratory mask. In the present invention, I developed an easy and cost effective systems and method for nano-patterning of large area graphene for use in respiratory masks including for N95, N99 masks.

## INVENTION

# A SUGAR-FREE CHEWING GUM TO CURE DENTAL CARIES, PAIN AND MOUTH ULCER



### INVENTORS

**Saurabh Bhatia, AUH**  
**Pritam Babu Sharma, AUH**  
**Viveak Ballyan, AUH**  
**Ahmed Al-Harrasi, AUH**  
**Sridevi Chigurupati, AUH**

*Patent Application No. 202011022670 filed in India on 29/05/2020*

**Abstract of Invention:** Dental caries and mouth ulcers are major public health problems which causes continues discomfort and pain in oral cavity. These two conditions restrict mouth activity by causing acute pain, inflammation and discomfort. Objective of the current invention is to treat dental caries and mouth ulcer by sugar-free chewing gum containing combination of plant extracts and essential oils. In this invention polyherbal syrup of different herbal extracts will be prepared and mixed with water soluble gum base. To impart flavor combination of essential oils will be prepared and mixed with water insoluble phase comprised of beeswax, polybutene, gum rosin and Span 80. Antiulcer and antimicrobial activity of developed gum will be evaluated. Portable sugar-free chewing gum can be utilized to treat and prevent various oral ailments and to maintain oral hygiene. This gum can also be used by diabetic patients suffering from severe periodontal disease.

## INVENTION

# A METHOD OF SYNTHESIS OF MAGNETO-ELECTRIC LEAD NICKEL NIOBATE CERAMICS



### INVENTORS

**Chander Shekhar, AUH**  
**Preeti, AUH**  
**Aditya H Narayan Pandey, AUH**  
**Rachna Selvamani, AUH**

*Patent Application No. 202011024826 filed in India on 12/06/2020*

**Abstract of Invention:** The present invention relates to a method of synthesis, of magneto-electric lead nickel niobate ceramics. The (PNN) powder was synthesized by two different methods, namely (i) single step and (ii) double step method. It was observed that it is difficult to synthesize the single phase PNN perovskite by single step even with addition of lead oxide. whereas, by the addition of 2 wt% excess of PbO than the stoichiometric ratio, single phase PNN perovskite has been synthesized by double step method. The PNN crystalizes in perovskite phase with cubic crystal structure with a lattice constant  $a = 4.0305(2) \text{ \AA}$ , which matches with earlier reported data with best quality of fitness parameter ( $R_p = 5.54$ ,  $R_{wp} = 6.98$ ,  $R_{exp} = 3.36$ ,  $\chi^2 = 4.33$ ,  $R_b = 4.43$ ,  $R_f = 3.64$ ). In this study, the dielectric constant at  $T = 161.58 \text{ K}$  and  $1 \text{ kHz}$  frequency is found to be 4614.03. The critical exponent and diffuseness parameter were found to be  $= 1.8$  and  $= 89.4$  from the dielectric data.

## INVENTION

# A GREY WATER REMEDIATION SYSTEM WITH EXISTING ORIGINAL EQUIPMENT MANUFACTURER OEM



### INVENTORS

**Seema R Pathak, AUH**  
**Manisha Devi, AUH**  
**Chinmay Paridha, AUH**  
**Varun Rawat, AUH**  
**Chandra Srivastava, AUH**  
**Pooja Rawat, AUH**  
**Monika Vats, AUH**  
**Manoj Dhariwal, AUH**

*Patent Application No. 202011030991 filed in India on 20/07/2020*

**Abstract of Invention:** The main barrier for wider and faster dissemination of suitable grey water management systems on household level is the lack of knowledge and experience in that field, especially in developing countries. Improper disposal of grey water produced by washing of cloths either by hands or washing machines are major concerns for creating sledges leading to most of infectious diseases. Scientific knowledge is sparse regarding grey water characteristics and adequate grey water treatment systems allowing a proper and safe disposal or reuse of grey water. We are herewith introducing a kit to be attached either in outlets of washrooms or as unit in washing machines and provide a very facile methodology for remediation of grey water and will lead to production of potable water.

## INVENTION

# A METHOD FOR PREPARING NANO-COMPOSITE ANTIMICROBIAL POLYMERS FOR MANUFACTURING RESPIRATOR MASK



## INVENTORS

**Preeti Thakur, AUH**  
**Atul Thakur, AUH**  
**Pritam Babu Sharma, AUH**

*Patent Application No. 202011031429 filed in India on 22/07/2020*

**Abstract of Invention:** This invention relates generally to Nano-composite materials which are used to make respirator masks. It relates to an improvement in composition of respirator masks which are prepared by using antimicrobial polymers for injection molding or three-dimensional printing. These are used to make three-dimensional printer cartridge with the antimicrobial properties to produce the respirator masks. The material is hydrophobic in nature, recyclable, reusable and non-toxic.

## INVENTION

# A RETRACTABLE SEAT ASSEMBLY FOR A MOTOR VEHICLE



## INVENTORS

**Edmund S Maputi, AUH**  
**Rajesh Arora, AUH**  
**Ranjana Arora, AUH**

*Patent Application No. 202011032177 filed in India on 27/07/2020*

**Abstract of Invention:** The present invention relates to a retractable seat for an automotive vehicle such as Auto-rickshaws and passenger interaction, which can be classified as relating to passenger comfort, provision of accessories or improvement in Auto rickshaws and automobiles and also relating to access of the motor vehicle by physically challenged persons. In accordance with one of the important aspect of the present invention to provide a hydraulic powered automotive vehicle retractable seat, which is retractable and can be adjusted to the desired position. The improvement of seat frame in order to optimize the seat base with respect to its height, which is adjustable through placed hinged mechanism. The invention is capable of other objects and of being practiced and carried out in various ways, according to the need of that industry.

## INVENTION

# AN AUTONOMIC NANO-FORMULATION FOR LONG HAUL DISINFECTION AND PROCESS THEREOF



### INVENTORS

**P. B. Sharma, AUH**  
**Gunjan Sharma, AUH**  
**Ashish Kumar, AUH**  
**Arun Kumar, AUH**

*Patent Application No. 202011032587 filed in India on 29/07/2020*

**Abstract of Invention:** The present invention provides a autonomic nano-formulation for long haul disinfection by the combination of copper nanoparticles and silver nanoparticles coated with chlorhexidine gluconate and polyvinylpyrrolidone (PVP), having particle size larger than 500nm combination with existing disinfectant that can effectively prevent microbial contamination and spreadability of virus. The larger sized nanoparticles will prevent their absorption through skin of the contact user. The formulation is dispersed into the solution of PVP, which will act as a binding polymer and help in adhering the nanoparticles on different surfaces.

## INVENTION -

# A NOVEL MEDICATED PLASTER FOR THE TREATMENT OF UNDERLYING SKIN COMPLICATIONS



### INVENTORS

**Saurabh Bhatia, AUH**  
**Pritam Babu Sharma, AUH**  
**Viveak Ballyan, AUH**  
**Ahmed Al-Harrasi, AUH**

*Patent Application No. 202011032835 filed in India on 30/07/2020*

**Abstract of Invention:** Plaster of Paris or POP is a fine powder used in postoperative immobilization. Prolonged immobilization in a POP makes the skin under the cast vulnerable. The dead skin is not removed and leads to scaling. Other complications like ulceration, maceration, itching can result. Even burns can be caused by the exothermic reaction. The most concerning side effects for fracture casted with POP are skin infection, inflammation and scaling, itching etc. In the current invention POP is proposed as drug loaded microcapsules carrier to deliver combination of drugs in a controlled fashion to ultimately treat underlying skin complications caused by POP cast. Thus the objective of the current study is to fabricate medicated POP loaded anti-microbial, antifungal and anti-inflammatory encapsulated capsules as a controlled release delivery to study its effect over skin and bone infections under in vitro and in vivo conditions.

## INVENTION

# NASAL SPRAY WITH BOSWELLIA SERRATA BASED COMPOSITIONS AND METHOD THEREOF



### INVENTORS

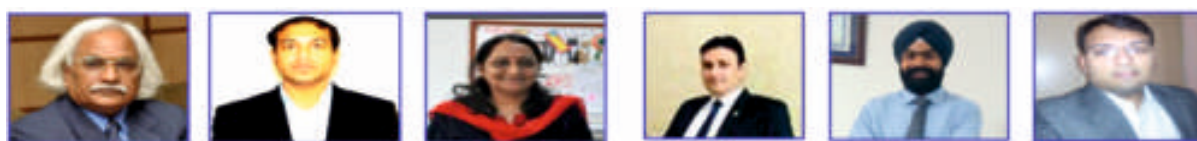
**Saurabh Bhatia, AUH**  
**Pritam Babu Sharma, AUH**  
**Ahmed Al-Harrasi, UoN**

*Patent Application No. 202011037227 filed in India on 28/08/2020*

**Abstract of Invention:** Chronic rhinosinusitis is characterized by chronic inflammation of the sinonasal mucosa and is clinically associated with sinus pressure, nasal congestion rhinorrhea, and a decreased sense of smell persisting for greater than 12 weeks. This invention relates generally to a novel composition and preparation method thereof for the treatment of Chronic sinusitis, and particularly the nasal spray with Boswellic serrata exudate based compositions and method thereof. Development of Boswellic serrata exudate loaded nasal spray can not only offers anti-inflammatory and analgesic effect but also relive symptoms to improve quality of individual with minimum side effects.

## INVENTION

# A METHOD FOR THE DEVELOPMENT OF MALTODEXTRIN AND GUM ARABIC MICROENCAPSULATED FREEZE DRIED LATEX FROM FICUS RACEMOSA AND ITS HEPATOROTECTIVE EFFECT



### INVENTORS

**Pritam Babu Sharma, AUH**  
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**Viveak Ballyan, AUH**  
**Sandeep Singh, AUH**

*Patent Application No. 201911024115 filed in India on 13/05/2020*

**Abstract of Invention:** The present invention relates to a method for pretreated maltodextrins and Arabic gum encapsulated latex from Ficus racemosa and hepatoprotective effect of freeze dried MD and GA encapsulated latex from Ficus racemosa. The present scheme provides the hepatoprotective potential of freeze dried gummy exudate from Ficus racemosa. This novel method is followed by the encapsulation with maltodextrins and Arabic gum to increase the shelf life and improve its quality. Plant exudates are vulnerable against various environmental factors which can encourage the oxidation of chemical components. The present invention provides novel approach to prevent oxidation of chemical constituents by microencapsulation using lyophilization process and its further treatment. Optimized conditions which are used during microencapsulation remove the solvent at a very low temperature.

## INVENTION

# A HEAD GESTURE-CONTROLLED WHEELCHAIR SYSTEM



## INVENTORS

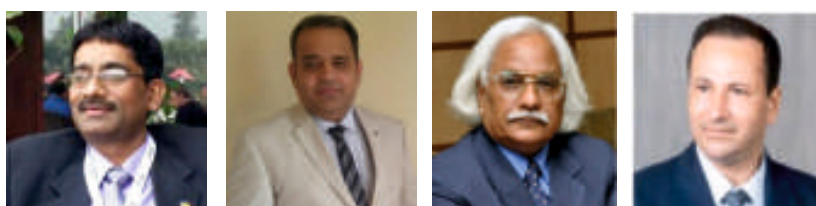
**Kiran Somisetti, AUH**  
**Rohit Phogat, AUH**  
**Khushboo Tripathi, AUH**

*Patent Application No. 202011033725 filed in India on 06/08/2020*

**Abstract of Invention:** The present invention relates to a head gesture-controlled wheelchair system. The present invention pertains a sensing system for controlling movement of a wheelchair, which includes a microcontroller to actuate the movement of the wheelchair; an electric motor adapted to move the wheelchair on receiving signal from the microcontroller; a head wearing unit having an accelerometer sensor; a solar panel for providing solar power supply to the whole electronic components. Further, the accelerometer sensor is configured to provide input to the microcontroller.

## INVENTION -

# A METHOD FOR PREPARING AN ADVANCED GRAPHENE AND NATURAL SILK REINFORCED EPOXY COMPOSITE MATERIALS



## INVENTORS

**Sanjeev Sharma, AUH**  
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**Abdel Hamid Ismail Mourad, AUH**

*Patent Application No. 202011035994 filed in India on 20/08/2020*

**Abstract of Invention:** The invention deals with the development of the novel advanced composite material involving epoxy resin as matrix and reinforcing with Graphene and Natural silk suitable for structural applications in wind turbine blades, aircraft wings and bullet-proof vest. Graphene and natural silk fiber have been used individually in polymer composites but there has never been used in combination for development and application of epoxy based composite at low cost. Hence, Hybridization of Graphene and natural silk fibres to reinforce epoxy-matrix composites is being conceptualised and developed which can result in high performance advanced composite material for structural application with high impact strength and toughness but light in weight. Our invention provides a composite material that will have lower weight but at the same time higher strength and stiffness.

## INVENTION

### Invention : **A Mop Assembly**

Patent Application No. 202011038376 filed in India on 04/09/2020



### **INVENTORS**

*Shivangi Kaushal, AUH*

*Komal, AUH*

*Khushboo Tripathi, AUH*

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#### **ABSTRACT OF INVENTION**

The present invention generally relates to a mop assembly. The assembly includes a handle to hold the device, a screen connected to the camera, a camera attached at the bottom of the mop stick to view the area to be cleaned beneath the furniture, wires to connect the electronic component and other devices, a Flash-Light connected near the camera for light purpose, a battery panel, a swivel having 90 degrees swivel at the center of mop rod and -180 degrees swivel at the end where cleaning head is connected and microfiber cleaning pads and a jet spray for the provision of water supply to the fibre cloth for cleaning purpose, a water bottle to hold cleaning compositions in liquid form or water and the like with a button to control the flow of the liquid supply to the fibre cloth, fibre cloth for cleaning purpose.

## INVENTION

### Invention : **A detachable wiping assembly for crockery and utensils**

Patent Application No. 202011036648 filed in India on 25/08/2020



### **INVENTORS**

*Vinod Kumar, AUH*

*Prakhar Jindal, AUH*

#### **ABSTRACT OF INVENTION**

The present invention relates to a novel yet simple mechanically operated crockery wiper for different types of crockery used in hotels / restaurants and even households, which reduce the time as well as manual intervention for wiping. The present invention relates to a novel portable mechanical crockery wiper, which will useful to wipe the crockery like full plates, half plates, quarter plates, under liners, soup bowl, curry bowl, all types of water goblets and other glasses used in hotel industry as well as in households. The wiper mechanically operates and helps in wiping or drying the crockery/utensils. It has a small frame structure with variety of attachments. The frame has two ends which uses two motors that rotate the attachment bay, in opposite directions, at the time of wiping/drying. Different attachments for different variety of utensils are available and can be replaced as and when required. These attachments can be placed or attached to the attachment bay. Once attached, utensils can be placed in these attachments and the wiper will dry the utensils/crockery once electrically connected. The present invention is designed to wipe the different types of plates, bowls and glass ware, etc. This invention is very low cost, has simple design, is light in weight and hence portable, and reduces the risk of breakage of crockery by manual invention.

# RESEARCH PUBLICATIONS



## A LOCALIZED CHIMERIC HYDROGEL THERAPY COMBATS TUMOR PROGRESSION THROUGH ALTERATION OF SPHINGOLIPID METABOLISM.



Sanjay Pal, Nihal Medatwal, Sandeep Kumar, Animesh Kar, Varsha Komalla, Prabhu Yavvari, Deepakkumar Mishra, Zaigham Rizvi, Shiv Nandan, Dipankar Malakar, Manoj Pillai, Amit Awasthi, Prasenjit Das, Ravi Sharma, Aasheesh Srivastava, Sagar Sengupta, **Ujjaini Dasgupta\*** and **Avinash Bajaj\***

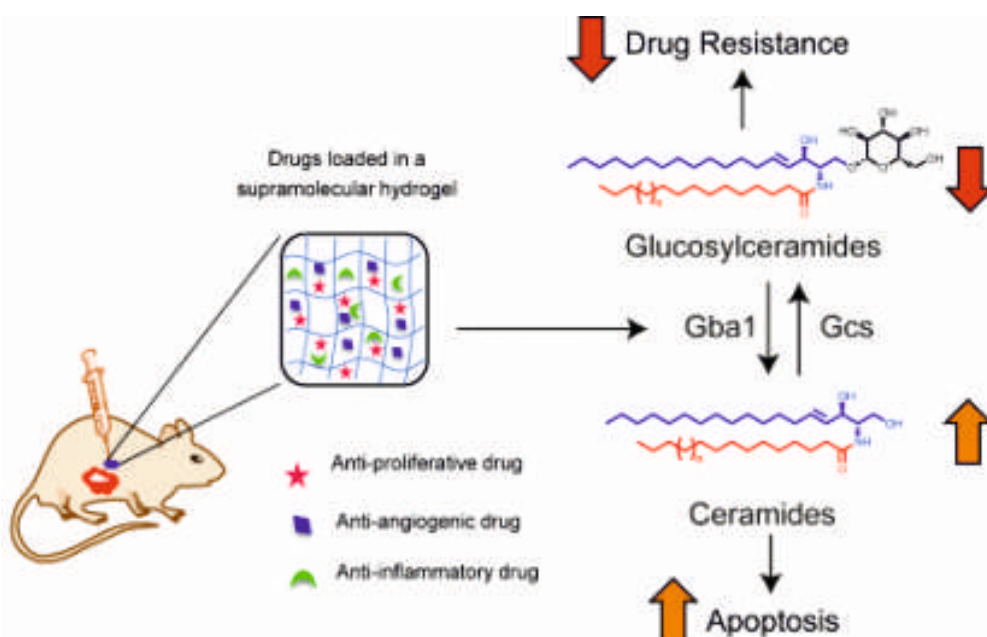
**\*corresponding authors**



**ACS Central Science (Impact Factor 12.8)**

**A Leading Interdisciplinary Journal of American Chemical society**

In this research article, Amity scientists in collaboration with RCB scientists developed a novel localized hydrogel-based drug delivery system. Scientists showed that sustained delivery of combination of drugs from hydrogel helps in inducing tumor regression and does not allow the tumor to develop drug resistance via sphingolipid metabolism.



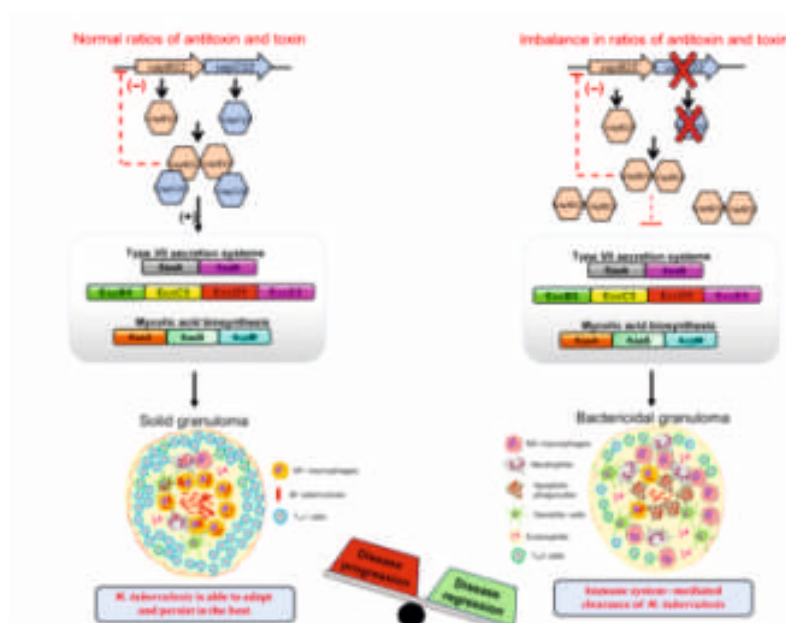
## VAPBC22 TOXIN-ANTITOXIN SYSTEM FROM MYCOBACTERIUM TUBERCULOSIS IS REQUIRED FOR PATHOGENESIS AND MODULATION OF HOST IMMUNE RESPONSE (JUNE, 2020)



Sakshi Agarwal, Arun Sharma, Rania Bouzeyen, Amar Deep, Harsh Sharma, Kiran K, Mangalparthi, Keshava K Datta, Saqib Kidwai, Harsha Gowda, Raghavan Varadarajan, Ravi Datta Sharma, Krishan Gopal Thakur and Ramandeep Singh

### Science Advances (Impact Factor 12.804)

Amity University in collaboration with THSIT, Faridabad have published a paper on functional characterization of the VapBC22 TA system from Mycobacterium tuberculosis. Transcriptome analysis revealed that over expression of VapC22 toxin in M. tuberculosis results in reduced levels of metabolic enzymes and increased levels of ribosomal proteins. Proteomics studies showed reduced expression of virulence-associated proteins and increased levels of cognate antitoxin, VapB22 in the vapC22 mutant strain. Furthermore, both the vapC22 mutant and VapB22 over expression strains of M. tuberculosis were susceptible to killing upon exposure to oxidative stress and showed attenuated growth in guinea pigs and mice. Host transcriptome analysis suggests upregulation of the transcripts involved in innate immune responses and tissue remodeling in mice infected with the vapC22 mutant strain. Together, we demonstrate that the VapBC22 TA system belongs to a key regulatory network and is essential for M. tuberculosis pathogenesis.

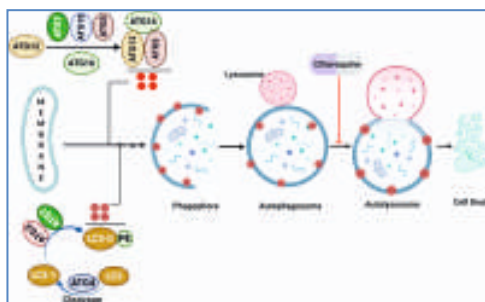


## REPURPOSING OF DRUGS: AN ATTRACTIVE PHARMACOLOGICAL STRATEGY FOR CANCER THERAPEUTICS



**Dr. Amit Kumar Pandey**

Anuradha Kirtonia, Kavita Gala, Stina George Fernandes, Gouri Pandya, Amit Kumar Pandey, Gautam Sethi, Ekta Khattar, Manoj Garg



### **Seminars in Cancer Biology (Impact Factor 11.09)**

Seminars in Cancer Biology is a review journal dedicated to keeping scientists informed of developments in the field of molecular oncology on a topic by topic basis

**The development of novel drugs/agents requires a huge amount of cost and time that represents a major challenge for drug discovery.**

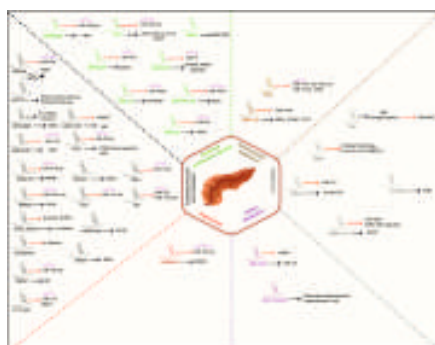
The repurposing of approved non-cancerous drugs is an effective strategy to develop new therapeutic options for the treatment of cancer patients at an affordable cost in clinics.

**The implication of long non-coding RNAs in the diagnosis, pathogenesis and drug resistance of pancreatic ductal adenocarcinoma and their possible therapeutic potential.**

Gouri Pandya, Anuradha Kirtonia, Gautam Sethi, Amit Kumar Pandey, Manoj Garg

### **BBA- Reviews on Cancer (Impact Factor 7.3)**

BBA Reviews on Cancer covers the whole field of the biology and biochemistry of cancer



We have discussed how lncRNA expression can be used for the diagnosis and prognosis of PDAC. The current review discusses the potential role and molecular mechanism of lncRNA in regulating the prominent hallmarks of cancer including abnormal growth, survival, metastasis, and drug-resistance in PDAC. Importantly, we also highlight the possible application of various therapeutic strategies including small interfering RNA, CRISPR-Cas9, antisense oligonucleotides, locked nucleic acid Gappers, small molecules, aptamers, lncRNA promoter to target the lncRNA as a novel and viable options for treatment of PDAC

# WATER-TEMPLATED, POLYSACCHARIDE-RICH, BIO-ARTIFICIAL 3D MICROARCHITECTURES AS EXTRA-CELLULAR MATRIX BIOAUTOMATONS



Swati Kaushik, Sonu Gandhi, Mehak Chauhan, Shaohua Ma, Souvik Das, Deepa Ghosh, Aneesh Chandrasekharan, Md Bayazeed Alam, Avanish Singh Parmar, Alpana Sharma,\* T.R. Santhoshkumar,\* and Deepa Suhag\* (AIB, AUH)

April 2020 DOI 10.1021/acsami.0c01012

\*Dr. Deepa Suhag: Lead Corresponding Author. Paper was communicated from Amity Institute of Biotechnology, Amity University Haryana.

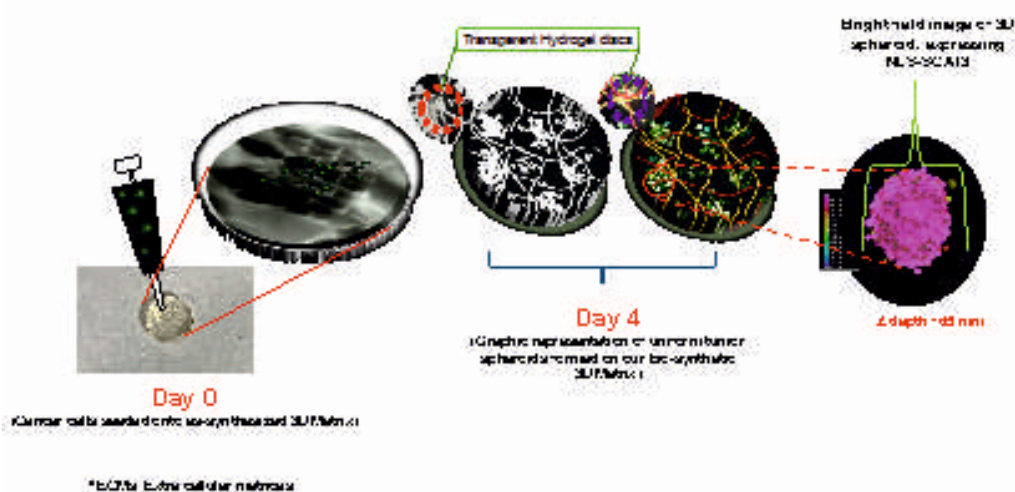
## ACS Applied Materials and Interfaces, Impact Factor: 8.8

In this original research work, Amity University Researchers (including a student from Amity University Uttar Pradesh, Noida) in collaboration with other leading researchers from India and overseas, established for the first time, a polysaccharide rich, polymeric matrix, templated by “quasi-spherical” water molecules for recapitulating a true human extra cellular matrix (ECM). Consequently, the high transparency of the matrix also corroborated its potential as a promising candidate for phenotypic screening in the field of real-time HTS and HCS for image-based assessment of the potency of anti-cancer drugs. This attribute of our material can be capitalized for achieving personalized cancer modelling for precision medicine.

In our ongoing studies, we are also examining in vitro tumors formed in our 3D matrix, which would further lend cues to bridge in vitro and in vivo tumor signatures.

This which would further elucidate our matrix’s tumor microenvironment recapitulation.

Ultimately, we aim to establish a bio-artificial 3D matrix to reduce co-morbidity associated with frequent attrition rates in drug screening and drug repurposing, while simultaneously decreasing the sky-rocketing investments required for drug-screening, subsequently rendering anti-cancer treatments precise, affordable and cruelty-free.



Approximating ECMs for precision oncology: Transparent, self-remodeling, bio-artificial 3D Matrix as ECM bio mimics for heterogeneous tumor recapitulation



## Editor's Pick



Editors' Pick: Among top 50 papers out of ~6500  
**JBC, April, 2019**

### **Phosphorylation of HSP90 by protein kinase A is essential for the nuclear translocation of androgen receptor, Manisha Dagar, Julie Pratibha Singh, Gunjan Dagar, Rakesh K. Tyagi and Gargi Bagchi**

Prostate cancer is often managed by reducing androgen levels to limit signaling through the androgen receptor. The tumors in many patients respond by developing androgen-independent growth, but the molecular basis for this growth alteration is poorly understood. Dagar et al. now demonstrate that a second signaling pathway leads to phosphorylation of HSP90, breaking up a complex with the androgen receptor to enable nuclear trafficking and pathway activation. These results suggest HSP90 as a potential target in prostate cancer therapy.

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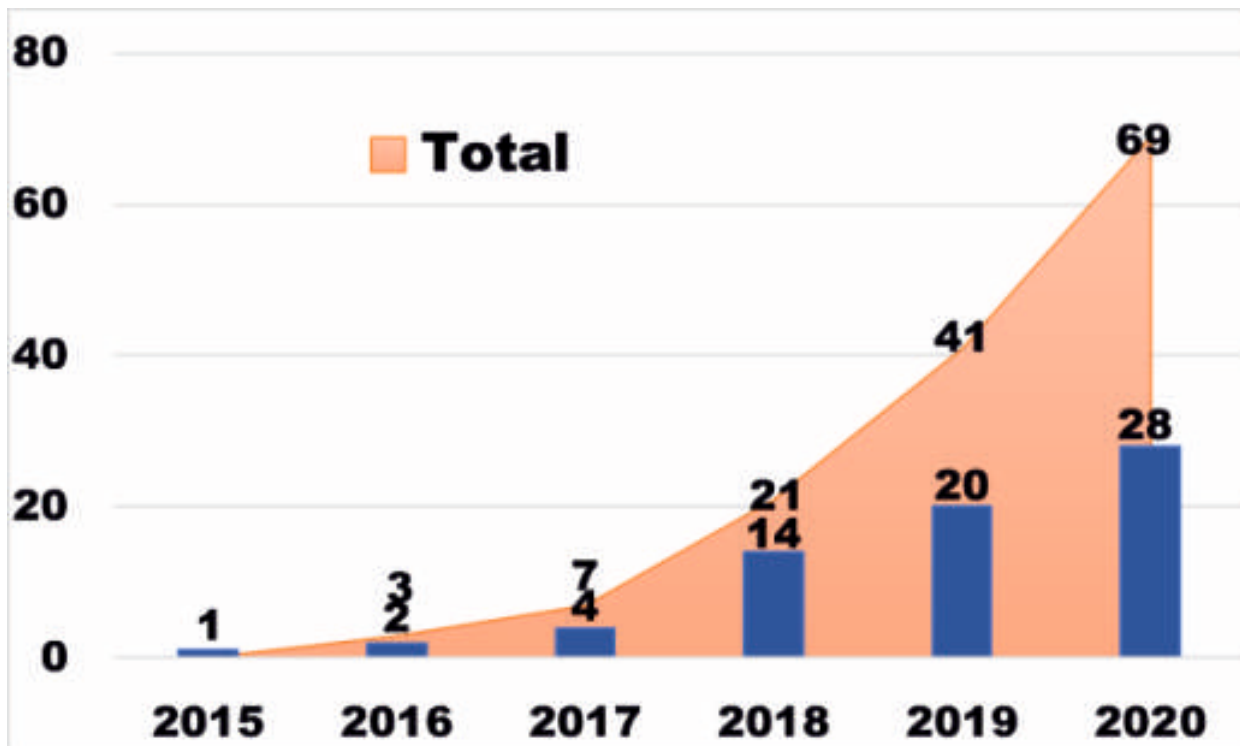
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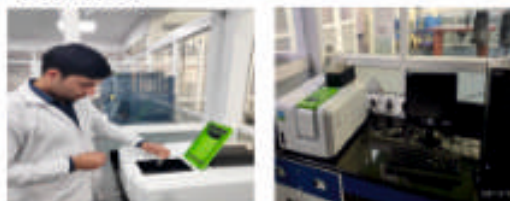
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25th -29th March 2019



#### Objectives of the Workshop

- Lectures on basic principles of Lipidomics and proteomics
- Hardware knowledge of Hybrid-TRAP and QTOF technology
- Demonstration of method development, data acquisition and data analysis and interpretation for Targeted and Untargeted approach for Lipidomics and Proteomics
- Visit to Sciex laboratory (Gurgaon, Haryana) and get training on HRMS technology
- A complete knowhow and demonstration of general principles of Lipidomics and proteomics
- Concept and idea development for designing own project



### 2 day Workshop on FLOW CYTOMETRY: TECHNOLOGY & APPLICATION 18-19 February, 2020



#### Highlights from the event:

- 11 participants including 9 students and 2 Faculty members
- Expert Speaker: Dr. Ravi Tandon, School of Biotechnology, JNU
- Expert Trainers from BD: Dr. Pradeep Rai and Dr. Vinay Gupta
- Sessions included Introduction to FACS Lyric instrument, FACS Suite software, Application of FACS, Hands on Training and Experiments.





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