



3rd International Conference on  
Bioinformatics and Data Science

(ICBDS - 2022)

and

9th International Conference on  
Public Mental Health and

Neurosciences (ICPMN - 2022)



Abstract Book  
December 22-23, 2022

<https://sarvasumana.in/conference>

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# Sarvasumanâ Association

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## WELCOME



On behalf of Sarvasumana association, as a President it is my pleasure to invite all delegates from across the world to the joint **ONLINE 3<sup>rd</sup> International Conference on Bioinformatics and Data Science (ICBDS – 2022)** and **9<sup>th</sup> International Conference on Public Mental Health and Neurosciences (ICPMN – 2022)**. I thank you all for being a part of the fight against covid pandemic.

This conference gives a platform to researchers and learners to share their ideas and inventions with their peers.

We have boldly overcome the lockdown period, still I request everyone to follow the safety measures.

By the unique theme, "The Gen-Next Genome" this conference brings Big data to the world of Biotechnology and health sciences.

I hope you will enjoy the conference.

With best wishes.

*Padmashree murthy*

Padmashree Murthy.

**President**

**Sarvasumana Association**



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# Vasishth Genomics Research Lab (P) Ltd®

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## FROM CHAIRMAN'S DESK



Dear Friends,  
Greetings!

It is my pleasure to invite all of the great scientists, academicians, young researchers, and students from all over the world to attend the **joint ONLINE 3<sup>rd</sup> International Conference on Bioinformatics and Data Science (ICBDS – 2022) and 9<sup>th</sup> International Conference on Public Mental Health and Neurosciences (ICPMN – 2022)**.

As the association is encouraging inter disciplinary research in the conference, research papers will be presented on Microbiology, Homeopathy, Ayur informatics, Acupuncture and Yoga in this platform. Young researchers are participating in oral presentations as well. Due to Covid-19 pandemic we are unable to conduct the conference physically, but thanks to technology that all of us are coming together to share the knowledge by connecting from home virtually.

During the lockdown period people were losing connectivity with their loved ones. This situation has affecting us socially, financially, spiritually as well as mentally. Stress and anxiety have been affecting people of all age groups.

I hope this conference would throw some light on the current researches. I wish everyone to stay safe and stay healthy.

Yours sincerely,

Dr. R. Somashekhar,  
Director (Research)



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13 December 2022

It is with great pleasure to know that the Sarvasumana Association, together with Padmashree Group of Institutions, Vasishth Genomics Research Lab Pvt Ltd and Sanatana Yoga Vignana Kendra Bengaluru, India are hosting the 9<sup>th</sup> Public Mental Health & Neurosciences Conference and the 3<sup>rd</sup> International Conference on Data Sciences and Bioinformatics on December 22-23, 2022. This wonderful event allows young researchers and experts to present their work, receive feedback, and enhance their quality. Also, I understand that the call for papers was favourably received. This event allows academic members and industry professionals to share suggestions on how to improve the effectiveness of their work. The rise of new technologies has led to the increasing interest in various topics such as data science, machine learning, and metabolomics.

The goal of the ICBDS-2021 and ICPMN-2021 is to bring together the various components of computer science, biology, and technology to address the challenges of Big-Data biology. Further this, it also aims to provide a forum for exchanging experiences and finding solutions to the many challenges that researchers encounter when it comes to analysing and managing big data. The conference will provide an opportunity for instructors, students, and industry experts to discuss the latest developments in metabolomics, integrative spirituality, and genomics.

I would like to express my gratitude to Mrs. Padmashree Murthy, the conference's Patron, and Dr. R. Somashekhar, the event's Chairman, for their efforts in making the ICBDS-2022 and ICPMN-2022 successful. Not forgetting sincere thanks to conveners, Dr Preenon Bagchi and Dr Kirthi S Jawalkar. I am sure that the delegates will leave the conference with happy memories. I wish them a successful and enjoyable stay and technical exchange.

Thank you.

Best regards,

Associate Professor Dr Vuanghao Lim, *IPHM*  
Advanced Medical and Dental Institute  
Universiti Sains Malaysia  
Penang, Malaysia



## Sanatana Yoga Vignana Kendra

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Ref.No: SYVK/OL/001/22

Date: 16<sup>th</sup> Dec 2022

### MESSAGE

I am very happy to learn that joint **ONLINE**



**3<sup>rd</sup> International Conference on Bioinformatics and Data Science (ICBDS – 2022)**  
and

**9<sup>th</sup> International Conference on Public Mental Health and Neurosciences (ICPMN – 2022)**

is being jointly organized by Sarvasumanā Association, and Sanatana Yoga Vignana Kendra in Namma Bengaluru in December 2021.

Every session in the conference provides new insight to manage stress, anxiety and psychological disorders - a novel approach to look at the mental burdens and provided solutions to critically handle these issues. As we look close to remnants of the antiquities, I will expect that wonderful things shall emerge – new ideas, fresh thinking, and a reawakening of the enchantment of life that our academic studies seek to understand. By the unique theme **“The Gen-Next Genome”** this conference brings the Big data to the world of Biotechnology, Medicine and yoga.

I am sure that, this interaction will help in fostering strong partnership and linkages with Doctors, Yoga practitioners, Psychologists, Psychiatrists and Neurologists and Neurobiologists. Best wishes for the success of the conference and future endeavors.

Founder Director

  
Rajesh.T.S M.Sc,M.Phil,YIC,(Ph.D)



## INSTITUTE OF BIO SCIENCES AND TECHNOLOGY

I am glad to learn that Padmashree Group of Institution is collaborating with us and Sarvasumana Association, Bangalore in organizing the 3<sup>rd</sup> International Conference on Bioinformatics and Data Science (ICBDS-2022) and 9<sup>th</sup> International Conference on Public Mental Health and Neurosciences (ICPMN – 2022) on the theme The Gen- Next Genome on 22-23<sup>rd</sup> of December 2022. The team spirit towards providing interdisciplinary and trans disciplinary exchange of knowledge is tremendously appreciable.

Young researchers are participating in oral presentations as well. Due to Covid-19 pandemic we are unable to conduct the conference physically, but thanks to technology that all of us are coming together to share the knowledge by connecting from home virtually.

During the lockdown period people were losing connectivity with their loved ones. This situation has affecting us socially, financially, spiritually as well as mentally. Stress and anxiety have been affecting people of all age groups.

I hope this conference would throw some light on the current researches. I wish everyone to stay safe and stay healthy.

Though the conference is going to be held online, I am sure the expanse of knowledge and the quality of dissemination of information will not be compromised. Wishing you all a very fruitful and rewarding conference.

  
14.12.2022  
Director  
MGMU-IBT, Aurangabad

[DR. SANJAY N. HARKE]





**PADMASHREE**  
INSTITUTE OF CLINICAL  
RESEARCH

December 21, 2022

It was an immense pleasure to inform that Padmashree Institute of Clinical Research, PGI, Bangalore is working in deep partnership with, MGM Institute of Biosciences and Technology, Aurangabad in organizing the Joint 3<sup>rd</sup> International Conference on Bioinformatics and Data Science (ICBDS-2022) and 9<sup>th</sup> International Conference on Public Mental Health and Neurosciences (ICPMN – 2022) on the theme “The Gen-Next Genome” on 22-23<sup>rd</sup> of December 2022.

In this context we are glad to organize these programs and the platform provides a great opportunity for learning and networking for students, scholars, academicians, and researchers from different streams. The team spirit will make these series of two days sessions would cherish and enrich the knowledge.

Coming together is a beginning; keeping together is progress; working together is success. Hence, a well-organized program will fill our lacunae with dignity and strength. Though the conference is going to be held online, I am sure the impart knowledge would make our dream a reality which in turn will augment better quality of new world order.

Wishing you all a very best memorable and rewarding conference.

Dr. Suresh Babu S V.

Principal, PICR

Padmashree Institute of Clinical Research,  
Kommaghatta, Kengeri, Bangalore - 560 060

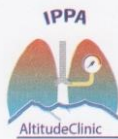
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As the Head of our institution, I wish all of you good health and the best of success in all your endeavours during the forthcoming:

**3rd International Conference on Bioinformatics and data science  
and  
9th International conference on Public Mental Health and Neurosciences**

Our blessings for such important conferences!!

Prof. Dr. Gustavo Zubieta-Calleja  
Head

Dec 18, 2022

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	<i>Prof. Dr. Gustavo R. Zubieta-Calleja</i>
2	<b>Frontiers Of Nanoinformatics In Nanomedicines</b>
	<i>Dr. Vuanghao Lim</i>
3	<b>Cognitive Technology</b>
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4	<b>Genomic In Life Sciences</b>
	<i>Dr. Dhanalakshmi G</i>
5	<b>Seeking Neural Mechanistic Understanding Of Decision-Making In The Era Of Big Data And Machine Learning</b>
	<i>Dr. Kongfatt Wong-Lin</i>
6	<b>How To Kick Start Your Professional Journey Towards Success</b>
	<i>Shruthi.G.K</i>
7	<b>Science/Signs Of Purification In Yoga</b>
	<i>Rajesh.T.S</i>
8	<b>Nutraceutical Nootropics</b>
	<i>Dr. M. Anuradha</i>
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	<i>Mrs. Padmashree Murthy</i>
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	<i>Dr. Archana Panche</i>
12	<b>Inherited Metabolic Disorders: Biochemical Approach At Tertiary Care Hospital.</b>
	<i>Dr. Suresh Babu Sv</i>
13.	<b><i>A Journey From Inside To Insight</i></b>
	<i>Chitra. C</i>

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1	<b>Dominating Sets In Protein-Protein Interaction Networks</b> <i>Yegnanarayanan Venkataraman, T. Kalaiselvi, Jane Rubel Angelina Jeyaraj, Subhashini Sottallu Janakiram</i>
2	<b>The Relationship Between The Self-Affirmation And Life Skills For Better Mental Health And Well-Being Of Youth</b> <i>K.S. Sri Rajeshwari Devi</i>
3	<b>Parenting Stress And Resilience In Parents Of Children With Two Most Common Neurodevelopmental Disorders ASD [Autism Spectrum Disorders] And ADHD [Attention Deficit Hyperactivity Disorder]</b> <i>K.S. Sri Rajeshwari Devi</i>
4	<b>Comparative Analysis Of Sars-Cov-2 Variants Across Three Waves In India</b> <i>Kushagra Agarwal And Nita Parekh</i>
5	<b>Perception Of Learned Helplessness In Relationships Among Female Emerging Adults</b> <i>Sharmili. C and Agna M.P</i>
6	<b>An Insight Into Art Analysis And Therapy (Deep Dive Into Magic Of Your Being)</b> <i>Noothan Rao</i>
7	<b>Graphology: An Inclination To Profession</b> <i>Pooja Renukdas</i>
8	<b>Targeting Gmbadh2 Gene Specific Mutation And Designing Of Allele Specific Marker For Aroma</b> <i>Ss Pawar, Pv Jadhav, Ra Uikey, Gk Mote, Mp Moharil, Ss Nichal, Bs Munde, Sb Sakhare, Rb Ghorade</i>
9	<b>Study Of Yoga In Indian Psychology</b> <i>Sushma. N</i>
10	<b>Decode The Secret To Mental Health Through Pranayama</b> <i>Rajesh.T.S and Shruthi.G.K</i>
11	<b>Understanding The Effect Of Social Media Use On Self-Esteem Among Senior Secondary School Students In Delhi-Ncr.</b> <i>Cheryl Jolly Andashu Kumari</i>
12	<b>Graphology: Ultimate Healer Of 7 Chakras</b> <i>Pooja Renukdas</i>
13	<b>Indian-Covid-19 Ct Dataset: Evaluating Generalizability Of Deep Learning Models</b> <i>Suba S and Nita Parekh</i>
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15	<b>Association Between Mindfulness, Triguna And Chronotype : A Cross-Sectional Study Among Undergraduate Students</b> <i>V. Gobinath</i>
16	<b>Protein Binding Classification Of Dna Sequences Using Cnn-Bidirectional Lstm</b> <i>S.Deena,Sarthak Yadav,Sangeeth Ajith, S Sudarshan Rajaram, S Manojna Karuparthi, S Valluru Venkata Vighneswara Bhagya Sree</i>

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18	<b>A Systematic Review Of Route Optimization For Ambulance Routing Problem</b>
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19	<b>EFFECT OF SIDDHA COMPOUND ON CARDIAC DISEASE ON AVIAN MODEL</b>
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	<b>Associated Proteins In Neuroblastoma</b>
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	<b><i>Darshna Kotharkar and Preenon Bagchi</i></b>
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	<b><i>Kavya.T. T, Harsha.B, Kalavathi.K.P, Dileep.K.R, K.G.Mallikarjuna Gowda, Preenon Bagchi, Umalatha, and Anuradha M</i></b>
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	<b><i>Shahnawaz Ahmad, Md. Imtaiyaz Hassan, Dinesh Gupta, Tanzeel Ahmad and Asimul Islam</i></b>
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सर्वसुमना



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# **CHRONIC HYPOXIA: ADAPTIVE RESPONSES THAT EXTEND SURVIVAL ON PLANET EARTH AND BEYOND**

*Prof. Dr. Gustavo R. Zubieta-Calleja*

High Altitude Pulmonary & Pathology Institute  
Instituto Pulmonar y Patología en la Altura (HAPPI-IPPA),  
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Over 2 million people living between 3,100m and 4,100m in the neighboring cities of La Paz and El Alto in Bolivia prove that high-altitude residents carry out perfectly everyday lives. We are born, develop, study, have children, participate in sports, and have pleasant lives at high altitude. Upon evaluation of the lifespan of high-altitude residents as compared to lowland residents in Bolivia, it is evident that there is extended longevity directly proportional to the altitude. Our high-altitude athletes are winning more and more competitions at sea level by significant time differences with the second and the rest of the competitors. Our brains, hearts, and retinas have greater vascularity and hence not only perform optimally but also are less prone to stroke and myocardial infarction. Our bodies increase the red blood cell count making oxygen transport more efficient despite low barometric oxygen pressures. We hardly ever have asthma crises at high altitude. The incidence of lung cancer at high altitude is much lower than at sea level.

One of the most significant threats to humans in these times has been the COVID-19 Pandemic. We have successfully shown that the incidence and the case fatality rate are lower at high altitudes compared to sea level. We feel safer at high altitude and have shown a greater chance of survival during the pandemic. We have previously affirmed that sea-level residents (compared to high-altitude dwellers) have poor tolerance to hypoxia. Nevertheless, adequate adaptation makes it possible to climb to the summit of Mt. Everest without oxygen.

High-altitude life under chronic hypoxia is a healthy stimulus for the metabolism of living beings. It is like performing exercises that stimulate favorably not only the muscles but also the heart, the lungs, the kidneys, and all the body organs, along with favorable metabolic and genetic expressions to survive under low oxygen pressures. This has important implications even for space travel, as in a space capsule, the ambient should be the pressure of the high-altitude cities of La Paz (3,100-4,100m) and El Alto (4,100m), and this should be extended for human colonies outside of our planet.

In conclusion, our human genes, which have evolved over millions of years, have an inherent capacity for survival even at the highest point on earth in extreme hypoxia. Nature has provided the mechanisms of physiologic (within the lifetime) and genetic adaptation (over many generations) for a successful existence. This millennial evolution resulting from trial-and-error survival of the fittest should be carefully handled and respected, protecting the environmental quality and living conditions and avoiding genetic manipulation in humans and all living organisms, which may seem profitable in the short time but catastrophic in the long run.

## FRONTIERS OF NANOINFORMATICS IN NANOMEDICINES

*Dr. Vuanghao Lim*

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Scientists started looking into the potential applications of nanotechnology in medicine a decade ago, which has revealed various opportunities and challenges. The complexity of managing and integrating heterogeneous information is a significant challenge that researchers face when it comes to developing new technologies and workflows for the design and implementation of nanomedicine. This includes the development of classification and modelling techniques for nanosized particles. The design and optimisation of nanomedicines often involve a trial-and-error process, and the benchwork required to carry out these procedures can be incredibly challenging. To speed up the research process, data science is becoming more prevalent in the field of nanoinformatics. Through the use of advanced data analytics, researchers have been able to develop new ways to predict the biological and chemical reactions occurring in nanomedicine. Despite the advances made in nanoinformatics, there are still many issues that need to be addressed before its scope can be understood. In addition, more organisations and researchers working on the development of nanoinformatics and attempting to comprehend the ethical implications of research in this field. The increasing number of professionals working in nanomedicine has resulted in the creation of new computational methods capable of addressing the numerous issues in nanoinformatics. Keywords: Nanoinformatics, nanomedicine, data analytics, machine learning, artificial intelligence

# **COGNITIVE TECHNOLOGY**

*Dr. Ravindra Henry*

Dean Research & Innovation  
Professor of Technology  
ATLAS SkillTech University, Mumbai

Replicating the functionality of the human brain to develop new tools and craft to improve the quality of human life is generally defined as Cognitive Technology. Artificial Intelligence (AI) is the soft aspect of the technology while replicating and interfacing with live human brain is the hard aspect of it. This talk covers the basic of the basics of technology. It illustrates the ways and means through which replicating physiological and functional aspect of human brain is redefining the subsequent progress of human life on earth. It includes topics like AI, Machine learning, Internet of Things (IoT), Iontronics, Optogenetics, Neuromodulation etc.

# GENOMIC IN LIFE SCIENCES

*Dr. Dhanalakshmi G*

Department of Biochemistry, Padmashree Institute of management and sciences,  
Bangalore, Karnataka, India

## **Abstract:**

Genomics is the **study of the complete** genome of an organism. It is an interdisciplinary field of biology focusing on the DNA sequencing and Bioinformatics to investigate structure, function, evolution, mapping, and editing of genomes. The genomic study is divided into structural genomics and functional genomics. Structural genomics include Genome mapping, Physical mapping, sequencing, assembly, Annotation and Gene Ontology. Functional genomics is the study of **expression and function of the genome**. Current Initiative in Structural Genomics deals with various organisms (Bioinformatics tools like USA (NIH) and Non USA). Genomic Study helps in Production of fuels, Forensic Analysis, Pharmacogenomics, Oral immunization with plants, cancer, heart disease and genetic testing. In conclusion, Genomic research will take over to healthy environment and is believed that we will soon get to a point where at the time of birth, each baby has their whole genome sequenced so that risk of diseases can be assessed in early life.

# SEEKING NEURAL MECHANISTIC UNDERSTANDING OF DECISION- MAKING IN THE ERA OF BIG DATA AND MACHINE LEARNING

*Dr. KongFatt Wong-Lin*

Reader, Intelligent Systems Research Centre, School of Computing, Engineering and  
Intelligent Systems, in Ulster University, UK.

Decision-making is a fundamental aspect of human cognition. In particular, perceptual decision-making is a basic form of decision-making that involves transforming sensory information into motor action, which readily allows experiments to probe its neural basis. This talk will provide a journey into understanding the neural mechanisms from perceptual decisions to decision uncertainty awareness, a form of metacognition, using computational modelling and mathematical analysis. The computational models developed can in turn shed light on the possible mechanisms of mental disorders and enhance the performance of machine learning algorithms.



## HOW TO KICK START YOUR PROFESSIONAL JOURNEY TOWARDS SUCCESS

*Shruthi.G.K B.E, M.Tech, YIC*

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Students when they are nearing to the completion of their course, their focus is to obtain a job and start their professional journey. This key note speech addresses various questions regarding how to prepare for an interview, what are the challenges that students face when they are new to their profession and also how to tackle the challenges on a positive note. In addition, this speech focus on how one can slowly accelerate their professional journey towards success after gaining expertise in their respective profession.

The ultimate aim of this speech is to bring about the best out of every student, boost their confidence and give their best in the interviews.



## SCIENCE/SIGNS OF PURIFICATION IN YOGA

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Purification is the process of removal of impurities. In a mixture of substances when it is difficult to remove the pure compound we just follow the general principle of purification ie removing the impurities. When the impurities are removed the substance shows its real characteristic which will be different when compared to the mixture. These characteristics are studied in the nanotechnology and used for many industrial and therapeutic applications. In the same way human beings are a mixture of negative emotions, toxins, negative thoughts as impurities. Ancient Yogic scriptures shows the way to remove the impurities and make a human from animal consciousness to higher consciousness (human being). When a human being is in his pure state/with self he will experience the happiest/joy full state of his life. He will be free from all impurities which will illuminate him and makes him human being.

सर्वसुमना

# NUTRACEUTICAL NOOTROPICS

**Dr. Anuradha Maniyam**

**Principal and Research Head, Padmashree Institute of Management and Sciences,  
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Nootropics coined by Romanian psychologist and chemist Corneliu E. Giurgea in 1972 and this word is derived from the Greek words nous mean "mind", and trepein meaning to bend or turn. Nootropics are smart drugs which are basically memory enhancers, neuron enhancers, cognitive enhancers, and intelligent enhancers. Nootropics include drugs, supplements, nutraceuticals, and functional foods. Nutraceutical is foods or part of food or dietary supplements that may claim to provide medical or health benefits – this includes the treatment of or prevention of disease. Nootropics as a drug sometimes may have little side effects, however nutraceutical nootropics are safe which can be used for enhancing cognitive management, improving concentration, and can be memory enhancers. This review provides a detailed account of types of nootropics and benefits of nutraceutical nootropics to maintain mental well-being.



सर्वसुमना



## **STORYTELLING FOR CHILDREN AND TEENAGERS IN COUNSELLING.**

**Mrs. Padmashree Murthy**

**President, Sarvasumana Association, Bengaluru**

Storytelling plays a vital role in the process of assessment and intervention during counselling. Children and teenagers can identify themselves with the characters of the stories they listen to, through which they can overcome the difficulty of self disclosure during counselling. It can be narrated through pictures, art and orally too.

Stories would bring behavioral change, improvement in communication, it can be applied to gain knowledge, implement values and ethics. It can also intrigue and introspect their belief systems, and improve their verbal language. The stories people hear and have told others would influence them in their work, relationship and help them in learning how to cope with different phases of life. Everyone has a story to tell and these stories help in accepting what life is, and all its surprising ups and downs.

Giving voice to all the people to tell their stories, and listening to them would be conducted in counselling.



सर्वसुमना

## **GENOMICS IN HOMEOPATHY**

**Dr Kirthi Jawalkar**

**Director, Vasishth Genomics Research Lab Pvt Ltd, Bengaluru**

Geno-Homoepathy is a scientific study that includes observable changes in disease that are genetically transferred and those caused due to environmental changes and how Homeopathic medicines can influence in bringing about a positive influence to instil health in individuals.

Investigating genetic patterns under the influence of Homeopathic medicines gives us an understanding as to the extent of influence these medicines can create in illnesses like Diabetes, Cardiac illness, asthma, cancer , management of chronic illness, skin conditions, familial inheritance of diseases and to assess other risks to health. A new branch of GenoHomoepathy is conducting studies in genetic counselling where the diseases and tendencies can be stopped from a mother to child using Homeopathic medicines from the first trimester..

GenoHomoepathy is a combined study using Homeopathic Science, homeopathic philosophy, drug proving, pharmacology, pharmacodynamics, study of causative factors, thorough study of Familial history, temperaments of an individual and their environmental adaptations to any given condition. The Homeopathic disease classifications includes the level of morbidity called Miasms, personality traits or temperaments and essentially the psychological changes with a detailed emphasis of specific sensations, pain type and intensity, extent etc, that takes place during illness. Homeopathy believes in bringing about cure in the shortest duration with minimal invasion and in the most effective way that makes Homeopathy a medicine of the future.

While one draws similarities between Homeopathy as a holistic system of Medicine and Genomics, a continuous realm of evolving genetic patterns, its collaboration and research can bind the health system of the future in the most imperial way.

Homeopathic medicines administered in its minimalistic form as a Nano particle when given in different methods has the capability to change the pathophysiology at the genetic level. A new observation also claims that homeopathy is working on the quantum level is a highly articulated fact that is promising and a game changer in the field of medicine.

सर्वसुमना

# MULTI-TARGET PROTEASE INHIBITORS FROM *ANDROGRAPHIS PANICULATA*: *IN SILICO* AND *IN VITRO* STUDIES

Dr. Archana Panche

Postdoctoral researcher at Centre for Biosustainability, Technical University of Denmark, Denmark

## Abstract:

Natural products derived from plants play a vital role in the discovery of new drug candidates, and these are used for novel therapeutic drug development. *Andrographis paniculata* and *Spilanthes paniculata* are used extensively as medicinal herbs for the treatment of various ailments, and are reported to have neuroprotective properties.  $\beta$ -amyloid is a microscopic brain protein whose significant aggregation is detected in mild cognitive impairment and Alzheimer's disease (AD) brains. The accumulation of  $\beta$ -amyloid disrupts cell communication and triggers inflammation by activating immune cells, leading to neuronal cell death and cognitive disabilities. The proteases acetylcholinesterase (AChE), butyrylcholinesterase (BChE), and beta secretase-1 (BACE-1) have been reported to be correlated with the synthesis and growth of  $\beta$ -amyloid plaques in the brains of AD patients. In the present study, the phenolic compounds from *A. paniculata* and *S. paniculata* that have been reported in the literature were selected for the current investigation. Furthermore, we employed molecular docking and molecular dynamics studies of the phenolic compounds with the proteins AChE, BChE, and BACE-1 in order to evaluate the binding characteristics and identify potent anti-amyloid agents against the neurodegenerative diseases such as AD. In this investigation, we predicted three compounds from *A. paniculata* with maximum binding affinities with cholinesterases and BACE-1. The computational investigations predicted that these compounds follow the rule of five. We further evaluated these molecules for in vitro inhibition activity against all the enzymes. In the in vitro investigations, 3,4-di-*o*-caffeoylquinic acid (5281780), apigenin (5280443), and 7-*o*-methylwogonin (188316) were found to be strong inhibitors of AChE, BChE, and BACE-1.

These findings suggest that these compounds can be potent multi-target inhibitors of the proteases that might cumulatively work and inhibit the initiation and formation of  $\beta$ -amyloid plaques, which is a prime cause of neurotoxicity and dementia.

Keywords:  $\beta$ -amyloid; *Andrographis paniculata*; multi-target anti-amyloid agents

# **INHERITED METABOLIC DISORDERS: BIOCHEMICAL APPROACH AT TERTIARY CARE HOSPITAL.**

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## **Abstract**

Inborn Metabolic Disorder (IMDs) constitutes a heterogeneous group of disorders affecting the metabolic pathways with an underlying genetic defect. IMDs are becoming increasingly recognized, wherein the early diagnosis and appropriate treatment interventions are mandatory to reduce the morbidity and mortality rate among the newborns. Predilection of the nervous system, particularly during the early period of growth, to metabolic insults secondary to IMDs are often the cause of neurological dysfunction that are most common in childhood. Clinical manifestation of IMDs, depending on the manifestation at different point of life span, of infantile, juvenile or adult forms could be variable and non-specific in nature. Adult-onset forms of IMDs, with different/varied clinical presentation are often encountered, examples being Pompe disease, Tay-Sachs disease, Metachromatic Leuko Dystrophy (MILD), Gaucher's disease, and Maroteaux-Lamy disease. The past two decades have witnessed a rapid increase in the knowledge of the inherited neurometabolic disorders. The precise diagnosis of these disorders in reality is far from expectations. Hence, screening of clinically selected patients with simple chemical urine tests and routine blood chemistry investigations followed by measurement of specific metabolites and assay of the relevant enzymes confirms the diagnosis by biomedical instrumental tools aids in treatment and mitigate these rare disorders sufferings as well as helps to overcome clinician's diagnostic dilemma.

**Key words:** IMDs; inborn metabolic disorder, MILD: Metachromatic leucodystrophy

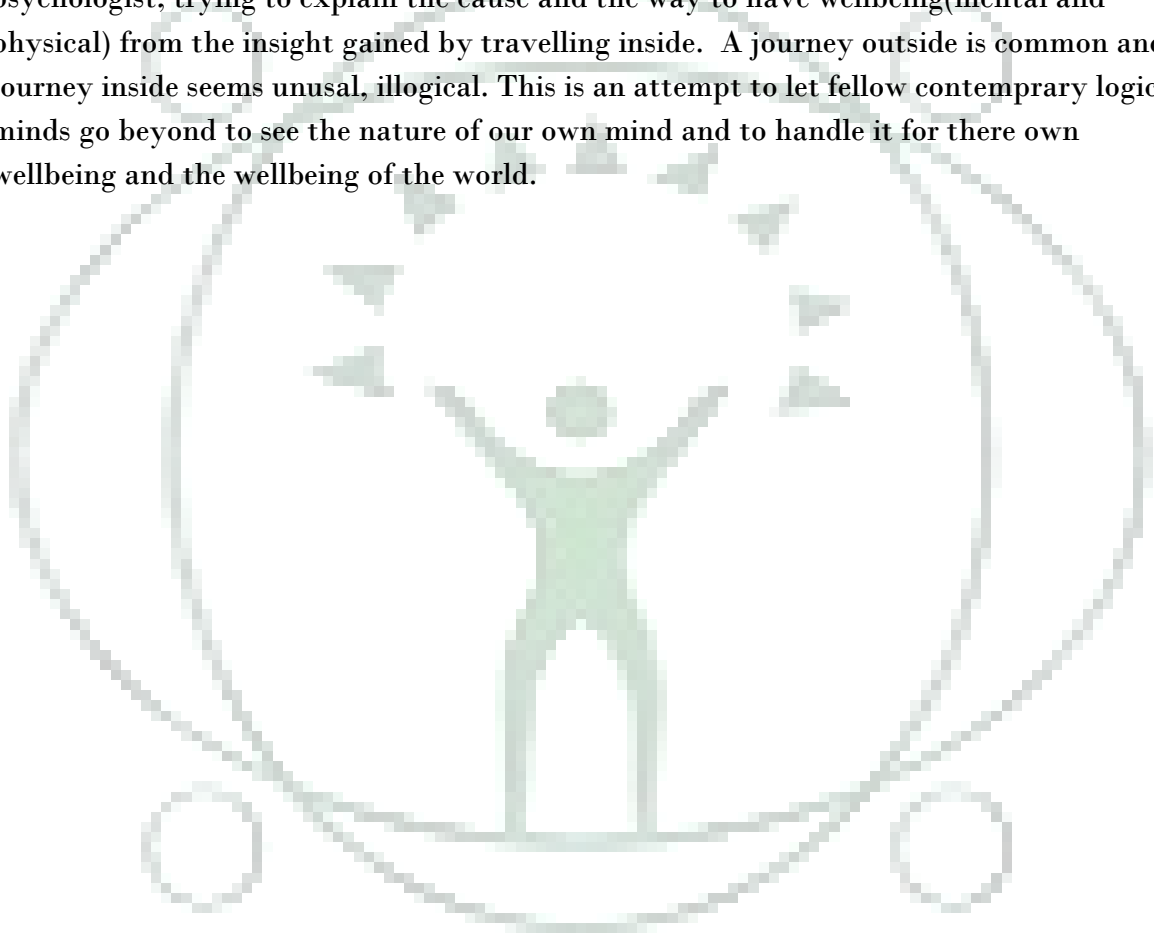
सर्वसुमना

## A JOURNEY FROM INSIDE TO INSIGHT

**Chitra. C**

Counseling psychologist

(Greater insights, unanswered questions, healings, solutions happiness, peace etc) are certain things people usually seek for, where are these treasures hidden and how to seek it? This is a talk based on personal and professional experience being a counseling psychologist, trying to explain the cause and the way to have wellbeing(mental and physical) from the insight gained by travelling inside. A journey outside is common and journey inside seems unusal, illogical. This is an attempt to let fellow contemporary logical minds go beyond to see the nature of our own mind and to handle it for there own wellbeing and the wellbeing of the world.



सर्वसुमना



# PRESENTATION ABSTRACTS

# DOMINATING SETS IN PROTEIN-PROTEIN INTERACTION NETWORKS

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Protein-Protein interactions (PPIs) are vital for explaining the structural and functional architecture of the cell. To have a wider comprehension of the mechanisms, finding driver proteins that are vital for the control of the said network is a pertinent task in systems biology. Lately, it has become a strategy to find the smallest set of driver nodes to control the whole network. To apply on networks that are undirected, Nacher and Akutsu viewed this problem from the point of view of finding the smallest dominating set. Dominating sets are widely enriched with genes that are biologically central. Nacher and Akutsu found that the speculated driver proteins using the smallest dominating set model not only pass pertinent functional features but also control the whole network. They classified the vertices into three types such as critical vertices that belong to every configuration, unnecessary vertices that do not belong to any configuration and intermediary vertices that belong to some configurations but not all. In this paper we explain the above and probe how various centrality measures such as degree centrality, betweenness centrality, subgraph centrality etc., help us to understand PPI networks.

Keywords: smallest dominating sets, centrality measures, protein-protein interaction networks

# THE RELATIONSHIP BETWEEN THE SELF-AFFIRMATION AND LIFE SKILLS FOR BETTER MENTAL HEALTH AND WELL-BEING OF YOUTH

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The purpose of this study is to investigate the correlation between self-affirmation and life skills for the betterment of mental health and well-being of youth. The rising incidence of anxiety and depression among youth is an increasing concern globally. The need for essential life skills is very important to maintain good mental health and well-being. Life skills learned from a young age help the youth to accept themselves for who they are. It helps them to resist peer pressure, face the realities of life, and compete in this world. Transferable skills also help young people affected by the crisis cope with the trauma and build resilience. Positive affirmations motivates the one who practices them regularly. Evidence-based research shows that affirmations like prayer, actually rewire the brain on the cellular level. Positive self-affirmation boost self-confidence, self-esteem, and self-worth which in turn reduces stress and anxiety. People will be able to make good decisions and have other life skills such as problem-solving, good communication, etc which will help the betterment of mental health and well-being of the youth.

**Keywords:** self-affirmations, life skills, self-esteem, youth, stress, self-worth, Mental health, wellbeing

सर्वसुमना



**PARENTING STRESS AND RESILIENCE IN PARENTS OF CHILDREN WITH TWO MOST COMMON NEURODEVELOPMENTAL DISORDERS ASD[ AUTISM SPECTRUM DISORDERS] AND ADHD[ ATTENTION DEFICIT HYPERACTIVITY DISORDER]**

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The rising prevalence of major neurodevelopmental disorders namely Autism spectrum Disorder[ASD] and ADHD[Attention deficit hyperactivity disorder}, warrants a greater level of clinical attention to best treat those with ASD @ADHD. The characteristics of ASD and ADHD lead to impairment for both the child with the neurodevelopmental disorder and his/her parents. The objective of this study is to evaluate parental stress in the ASD and ADHD groups. From the diagnosis to the employment of the child with ASD or ADHD, parents worldwide often experience difficulties, tension, anxiety, and frustration. Accepting the fact that their child has ADHD/ASD itself is a challenging aspect. To effectively treat children with ASD/ADHD, parents need to be included in the intervention efforts. When parents are included in treatment, numerous benefits are found. Apart from the medical care and therapies parents need to focus on positive, stay consistent and on schedule, put a play on the schedule, give it a time to try a lot of different techniques, take their child along for everyday activities, and get support from other families and friends. As a caregiver parents of ASD/ADHD should take care of themselves physically, mentally, emotionally, and financially. There is a need to adopt psychoeducational interventions for parents of children with ASD/ADHD, for them to be resilient.

**Keywords:** Stress, parents, interventions, Therapy, neurodevelopmental, and techniques

# COMPARATIVE ANALYSIS OF SARS-COV-2 VARIANTS ACROSS THREE WAVES IN INDIA

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In this study we carried out a comprehensive analysis of SARS-CoV-2 mutations and their spread in India over the past two years of the pandemic (27th Jan' 2020 – 8th Mar' 2022). The analysis covers four important time-lines, viz., the early phase, followed by the first, second and third waves of the pandemic in the country. Phylogenetic analysis of the isolates indicated multiple independent entries of coronavirus in the country, while principal component analysis identified few state-specific clusters. Genetic analysis of isolates during the first year revealed that though lockdown helped in controlling the spread of the virus, region-specific set of shared mutations were developed during the early phase due to local community transmissions. We thus report the evolution of state-specific subclades, namely, I/GJ-20A (Gujarat), I/MH-2 (Maharashtra), I/Tel-A-20B, I/Tel-B-20B (Telangana), and I/AP-20A (Andhra Pradesh) that explain the demographic variation in the impact of COVID-19 across states. In the second year of the pandemic, India faced an aggressive second wave while the third wave was quite mild in terms of severity. Here we also discuss the prevalence and impact of different lineages and Variants of Concerns/Interests, viz., Delta, Kappa, Omicron, etc. observed during this period. From the genetic analysis of mutation spectra of Indian isolates, the insights gained in its transmission, geographic distribution, containment, and impact are discussed.

**Keywords:** SARS-CoV-2, India, Omicron

# PERCEPTION OF LEARNED HELPLESSNESS IN RELATIONSHIPS AMONG FEMALE EMERGING ADULTS

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Learned helplessness is a state that occurs after a person has experienced a stressful situation repeatedly (Seligman; Groves, 1970). They come to believe that they are unable to control or change the situation, so they do not try even when opportunities for change become available. Female emerging adults are facing problems in their romantic relationships due to learned helplessness. However, the factors that lead to learned helplessness are obscure. Research has consistently demonstrated the perception of learned helplessness in relationships among female emerging adults.

To understand the experiences of learned helplessness in the relationship of female Emerging Adults residing to analyze whether learned helplessness in the relationship can lead to mental health tribulations. Data was qualitatively collected and analyzed using thematic analysis.

Participants of the study were identified and data were collected from 10 female participants [10 females from Bengaluru urban; age range 10 years to 25 years]. The data were thematically analyzed and interpreted based on data collected using the socio-demographic form and semi-structured questionnaire through telephonic interviews.

The results revealed there are mainly 5 patterns that can cause learned helplessness in romantic relationships of female emerging adults' perceived style of learned helplessness.

They are Societal and parental controls, battered women (Gondolf, E. W., & Fisher, E. R. 1988), physical and cognitive changes, mental health concerns (Seligman, M. E, 1975), and the role of social media.

Females are going through many stressful situations and are tolerating certain abuses. (Donohoe, M. 2003) The current study focuses on the patterns of learned helplessness in Adolescent relationships. The current study can help researchers and Mental Health professionals closely work with Youth. This will help them to have a newer insight into the concept of learned helplessness in romantic relationships.

**Keywords:** Learned helplessness, Relationships of females, Emerging Adults, Romantic relationships.

# AN INSIGHT INTO ART ANALYSIS AND THERAPY

## (Deep dive into magic of your being)

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At some point in their lives, people find themselves overwhelmed by the intensity of their emotions which are difficult to face either by themselves or with others. Art analysis and therapy offers an opportunity to explore these intense or painful thoughts and feelings in a supportive environment. It is an opportunity for expression and communication without recourse to words can enable a person to see more clearly the nature and extent of the problems with which they struggle.

Art therapy is the overlapping of three distinctive fields of study – art, art education and psychology. As Cathy Malchiodi states, “the visual expressions, creative process, human development, behavior, personality and mental health, among others, are important to the definition and scope of art therapy.”

There are two different approaches to art therapy: the art psychotherapy approach and the art as therapy approach. Art can also be used as a diagnostic tool as part of the therapeutic process.

There are 2 meanings for the topics asked to draw. One is the objective meaning which always remains the same. The other is the subjective meaning which differs with every person. Thus, drawing analyst can tell your background behavior and many crucial aspects of your personality.

*A PICTURE IS WORTH THOUSAND WORDS*

# GRAPHOLOGY: AN INCLINATION TO PROFESSION

*Pooja Renukdas*

**Grapho-therapist & Handwriting Analyst**

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Graphology is an in-depth study of **writing by hand** (and not typing) to express our inner feelings and thoughts on a piece of paper. Our handwriting is a key indicator that reflects our mind. So, a regular practice of expression through handwriting helps in balancing the function of our hand, brain and mind, to lead a successful and peaceful life.

Graphology also acts as a **diagnostic science** to identify several obvious and subtle aspects of the human personality that can affect his profession. Factors like mental and emotional patterns are easily tracked under the guidance of an advanced trainer.

Among many other approaches, Graphology can give us a clear insight into the personality with respect to accountability, loyalty, honesty, integrity etc. and help us analyze, understand, diagnose and implement it as a part of his profession.

**Some examples of different categories of profession are:**

No.	Profession	No.	Profession
1	Finance	5	Creative
2	Teaching	6	Psychology
3	Technology & Telecom	7	Social Work
4	Medical		

This article interestingly illustrates how Graphology can guide the right profession based on its personality to an individual and help achieve success through it.

## TARGETING GMBADH2 GENE SPECIFIC MUTATION AND DESIGNING OF ALLELE SPECIFIC MARKER FOR AROMA

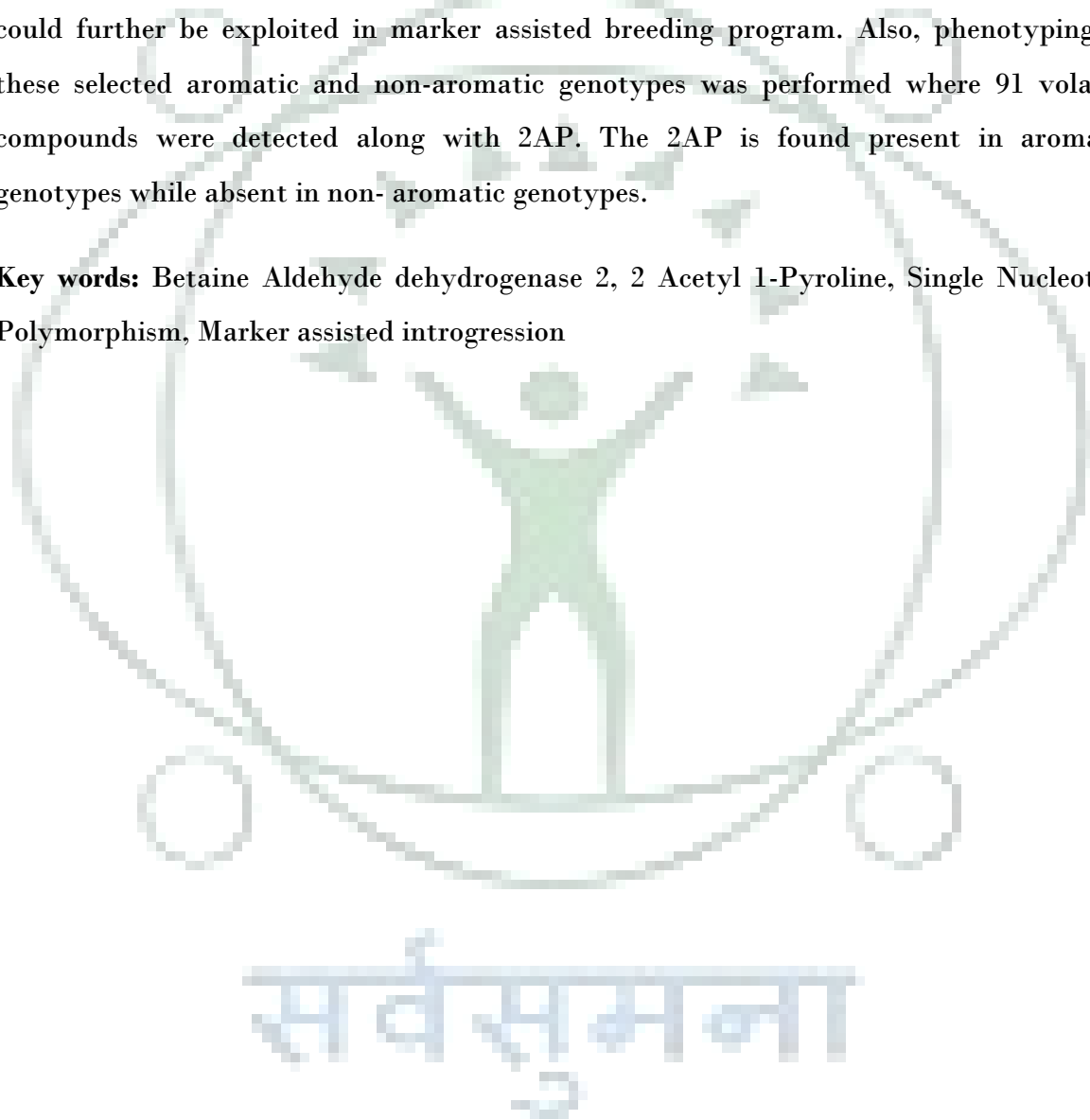
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Vegetable soybean is gaining popularity in recent days due to its sweeter taste, bold seeds, extra-large pods and high nutrient content. If it is added with fragrance, then it will be formidable than grain type soybean. The BADH2 gene encoding for betaine aldehyde dehydrogenase 2 is contributing for synthesis of 2-acetyl-1-pyrroline (2AP), a principle aromatic compound. In soybean SNP in exon 10 of GmBADH2 gene is responsible for aroma. The present investigation is carried to find mutation targeted to fragrance allele. Characterization of vegetable and grain type soybean was carried out using SNAP based marker. Allele specific primer GmBADH2-G2 showed polymorphism comprising with 200bp new allele in vegetable soybean, AGS-464. The amplicon obtained in PCR from grain and vegetable type genotypes were sequenced. Sequence alignment revealed single nucleotide polymorphism in triplet codon AAA (Swarna soya) in place of CAA (AGS-464)

distinctly in exon 10 region. This changes amino acids from Lysine (AAA) to Glutamine (CAA). The PCR primer targeted to mutation could be used further for marker assisted introgression of aroma. Sometimes, mutation in intronic region might be responsible for fragrance in soybean. For avoiding exclusion of single base pair mutation in BADH2 gene, further primers were designed targeting entire exonic and intronic region of BADH2 gene. The primer(s) showing distinctness among aromatic and non-aromatic genotypes could further be exploited in marker assisted breeding program. Also, phenotyping of these selected aromatic and non-aromatic genotypes was performed where 91 volatile compounds were detected along with 2AP. The 2AP is found present in aromatic genotypes while absent in non- aromatic genotypes.

**Key words:** Betaine Aldehyde dehydrogenase 2, 2 Acetyl 1-Pyrolone, Single Nucleotide Polymorphism, Marker assisted introgression



# STUDY OF YOGA IN INDIAN PSYCHOLOGY

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Indian psychology encompasses the profound intellect, knowledge, thought, spiritual-psychological understanding and underlying philosophy rooted for centuries in the Indian sub-continent. The tradition of yoga has been the very part of Indian system for ages. Explicit reference of Yoga dates back to pre-Vedic period. In traditional yoga, specific and systematized approach to both theory and practice has been postulated through Sutras and Shastras. While modern yoga focuses mainly on the physical aspect, limits it to physical activities and emphasizes posture practice or asanas, traditional Indian view professes a holistic approach. Yoga is said to encompass psycho-physiological, spiritual dimensions, and is linked to metaphysical and parapsychological phenomena. Of late, integrating and incorporating ancient yoga principles in the practice of yoga and yoga-based therapies has been the focus of research interest.

The objective of Yoga, as per Indian classical tradition is the attainment of moksha or kaivalya. Psychological sufferings or kleshas bind humans, inhibit the pursuit of self-realization and acquirement of true knowledge. Unification of the mind and consciousness, bringing a sense of oneness, harmony and salvation from human miseries is achieved through the practice of yoga. Indian psychological view not only limits to conscious efforts in achieving the physical health, mental wellbeing and cognitive benefits of yoga but also looks beyond, into the origin of human agony and aims at alleviating the unconscious factors affecting, manipulating conscious self and behaviour. Negative mental blockages, suffocating emotional baggages, clinging, unreal attachments leading to sorrow is removed and replaced by the light of freedom and self-attainment.



# DECODE THE SECRET TO MENTAL HEALTH THROUGH PRANAYAMA

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The Sanskrit word pranayama has been defined as the method of control and expansion of energy. In the developing/developed countries stress and life style has made the people to accept anger, frustration, fear and other negative emotions. This has made the human being to forget his real nature ie.HAPPY. The only way to bring back balance in our lives is to go back to our roots and start embracing the ancient breathing techniques popularly called as Pranayama. Pranayama is regarded as a science. It's believed that you can control the power of your mind through regulating your breath. The ancient Yoga texts will help the human being to understand the real nature and how to control our mind with all the above-mentioned emotions. The ancient texts also gives certain practices to control our breath /prana. In the current review details from ancient yoga texts and Upanishads will be discussed for the benefit of mankind.

सर्वसुमना

## UNDERSTANDING THE EFFECT OF SOCIAL MEDIA USE ON SELF-ESTEEM AMONG SENIOR SECONDARY SCHOOL STUDENTS IN DELHI-NCR.

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With the advent of social media, it has been commonly observed that the younger crowd has been drawn to it in a vast majority. Accompanying this increased engagement with various social media platforms, is an incumbent need to study the varied effects that the use of social media can have on a young mind. We need to navigate the milieu of trajectories that excessive use of social media can have on the mental health of an individual. It has been commonly observed that the younger generation uses social media as a medium in their identity formation and one of the key aspects of this is the development of self-esteem. Each like and appreciate comment on one's social media posts act as a reward toward developing a positive sense of self-esteem. On the other hand, lack of acknowledgement from one's peers can prove detrimental to one's self-esteem. This study aims at understanding the effect of social media use on self-esteem among Senior Secondary school students in Delhi-NCR. Some of the objectives of the study are, to examine the relationship between social media use and self-esteem among Senior Secondary school students of Delhi-NCR, to compare gender differences in social media use among Senior Secondary school students of Delhi-NCR, and to compare gender differences in self-esteem among Senior Secondary school students of Delhi-NCR. The study is conducted on 100 students, 50 male students and 50 female students, studying in senior secondary level at schools located in Delhi-NCR. Data collection is conducted using Rosenberg Self-Esteem Scale (RSES) and Social Networking Time Use Scale (SONTUS). The data analysis is done through JAMOVI, open-access statistical software. Based on existent literature, some expected outcomes of the study are that excessive use of social media will have a negative impact on one's self-esteem. Male school students spent more time on social networking sites than female school students. Female school students will have lower self-esteem when compared to male school students. Therefore, the results of this study shows the effect of social media use on self-esteem among Senior Secondary school students in Delhi-NCR.

**Keywords:** *school students, self-esteem, social media use, young, gender*

## GRAPHOLOGY: ULTIMATE HEALER OF 7 CHAKRAS

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Graphology is an in-depth study of **writing by hand** (and not typing) to express our inner feelings and thoughts on a piece of paper. Our handwriting is a key indicator that reflects our mind. So, a regular practice of expression through handwriting helps in balancing the function of our hand, brain and mind, to lead a successful and peaceful life.

Graphology also acts as a **therapeutic remedy** to overcome several obvious and subtle aspects of the human mind that affects the body. Factors like mental and emotional mood swings are easily tracked and healed under the guidance of an advanced trainer.

Among many other approaches, Graphology is a holistic approach in **cleansing 7 chakras** of our body. To analyze, understand, diagnose and implement appropriate therapeutic remedy, a complete study of an individual is most essential, through their handwriting.

We can then easily track the **effective and affecting impacts on the 7 chakras**.

No.	Place in our body	Name	No.	Place in our body	Name
1	Root Chakra	Muladhara	5	Throat	Vishuddha
2	Sacral Chakra	Svadhistan a	6	Third eye	Ajna
3	Solar Plexus	Manipura	7	Crown	Sahasrara
4	Heart	Anahata			

This article interestingly illustrates how Graphology is an ultimate healer of 7 chakras.

# INDIAN-COVID-19 CT DATASET: EVALUATING GENERALIZABILITY OF DEEP LEARNING MODELS

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Computer tomography (CT) have been extensively used for the diagnosis of lung diseases, and recently for COVID-19 during the pandemic, to identify and classify various stages of the disease with promising results. Research efforts worldwide for automatic processing of CT scan images using machine learning (ML) approaches have been affected due to limited publicly available COVID-19 data. Further, there have been concerns over the generalizability of deep learning models on external datasets. To address these issues, in the present work we provide an open-source repository containing 3D CT volumes along with curated 12096 chest CT images of 288 COVID-19 patients from India. In this work, a lightweight convolutional neural network (CNN) model and four state-of-the-art deep learning (DL) models, *viz.*, ResNet-50, Inception-v3, VGG-16 and EfficientNetB7 are trained on one of the largest public datasets, COVIDx-CT, for the task of classifying CT images into three classes, *viz.*, normal, non-covid pneumonia, and COVID-19. Performance comparison of the five models is presented on (i) hold-out test set of COVIDx-CT, and (ii) the external Indian-COVID-19 CT dataset. Our analysis show that the performance of CNN is comparable to deep learning models on COVIDx-CT. On the external Indian-COVID-19 CT dataset, all the models underperformed as expected. However, the drop was lower for the CNN model indicating that it is better generalizable compared to other DL models. From this analysis we show that for real world applications with limited and noisy data, there is a need for proposing reliable models and test sets for benchmarking. The data and code are available at <https://github.com/aleesuss/c19>.

# **MULTIPLE CASE ANALYSIS ON WORK-FAMILY CONFLICT AND FINANCIAL STRESSORS AMONG COVID SURVIVED NEWLYWEDS**

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India's marital culture is evolving over time. Relationship boundaries are becoming more diffused as a result of nuclear families, women being monetarily independent, and a reduction in social inhibitions. Due to Covid-19, a rapid shift happened to work culture, where the bridge between work and family environment largely dissolved which started affecting the routines and personal and family space of the employees. The rise in price of commodities due to war and pandemic also has heightened the financial burden of many middle-class families. In this research, multiple case analysis method (N=2) is used to ponder the issues related to work-family conflict and financial management of Covid survived dual career couples and how they try to tackle these issues using their coping skills with reference to PERMA model. With better coping mechanisms, couples will better adapt and remain flexible to changes which boost their personal wellbeing and marital happiness. This research helps to analyse the strategies adopted by Covid survived dual career couples for dealing with their stressors and to assess their coping skills which gives a framework to assist those who go through similar situations.

सर्वसुमना

# ASSOCIATION BETWEEN MINDFULNESS, TRIGUNA AND CHRONOTYPE : A CROSS-SECTIONAL STUDY AMONG UNDERGRADUATE STUDENTS

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Mindfulness is an adaptive self-regulatory skill associated with Physical and Mental Well-being. Triguna refers to the proportional prevalence of three gunas (Sattva, Rajas and Tamas) among people. Chronotype is the bodily preference to get into Psychophysical activities and sleep wake cycle during a typical 24 hours day . In this research, our aim was to study the relationship between Mindfulness, Triguna and Chronotype related variables among undergraduate students. For this purpose, a sample composed of 313 participants were recruited through an online survey and were invited to fill out the Five Facet Mindfulness Questionnaire(Short Form), the Vedic Personality Inventory and the Composite Morningness Questionnaire. Regarding mindfulness and Triguna measures, the results indicated that Sattvica showed higher levels of “acting with awareness” than the people with more of Rajas and Tamas. People with morning chronotype are found to exhibit more of Sattva guna and Evening type, more of Tamasic Gunas. Additionally, morning - types presented higher levels of “mindfulness” than intermediate and evening-types. In sum, mindful people showed higher association with Sattvic Characteristics and Morningness. Further systematic studies are needed to understand this association better and develop psychological interventions based on this.

**Keywords:** Mental well being, Gunas,Chronotype

सर्वसुमना

# PROTEIN BINDING CLASSIFICATION OF DNA SEQUENCES USING CNN-BIDIRECTIONAL LSTM

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In recent years, the ability of feature extraction of deep learning models has increased. This ability is used to extract high-level features from minimum preprocessing. We have used Convolutional Neural Networks, Convolutional Neural Networks -Long Short-Term Memory, and Convolutional Neural Networks -Bidirectional Long Short-Term Memory for performing the classification of DNA sequences. While doing the classification, we considered the sequences as text data. To represent sequences as input, we used one-hot vectors. By doing this, it preserves the necessary position data of nucleotides in sequences. This project has used the DNA Binding Protein sequence dataset and various metrics are used to evaluate the models. The conclusion we came to after overviewing the results is that CNN-Bidirectional LSTM showed high accuracy of 99.5 %.

**Keywords:** DNA, LSTM, Protein binding

सर्वसुमना

# **AN EFFECTIVE ARCHITECTURE FOR PREDICTION OF SEVERITY LEVELS OF ANXIETY,DEPRESSION,STRESS DURING THE DISSEMINATION OF SOCIAL MEDIA INFODEMIC AT THE TIMES OF COVID-19 USING MULTICLASS CLASSIFIER**

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During COVID-19, an infectious disease caused by the SARS-CoV-2 virus that spread across the world, a huge amount of the population got affected. It is directly affected to the mental and physical health of every stage of age and hence thereby immensely affects the work-life balance either directly or indirectly. Almost one year was the life changer phase of everyone's life. The mental state was affected due to financial issues, relational issues, environmental issues and some constrainable issues related to prevention from COVID-19. Some sort of pressure of survival in the profession and personal life is the big challenge for everyone, nowadays. During the lockdown period, frequent access of news channels, online and social media give birth to anxiety and stress. Increase in the media sources and variety of information presented on the single topic leads to develop multiple questions in our minds. Infodemic plays the vital role as the various information sources like news channels, social media, E- newspapers provides excessive information out of which some are essential for us but some information are un-essential and such un-important information has become the high risk for the mental health of individuals. In this research, we will attempt to analyze the various types of media content impacting mental health of the individual during COVID-19 therefore affecting the work life balance. As a part of this, we analyze different social media contents which are the part of infodemic and will apply data science techniques to analyze that the which part of information is misinformation in the terms of affecting mental state of anyone.

**Keywords:** COVID-19, Infodemic, Stress, Depression



# A SYSTEMATIC REVIEW OF ROUTE OPTIMIZATION FOR AMBULANCE ROUTING PROBLEM

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**Abstract.** Ambulance Routing Problem (ARP) is the part of Emergency Medical Services (EMS), which provide timely medical help for those who are in need. In Medical emergency situation, the key concern is, to provide early treatment. Relocating patients quickly to neighboring medical facilities is extremely difficult given the existing traffic situation and has to be rectified. A lack of EMS owing to urbanization and several routing considerations such as the precise location of the request, traffic problems, road width, and ambulance locations are few of the difficulties. This paper summarizes a number of recent studies on ARP in routing and the issues they raised. In this survey, Routing for Ambulance vehicles is categorized as initiating ambulance from depot to injured location (response Time) and routing from injured location to nearby medical Centre (Travel Time). And, we highlighted challenging issues and constraints related to route optimization in both above mentioned category. Also emphasized the less explored research area like Interfacility hospital transfer and importance of incorporating safety metrics during Ambulance Routing.

**Keywords:** Ambulance Routing Problem, Emergency Medical Services, Routing, Response Time, Safe Ambulance Routing, Route Optimization

सर्वसुमना

## EFFECT OF SIDDHA COMPOUND ON CARDIAC DISEASE ON AVIAN MODEL

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The heart is the body's most vital and irreplaceable organ. Cardiac arrest can occur as a result of the heart's irregular and unconditioned beating. Arrhythmia and ischemia are two types of cardiac arrest. Siddha components are one of the most effective natural cures for a number of chronic conditions. Many different types of siddha components are used to cure a number of disorders. To treat cardiac diseases, this initiative concentrated on six specific siddha components (Elettaria cardamomum (Elam), Withania somnifera (Ashwagandha), Bacopa monnieri (Brahmi), Terminalia arjuna, Boerhavia Diffusa, and Ficus religiosa). The study involves isolating and culturing chick heart cells, as well as examining the efficacy of siddha components after purposefully generating various chemicals. As a positive outcome of the research, after generating chemicals, the effect of siddha components has a favourable influence on cardiac cell beating. As per the observation Withania somnifera is comparatively more effective for cardiac arrhythmia and Boerhavia Diffusa is comparatively more effective for cardiac ischemia.

**KEYWORDS:** Cardiac arrest, Arrhythmia, Ischemia, Siddha components.

सर्वसुमना

**IN-SILICO CHARACTERIZATION OF PATHOGENIC PROTEIN OF  
FUSARIUM OXYSPORUM F. SP. LYCOPERSICI AND  
ANTAGONISTIC PROTEIN OF TRICHODERMA SPP. AND THEIR  
DOMAIN.**

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*Fusarium oxysporum* f.sp. *lycopersici* (*Fol*) is a major problem for tomato plants, causes wilt. However, *Trichoderma spp.* is a biocontrol agent that is reported as an antagonist for major plant pathogens. For further research, we also analysed the antagonistic behaviour of *Trichoderma spp.* against *Fol*. We have now studied the properties of the proteins and domains of both (*Fol* and *Trichoderma spp.*). *Fol* conserved type domains in pathogenic proteins such as *AhpC-TSA*, *Redoxin* from *pfam*, and other small domains also have been involved, named ZnF\_CHCC domain, Prim\_Zn\_Ribbon domain, PSA domain, Knot1 domain, WR1 domain, LRRCT domain, Agouti domain, CXC domain, TRASH domain, and ACR domain. *Trichoderma spp.* also contained varying types of domains, named A\_NRPS\_SidN3\_like, endochitinase, FUM14\_C\_NRPS-like, and EntF. Acyl-activating enzyme (AAE) consensus motif and Acyl transferase domain in polyketide synthase (PKS) enzymes used in domain function of *Trichoderma spp.*, as well as binding site types involved in domain function, such as pPant arm binding sites, AMP binding sites, and Phosphopantetheine attachment sites. All *Trichoderma spp.* domains that are antagonistic to *Fol* due to the endochitinase and secondary metabolites domains are available. Understanding the pathogenic behaviour of *Fol* and the antagonistic behaviour of *Trichoderma spp.* at the molecular level, this information will be useful in the future.

**Keywords:** *Trichoderma spp.*, AMP binding, polyketide synthase

## DEVELOPING A DIGITAL THESAURUS FOR KOKBOROK LANGUAGE

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Usage and meaning of words in a sentence in Kokborok language (ISO 639-3:trp, Ethnologue) highly depends on context of the word used. Simple dictionary representation of word meanings in Kokborok language cannot be directly used in a sentence. Therefore development of thesaurus is of high importance as it will provide for structured usage of terms and phrases. Further, the thesaurus can help in indexing, searching and mining Kokborok terms in documents. In this paper, we describe the development of framework of digital Kokborok thesaurus by using the Koktipra database (Koktipra Online Dictionary) consisting of 41,308 words of which 2765 verbs have been identified and represented. This will considerably facilitate the ease of using or writing in Kokborok language.

**Keywords:** Digital Thesaurus, Kokborok language, Koktipra dictionary.

सर्वसुमना

# **GENOMIC PROFILING OF NEUROPSYCHOLOGICAL DISORDERS IN KORAGAS, AN ABORIGINAL TRIBAL POPULATION FROM DAKSHINA KANNADA, KARNATAKA.**

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India is a diverse and its genetic diversity resulted in enormous group of indigenous, aboriginal tribal groups. Endogamy is helping the tribal populations to save their genetic integrity. The diseases are also showing variation with specific populations.

In this study, we focused to assessing and understanding the neurophysiological and Neuropsychological disorders among a tribal population of Dakshin Kannada, Karnataka. Genotyping data of the individuals acquired through invasive sample collection and computational methods.

648465 SNPs were analyzed against the SNPs associated with 6 disorders named Nicotine dependence (43), Hypertension (38), Alcoholism (49), Substance abuse (6), Schizophrenia(39)and Depression(57).

The curation and analysis-based results lead to make the genomic profiling and the generation of molecular Genetic Report which will helpful for the population to raise their health standard.

**Keywords:** Karnataka, Endogamy, SNPs

## GERIATRIC CARE THE NEW NEED

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Health definition as per WHO is “A complete state of physical, social and mental well-being and not merely the absence of diseases or infirmity”. Today’s major concern is rapid increase in mental health problems especially in older adults referred to as ‘Geriatric mental disorder’ or ‘Geriatric depression’ which is increasing globally as well as in India.

This paper talks about the possible reason for mental disorder in older adults especially in the developing countries like India, tries to throw light on how ‘Geriatric depression’ can lead to various psychological and physiological disorders and measures to be taken to maintain a healthy state of mind.

A major highlight of this paper is – ‘Depression due to Loneliness as children fly abroad’. The trend of sending children to foreign countries/children choosing to relocate to foreign land has skyrocketed leaving behind the elders clueless about their future journey.

In old age, people experience profound changes be it physical, emotional and also face challenges that include modifications in their roles, retirement and the death of their loved ones. Children moving abroad, abandoning their parents in home town or old age homes has resulted in an additional stress.

PICO (Parents in India and children abroad) has led to Psycho-Social problem where in loneliness syndrome leads to anxiety and depression.

The current findings say that if these stress issues continue, it can lead to serious health disorders like depression which causes physiological problems like feeling tired, loss of appetite, pain, low mood, constipation, loss of interest in life, sleep issues. This can further lead to deadly diseases like Alzheimer’s disease or Dementia or some may even think of ending their life.

This paper emphasizes about how being mentally healthy can significantly impact psychological, emotional, and social well-being and how they are inter-related.

Empowering the older adults, trying to change their outlook towards ageing, balancing their physical-mental-social well-being and how to lead an anti-depressive life are the areas that will be discussed in this article.

There is a need for geriatric care and one need to be responsible enough to make necessary arrangements and not merely warehouse the elders in health care units or old age homes. Let's be more responsible and mindful about taking care of our older generations.

**Keywords:** geriatric, Dementia, Alzheimer's, depression, old age



सर्वसुमना

# EXPLORING HUB GENES IN LUNG CANCER USING INTEGRATED BIOINFORMATICS ANALYSIS

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Lung cancer is a serious health issue worldwide causing death men than women. The environmental and genetic factored in metastasis primary lung cancer. The survival rate patient improved by identification hub genes lung cancer with bioinformatics tools. The present study was to determine the biological pathway and PPI network by identification the biomarker hub genes lung cancer. The GSE84797, GSE28827, and GSE115456 were retrieved from GEO attained upregulated and downregulated by GEO2R tool. Enrichment analysis DEGs analyzed used DAVID server. PPI network and hub genes was constructed by STRING, Cytoscape and cytoHubba. The OS and expression level were retrieved by KM plotter server and GEPIA2. Results obtained 3 DEGs dataset by GEO2R with  $-1.0 \leq \log FC \leq 1.0$ . Upregulated and downregulated DEGs presence for GO and pathway enrichment analysis. The PPI network and hub genes identification done with cutoff  $>0.9$  obtained KRT5, KRT13, KRT17, KRT16 KRTI5 , C5, PPBP, CXCL2, CCR9, and CCR7 .The OS done analyzed showed hazard ratio while expression level presented the different gene of LUSC/LUAD and normal tissues. The hub genes help in understanding the system biology of cancer through the identification network of protein interaction and hub gene identification lung cancer for classified the medicine and early diagnosis cancer.

**Keywords:** Primary Lung Cancer, PPI network analysis, Overall Survival analysis, Hub genes



# IDENTIFICATION OF BIOMARKERS IN KEY GENE PREDICTION IN LUNG CARCINOMA

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Lung cancer is a serious health issue worldwide causing death men than women. The cells of the respiratory epithelium are the cause of lung cancer. The survival rate patient improved by identification hub genes lung cancer with bioinformatics tools. The purpose of this research aimed to investigate the PPI network of lung cancer and to identify the cellular component, biological process, and molecular function of gene expression. The discovery of hub gene biomarkers, on the other hand, aids in the investigation of overall survival and the occurrence of lung cancer expression. The GSE176348 and GSE85841 were retrieved from GEO attained upregulated and downregulated by GEO2R tool. Enrichment analysis DEGs analysed used DAVID server. PPI network and hub genes was constructed by STRING, Cytoscape and cytoHubba. The OS and expression level were retrieved by KM plotter server and GEPIA2. Results obtained 3 DEGs dataset by GEO2R with  $-1.0 \leq \log_{2}FC \leq 1.0$ . Upregulated and downregulated DEGs presence for GO and pathway enrichment analysis. The PPI network and hub genes identification done with cut-off  $>0.9$  obtained ADH1B, CAV1, GSTA1, ADH1C ADH1A, CXCL12, FGF1, PPARG, FGF2, and IL1A. The OS done analysed showed hazard ratio while expression level presented the different gene of LUSC or LUAD and normal tissues. Through the identification network of protein interaction and hub gene identification lung cancer for classified medicine and early diagnosis cancer, hub genes aid in understanding the system biology of cancer.

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**Keywords:** Lung Cancer, PPI network, DEGs, Hub genes, STRING, Cytoscape, GEPIA2

# ESTABLISHING PHYLOGENETIC PROFILE AND IDENTIFICATION OF FUNCTION AND LIGANDS FOR *MYCOBACTERIUM ULCERANS* MICROBIOME

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In this study, the buruli ulcer causing microbiota is being used. Buruli ulcer has *Mycobacterium ulcerans* as its primary cause. Using Metatranscriptomic sequencing, the taxa and functional profile of the microbiome is identified. Again, the receptor genes involved in Buruli ulcer is taken and using computer aided drug design, the novel ligands from Ayurvedic medicinal plants *Jatropha curcas L.*, *Aloe vera (L.) Burm. f.*, and *Capsicum annum L.* are used for molecular docking. Further, in-vitro and in-vivo studies can be done on the selected ligands to prove their efficiency as drugs for the disease.

**Key Words:** *Mycobacterium ulcerans*, Buruli ulcer, Microbiome, Metatranscriptomics, phytocompounds, Molinspiration software, Patchdock tool, Docking, ADME analysis

सर्वसुमना

# IN-SILICO ANALYSIS FOR THE IDENTIFICATION OF DIFFERENTIAL EXPRESSED GENES AND CANDIDATE BIOMARKERS IN KAWASAKI DISEASE

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Kawasaki illness is an acute febrile systemic vasculitis with a complex aetiology involving genetics and environmental factors that affects children younger than five years. Genetic association and genome-wide association studies (GWAS) have paved the way for better comprehension of the molecular machinery intrinsic to Kawasaki's malady. In this study, 1,354 DEGs for Kawasaki's disease were found in the Kawasaki disease's group, with 20 genes upregulated and 15 genes downregulated. According to the GO analysis performed, the DEGs for Kawasaki's disease have been compiled in the categories of immune response, inflammatory response, cellular response to lipopolysaccharide, positive regulation of nf-kappab transcription factor, positive regulation of T-cell proliferation, positive regulation of inflammatory response, innate immune response, positive regulation of interleukin-12 production, aging, and bacterium defense response. Furthermore, KEGG pathway analysis has revealed that Kawasaki's disease shares top enriched pathways, including Malaria, Leishmaniasis, Rheumatoid arthritis, Tuberculosis, Chagas's disease, Allograft rejection, Inflammatory bowel disease, Cytokine-Cytokine receptor interaction, Graft-versus-host disease and Phagosome. The current work was based on using an integrated and assimilated analysis strategy to find the DEGs as well as other biological machinery, roles and functions that are shared by KD, thereby improved the understanding of the disease's pathophysiology. Furthermore, these findings might lead to identification of potential and probable biomarkers for the differential diagnosis of KD, as well as therapeutic targets for the development and expansion of new Kawasaki disease's treatments.

**Keywords:** Kawasaki's disease, GWAS, KEGG pathway analysis, inflammatory response, Transcription factors, enrichment pathways.

# PERFORMANCE ANALYSIS OF CLASSIFICATION ALGORITHMS BASED ON GRAPH KERNELS FOR DIAGNOSING AUTISM SPECTRUM DISORDER (ASD)

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This study deals with the performance analysis of some of the Graph-based kernel methods for Autism Spectrum Disorder (ASD) classification problem.

In the literature, most studies on complex network analysis involve graph modelling and graph-theoretic analyses. To name a few, Social Networks, Protein interaction networks, Hydrocarbon Structures and Brain networks widely use graph-based methodologies. In brain network analysis, graphs are used to model both the structural and functional connectivity of brain regions. Among the various brain disorders, Autism Spectrum Disorder (ASD) is a condition related to neuro-development from a very young age. It impacts the social and cognitive abilities of an individual. The problem of diagnosing a subject to be autistic is quite challenging and requires a deep analysis of both the structural and functional connectivity of brain regions. In the proposed study, the problem is formulated as a graph classification problem, wherein the structural and functional similarities of the brain networks of different subjects are analysed, using their fMRI scan images. Graph Kernels are a class of similarity functions that provide significant properties for learning algorithms and have been proved to perform well in classifying protein networks and gene networks. Motivated by such studies, in this paper, we attempt to develop classification algorithms that use graph kernels for the ASD classification problem. The main idea is to decompose a graph  $G$  into substructures and define a kernel  $K(G, G')$  as a combination of substructural similarities. The Autism Brain Imaging Data Exchange (ABIDE-I) dataset is used for the proposed study. The dataset consists of real-time functional Magnetic Resonance Image (fMRI) data collected through 17 international sites. The raw 4-dimensional data is converted to 2-dimensional data by

logical parcellation of fMRI signals using the Harvard-Oxford brain atlas and used for further analyses. The following observations have been made based on the experiments conducted on graphs obtained from healthy controls and subjects with ASD: The running time of Shortest path kernel method is  $O(n^4)$  and it performs with an accuracy of 51.92%, whereas random walk Kernel based algorithm takes  $O(n^6)$  time and performs with an accuracy of 57.62%. The Weisfeiler-Lehman graph kernel method of  $h$  iterations takes  $O(hm)$  time and provides an accuracy of 51.62%. Weisfeiler-Lehman optimal assignment kernel method gives an accuracy of 56.3%.

Though Graph kernel-based classification algorithms have been shown to perform well in protein networks and gene networks, the accuracy is pretty lesser in the case of brain networks. However, based on the literature, graph kernels are known to be good quantifiers for measuring the similarity of graphs and do not require separate feature extraction process. Thus, considering the larger size and structural complexity of the graphs generated from brain networks, the present study suggests that these methods are more appropriate for ASD classification problem, with a suitably modified kernel definition, resulting in good accuracy.

**Keywords:** Autism Spectrum Disorder (ASD), ABIDE-I, graph kernels, shortest path kernel, random walk kernel, Weisfeiler-Lehman kernel.

सर्वसुमना

# IN – SILICO ANALYSIS OF SNPS AND 3'UTR ASSOCIATED MIRNAS IN GENES FOR STUDYING THE PATHOGENESIS OF EPILEPSY

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Epilepsy is a neurological disorder though not a communicable one. In this disease the nerve cell activity gets disturbed in the brain. It may be caused due to the genetic disorder or any kind of brain injury. Despite many researches the causes of this disease are still not known. In this quest in this paper an attempt is made to understand the single nucleotide polymorphism and its effect on the causal protein.

Different bioinformatics tools (online servers) were used to foretell the effect of the SNP on structure and functioning of the proteins used here. miRNA founded in the UTR regions of the proteins (GABARAP ZDHHC3 NLGN2) were also defined.

The current study illustrates that rs2134510, rs367707073, and rs372747001 for GABARAP protein, rs150545990, rs201481724, rs201972977, and rs376668595 for NLGN2 gene and rs140002813, rs143591132 and rs376006143 for ZDHHC3 may have role in the disease. Thus these mutations might be responsible for the pathophysiology of the disease.

**KEYWORDS:** *Epilepsy, GABARAP gene, NLGN2 gene, ZDHHC3 gene, SNPs .*

सर्वसुमना

# IDENTIFICATION OF TAXA WITH FUNCTIONAL PROFILE AND NOVEL LIGANDS FOR TETANUS METAGENOME

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Tetanus is a severe disease caused by *Clostridium tetani*, a ubiquitous, spore-forming, gram-positive bacillus found in higher concentrations in soil and animal excrement. It is characterized by generalized rigidity and convulsive spasms of skeletal muscles. It is compulsory preventable by immunization and adequate wound management. The TetR gene immediately upstream from the tetanus toxin (TeTx) gene was characterized. Improved vaccination, particularly of pregnant women and infants, has resulted in a reduction of tetanus in women particularly in the child bearing age, neonates and children. The WHO targeted maternal and neonatal tetanus for elimination in 2000. However, in mid-2015, 21 countries still failed to eliminate maternal and neonatal tetanus and the disease continues to be a public health problem. Tetanus treatment requires modern intensive care facilities, but not withstanding, case fatality rate remains high (>10%).

In this work, gene responsible for tetanus is retrieved from SRA database. Using metagenomic sequencing, identified taxa and functional profile of microbiome was identified. Then the receptor genes involved in tetanus disease was taken and using drug design, the novel ligands from Ayurvedic medicinal plants was done.

**Keywords:** SRA database, Tetanus, *Clostridium tetani*,

सर्वसुमना

# FUNCTIONAL PATHWAY INFORMATION AND IDENTIFICATION OF NOVEL DRUGS FOR BRUCELLOSIS

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Familial Mediterranean Fever (FMF) is a genetic disorder that causes recurrent episodes of fever that are typically accompanied by pain in the abdomen, chest, or joints. It most often occurs in individuals of Mediterranean and Middle Eastern descent, and the first episodes typically begin in childhood. Mediterranean fever causing microbiome is taken in this work. Brucella species is the causative factor for Mediterranean fever. Using Metatranscriptomics sequencing, identified the taxa and functional profile of the microbiome is identified. Again, the receptor genes involved in Mediterranean fever is taken and using computer aided drug design, the novel ligands from Ayurvedic medicinal plants Salvia sclarea, Allium sativum, Caraway, Eucalyptus globulus, Humulus lupulus. Further, invitro and invivo studies can be done on the selected ligands to prove their efficiency as drug for the disease.

**KEYWORDS:** Mediterranean fever, microbiome, Metatranscriptomics, taxonomy, functional profile, gene receptors, docking, ayurvedic medicinal herbs.

सर्वसुमना



# **IDENTIFICATION OF EXPRESSED, MUTATED GENES AND BINDING SITES OF DNA-ASSOCIATED PROTEINS IN NEUROBLASTOMA**

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Neuroblastoma is developed in nervous system of babies and young children's which is rare and can commence with abdomen in adrenal glands and sympathetic nerve ganglia. In this cell become abnormal which further forms tumor. This grows and spread quickly as compared with another tumor. A mutation causes change in neuroblasts gene, in which cells grow and divide uncontrollably. ALK or PhoX2B gene is involved for mapping of genome. Metatranscriptomics was done to analyse intratumor microbial gene score which tells the COG risk (Children's oncology group) is either high or low than the current COG risk. This gene may influence the genes involved in cell proliferation, anit-apoptosis, and angiogenesis. Identification Of expressed genes in neuroblastoma genome and identification of binding Sites of DNA-associated proteins for neuroblastoma was done including finding pathway information of binding sites of DNA-associated proteins found in neuroblastoma.

**Keywords:** DNA, neuroblastoma, nervous system

सर्वसुमना

# MOTIF AND PATHWAY IDENTIFICATION WITH DESIGNING NOVEL LIGANDS FOR SANDHOFF DISEASE

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Sandhoff's disease is a lysosomal disorder. It's an inherited lipid storage disease. Progressively destroys the nerve cells in brain and spinal cord. It's a rare inherited disorder. Which is commonly seen in infants. Here I took the HEXB gene from Sandhoff's disease because we did motif analysis and peak, pathway identification. ChIP sequencing is used for the analysis of protein and DNA interactions. I got the result of high-quality immunoprecipitation ChIP Peak is detected in our results which imply high concentration of DNA binding protein genes. Molecular docking is a technique which is used for the computational drug designing, by using docking one can predict the interactions between the macromolecules and the micro-molecules. A well-known in-silico structure-based technique utilized extensively in drug development is molecular docking.

**Keywords:** ChIP Peak, Sandhoff's disease, HEXB gene

सर्वसुमना

# NANOINFORMATICS: ENHANCING CROP PRODUCTION WITH APPLICATION OF NANOPARTICLES IN AGRICULTURE

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Nanotechnology has received a lot of attention in recent years because of its wide range of applications in all scientific fields. Agriculture could benefit from the use of nanoparticles. In today's world, sustainable agriculture is essential. Smartly designed nanoparticles, such as nanozeolites, nanoclays, and nanofertilizers, can be used to improve soil. Green synthesis of nanoparticles from various organic matter is a much more environmentally friendly method of producing nanoparticles.

*Pleurotus ostreatus* is a common edible and medicinal mushroom species due to its ability to produce a wide range of effective compounds. The oyster mushroom ranks first among macrofungi in the production and application of metallic nanoparticles. *Pleurotus ostreatus* is used to produce nanoparticles of magnesium, nitrogen, silver, molybdenum, copper, and nickel. In addition, the nanoparticles interact with Chitosan. Chitosan and its derivative nanoparticles have many biomedical applications, including drug delivery, vaccine delivery, antibacterial agents, and wound healing. This mixture interacts with biofertilizers such as *Glucanoacetobacter diazotrophicus* (5KOH), *Frankia* (2RKO), and *Clostridium pasteurianum* (1CP2).

The synthesis of nanoparticles was confirmed by a significant colour change after a 15-day incubation period at room temperature in each of the metal nano solutions. When the Nano complex was docked with the selected biofertilizers, the In-silico studies of nanoinformatics revealed a good molecular docking score. Based on a successful interaction with a high docking score, it is possible to conclude that nanoparticles can improve biofertilizers in crop production.

**Key words:** nanotechnology, nanoinformatics, *Glucanoacetobacter diazotrophicus*

# IDENTIFICATION OF EXPRESSED, MUTATED GENES AND BINDING SITES OF DNA ASSOCIATED PROTEINS IN ALZHEIMER'S DISEASE

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A neurodegenerative disorder in the elderly individuals. It is a type of dementia that affects memory subsequently followed by executive dysfunction, confusion, agitation, and behavioral disturbances. Three causative genes have been associated with autosomal dominant familial AD (APP, PSEN1, and PSEN2). Identification of these genes has led to a number of animal models that have been useful to study the pathogenesis underlying AD. The primary goal of this research is to discover biomarker signatures in the blood that could help the diagnosis of AD at an early stage and so add valuable information to our understanding of the molecular mechanisms that underlie AD.

Keywords: neurodegenerative, AD, APP

सर्वसुमना

# IDENTIFICATION OF TAXA WITH PHYLOGENETIC PROFILE AND FUNCTIONAL PATHWAY INFORMATION AND NOVEL DRUG LEADS OF LEISHMANIA MICROBIOME

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Visceral leishmaniasis (VL), also known as kala-azar is fatal if left untreated in over 95% of cases. It is characterized by irregular bouts of fever, weight loss, enlargement of the spleen and liver, and anaemia. Most cases occur in Brazil, East Africa and in India. Kala azar, or visceral leishmaniasis, is the second deadliest parasitic disease in the world. Kala azar is one of the most dangerous neglected tropical diseases. The parasite is spread to humans through the bite of infected female sand flies. It attacks the immune system, and is almost always fatal if not treated. In this work, genome sequence of Leishmania microbiome was taken. After, pre-preprocessing of the sequence, the phylogeny was determined. Further, the presence/absence and abundance of microbial pathways in our microbiota was efficiently and accurately profiling. Next, the expressed protein sequence was taken and novel drug lead was identified from the Indian traditional ayurvedic herbs.

Keywords: Leishmania, visceral leishmaniasis, phylogeny

सर्वसुमना

# BIOPROSPECTING OF FRUIT WASTE-AN APPROACH TO CREATE WEALTH FROM WASTE

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In recent times, there has been a global issue concerning the use of industrial wastes. The industrial wastes produced during the refining of raw materials in food and agro-industries can be employed as an inception of bioactive compounds. The presence of the bioactive compounds such as phenols, polyphenols, flavonoids, tannins, alkaloids in agro-industrial wastes makes fruits and vegetables leftovers more valuable and create wealth from waste. The agro-industrial wastes concerned in our project was waste from fruit juice processing units such as grape skin [GP], grape seeds [GS], pineapple peel [PP] and pineapple crown leaves [PCL]. The crude sample were extracted from these wastes using nonpolar-polar solvents and assayed for alpha-amylase inhibitory and antioxidant assay. Further Insilco studies were done for the active compounds present in these wastes concerned such as resveratrol, catechin, epicatechin, gallic acid and ferulic acid.

**Acknowledgement:** This work is funded by Karnataka State Council for Science and Technology vide reference number 45S\_MSc\_065

**Keywords:** pineapple peel, alpha amylase, antioxidant

# QSAR, MOLECULAR DOCKING, DFT AND SCAFFOLD HOPPING BASED DESIGNING OF NEW TETRAHYDRO-BETA-CARBOLINE DERIVATIVES FOR ABCG2 OF BREAST CANCER

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ATP-binding cassette superfamily G member 2 (ABCG2) is a protein in humans that play crucial role in multidrug resistance (MDR) in breast cancer. The MDR is caused by the over expression of efflux transport proteins from family of ABC transporters. ABCG2 is one of the major factors responsible for causing MDR in various cancer cells. It has been identified as breast cancer resistance protein (BCRP) that is an ATP-binding Cassette transporter, physiologically functions in self-defence mechanism in eliminating toxic xenobiotics through various barriers. The purpose of this study is to reduce MDR burden, so we utilized Tetrahydro-beta-carboline (TH $\beta$ C) compounds and accomplished a three-dimensional quantitative structure-activity relationship (3D-QSAR), scaffold hopping to design new compounds library of TH $\beta$ C. Herein, we found that one of the best QSAR model  $r^2 = 0.99$ ,  $q^2 = 0.92$ , as well as determine the necessity of electrostatic, steric, and hydrophobic fields that could modulate bioactivity. Finally, on the basis of electrostatic, steric, and hydrophobic fields notations, we designed 3400 newly designed TH $\beta$ C derivatives and then we analyzed interaction of the compounds with ABCG2 by molecular docking studies analyzed followed by drug-like features by Lipinski rule of five and ADMET properties. Thus, the findings of this study provide a new insight for researchers to design better antagonists with potent MDR treatment of breast cancer.

**Keywords:** Scaffold hopping; Molecular Docking; Breast cancer; ABCG2; QSAR; DFT.

**APPLICATION OF PLANT GROWTH PROMOTING MICROFLORA FROM GUT  
MICROBIOME OF EARTHWORM AS LOW-COST INOCULANTS IN AGRICULTURE  
TECHNOLOGY**

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**Abstract:** Soil is the reservoir of various organic, inorganic matter and essential nutrient, some essential nutrients are not able to utilize by plant directly. The gut dwelling microbiome of earthworm is considered as one of the better alternative for sustainable agriculture and feasible solution to meet nutritional requirement by the plants. Thirty seven morphologically different microbes were isolated from gut of earthworm by serial dilution. Among 37 organism 6 bacteria and 7 fungi showed the maximum growth in the selective media and has the ability to grow in nitrogen fixing medium. The most active microbes were selected based on their growth in the specific media that are capable of nitrogen fixing and phosphate solubilizing ability. Plant microbes interaction were studied in term of parameters such as shoot length, root length, no of leaves, flowering. Our study demonstrates the gut microflora of Earthworm plays key role in significantly increasing the nutrient availability by their enzymatic activity (denitrification, nitrification, growth hormone production, phosphate solubilization) and promote the growth and development of plant.

सर्वसुमना



## **UNIQUE FINGERPRINT ANALYSIS AND BRAIN MECHANISM**

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Human Brain has a great potential, it can do anything and everything. All the power is within, but we as students never studied about the brain related information, nor we were taught through our journey, this is the main reason most of the population find the solutions outside.

Our Brain functioning can be studied and understood through our Fingerprint patterns Francis Galton is the great scientist who introduced clear inputs about fingerprints and the behaviours of different fingerprint patterns.

Fingerprints are the replica of our Brain pattern; every fingerprint is Unique as we all know that no two fingerprints are alike on this earth, it means every brain is UNIQUE.

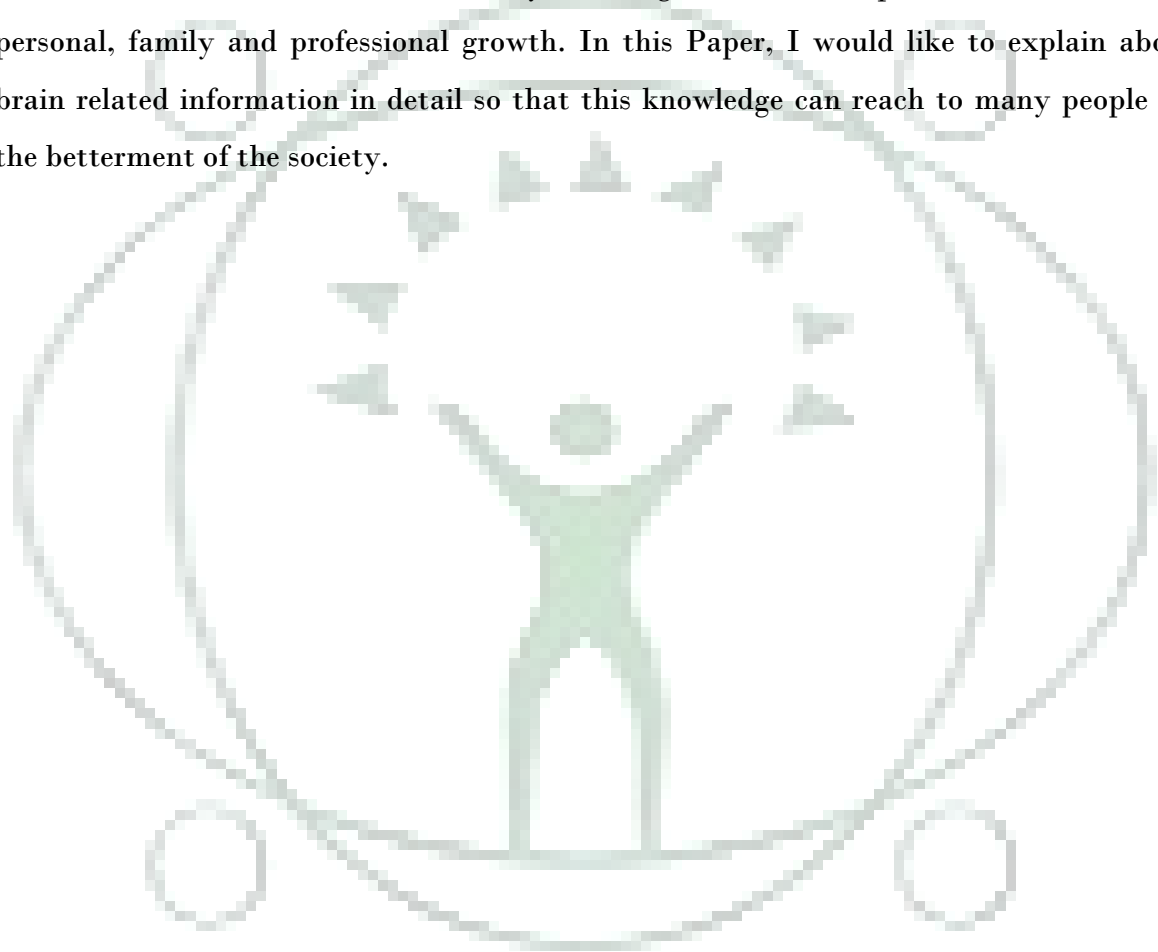
Fingerprint Analysis: It is purely a scientific approach to understand Brain Patterns, Mechanisms and Uniqueness of an individual.

Fingerprint analysis shows how a person Senses, Listens, Perceives, Understands, Analyses, and executes each activity which is called as Unique brain patterns. The analysis of one's Fingerprints shows a hidden combination of a person's Skills, Passion, Strengths, Intelligence, Interest, Potential, Weaknesses, and Blind spots called as Brain Mechanism. One' s personality in combination with their specific intelligence highlights the essence of uniqueness within them.

When we talk about Mental, Emotional, physical and Spiritual state of mind or health, fingerprint analysis gives exact clarity to balance ourselves, this study is a road map to work on ourselves for the greater level of development, every philosophy and psychological theories will not work for everyone because everyone's brain pattern, Mechanism and Uniqueness is completely different. As per my awareness today most of the people are struggling to analyse the root causes for their problems, this has become a big concern for people because they will be unhappy most of the time unknowingly, what they expect won't happen, they are sharing the love and being adaptable but they won't

receive proper response from the opposite person. They are working hard but there is no development in their profession, they are having hygienic food still there are health problems, children are doing and practicing to their best level but not effective results. Our own Fingerprint patterns have all the answers for these doubts and it is hidden.

With my 10 years of experience, I could analyse each fingerprint pattern to deeper extent and discover the root cause for many challenges and we help individuals for their personal, family and professional growth. In this Paper, I would like to explain about brain related information in detail so that this knowledge can reach to many people for the betterment of the society.



सर्वसुमना

## **EMOTIONAL WELL BEING IN PARENTING**

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“Mental and emotional well-being of a Parent will create a great impact on the child. Parents’ mental and emotional status from the time of conception to early 6 years of the child in Parenting creates healthy lifestyle to a child.”

For the well-being of any individual, the parenting journey will create maximum influence to the child, all parents need to understand that Parenting has to be done according to the Uniqueness of the child, giving the right environment to the child will enhance the self-esteem; self-respect of the child, then the child grows as an emotionally strong individual.

**Emotional Wellbeing:** Emotional wellbeing is directly connected to mental health, the relationship between the brain and heart is very important, when parents’ thoughts or the mental health is positive then emotional health will be automatically taken care, emotional health is nothing but how do we feel about our ourselves.

Mental and emotional wellbeing of a child is at its best when parents have self-awareness, when they have complete knowledge about Uniqueness and Understand Universe and Universal theories. A pregnant woman and her partner in very general environment with lack of Knowledge about self, self-love, emotional stability, Universe and universal theories gives birth to a unique child, and is not able to give a healthy childhood or upbringing to the child because of lack of knowledge, will make the child's entire life uncomfortable, emotionally imbalanced, unhealthy with a mediocre performance in life.

Every mother’s personality, thoughts, feelings, wants, likes and dislikes are completely different as per her Uniqueness. In this paper I have decoded in detail the concepts behind “Parenting and their Energies” how an individual mother’s personality, thoughts, feelings, expectations and life styles can create a healthy emotional wellbeing of a child for the entire life.

## EXTRACTION OF CAFFEINE FROM TEA WASTE AND ITS ANALYSIS

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### ABSTRACT

Caffeine is a chemical found in coffee, tea, cola, guarana, maste, and other products. Caffeine is one of most commonly used stimulants among the athelets. Taking caffeine, within limit, is allowed by the National Collegiate athletic Association (NCAA).It takes most people about 8 cups of coffee providing 100mg/cup to reach this urine concentration (Chaugule, et al.) The study also focused on whether we can extract a significant amount of caffeine using different content in tea sample. The caffeine is bitter, white crystalline xanthine alkaloid and a stimulant drug. It is found in varying quantities in the seeds, leaves and fruits of some plant. Part of the reason caffeine is classified by the Food and Drug Administration as GRAS (Generally Recognized as safe) is that toxic doses (over 10 grams for an average adult) are much higher than typically used doses (less than 500 milligrams). In this work the processes like extraction of caffeine from tea waste, caffeine detection by TLC, likewise HPLC of caffeine is performed and DPPH was conducted to check antioxidant activity of caffeine. By TLC the Rf value is calculated. By the extraction of caffeine from different tea waste sample the extraction yielded 2-3 mg caffeine molecule.

सर्वसुमना

# TO STUDY THE DEGRADATION RATE OF MICROBES ON STARCH BASED BIOPLASTIC

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Millions of tons of single use synthetic plastic is produced per year. This single use plastic is turned into trash causes environmental pollutions to increase day by day. Starch based bioplastic has seen a remarkable growth in replacing synthetic plastic. Bioplastics have similar features as synthetic plastics while providing extra features because of their low carbon footprint. Interest in competitive biodegradable materials is growing to limit environmental pollution and waste management problems. This can be seen as beginning to replace the single use synthetic plastics with biodegradable starch based plastics and a step forward for a greener environment.

Bioplastics made from starch are composed of bio-polymer called Amylose. Amylose is an unbranched linear molecule polymer composed of glycosidic linkages. As Starch is a reserve carbohydrate found in the majority of plants, in this study Potato, Sweet potato and Corn were used as the sources of starch extraction. Further the extracted starch was processed into biodegradable plastic.

Amylose denatures when exposed to enzyme Amylase. Amylase is an enzyme commonly found in various microorganisms present in soil and can be extracted easily. The degrading activity of the isolated microorganisms on starch based bioplastics was studied and a comparative analysis was made. The degradation rate of the isolated bacteria and fungus were as follow: Coccus sps. : 5.1 mg/hr, Bacillus sps. : 4.5 mg/hr, Coccus sps. + Bacillus sps. : 2.2 mg/hr, A.fumigatus : 2.5mg/hr, A.niger : 3.2 mg/hr, A.fumigatus + A.niger : 3.3mg/hr

## **TO ACTIVATE ULK1 PROTEIN FOR CANCER TREATMENT**

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Cancer is one of the leading deaths causing diseases all over world. Although anticancer therapies have been improved significantly, but it still has limited efficacy for tumor eradication and is highly toxic to healthy cells. That's why modulating autophagy for cancer treatment is an interesting or beneficial therapeutic approach. Autophagy is the process in which cell eats its own content. Autophagy is just like a self-healing process. Nutritional restriction or fasting is a promising custom to modulate autophagy and enhance the efficacy of anticancer therapies while protecting normal cells.

Going through the fasting body enter into the deep ketosis state, ketosis is a process that happens when body doesn't get enough amount of carbohydrate to burn for energy instead of glucose body burn fats for energy, where ketone body Beta hydroxybutyrate is synthesized by the body for providing energy.

Beta hydroxybutyrate binds to the AMPK to activate AMPK. AMPK can activate ULK1 at multiple serine residues. AMPK binds with ULK1 for activation as ULK1 plays a core role in the activation of the autophagy pathway.

सर्वसुमना

## **ISOLATION OF THE PROTEIN FROM THE LATEX OF *CALOTROPIS PROCERA***

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Calotropis Procera is the soft wooded evergreen perennial shrub. Belongs to the Family Apocynaceae and subfamily Asclepiadoideae. Scientifically very important, medicinal values of the Calotropis Procera have been mentioned in pharmacopeias. The milky latex of the Calotropis Procera is rich in proteins i.e., the evidence they are involved in pharmacological properties. The present study was conducted to isolate the proteins from the milky secretion that is the latex of Calotropis Procera. Estimation of proteins as well as separation and identification of proteins was done. Modified buffer is used for the extraction of sample and sodium azide is used as antifungal agent. Lowry method for the estimation of protein and BSA used as a standard. Separation of the proteins is done by SDS PAGE. The concentration of protein at 660 nm 9.05  $\mu\text{g/ml}$  and the 4 bands of protein were observed according to their molecular weight. It has the major role in the treatment of various diseases such as leprosy, hepatic disorders. The latex of Calotropis Procera when exposed to eye causes Oculartoxicity and creates dimness in the vision due to damage in cornea, we can perform Molecular Docking of the latex proteins and corneal protein to know which protein will be responsible for corneal damage.

सर्वसुमना

# ESTABLISHING PHYLOGENY, FUNCTIONAL PROFILE AND NOVEL DRUG FOR NIPAH VIRUS ENCEPHALITIS.

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## ABSTRACT

**Background:** Nipah virus encephalitis causing microbiome Nipah henipavirus was taken in this work which is the causative factor for encephalitis condition in humans. The fruit bats of *Pteropus* genus are the natural reservoir and acts as a carrier of this Nipah henipavirus. The phylogeny, functional profile of Nipah virus microbiome was identified by using metatranscriptomic sequencing. The receptor genes involved in the Nipah virus encephalitis mainly L protein and a P gene product – V protein were taken in this work and molecular docking studies were done using the phytocompounds from *Centella asiatica* with the target protein receptors taken. The computational drug designing was employed to prove the efficiency of the novel drug against the Nipah virus encephalitis disease. From the result of this study, the phytocompound- Arjunolic acid from *Centella asiatica* plant showed better interactions with the protein receptors with good docking score.

**METHODOLOGY:** Using metatranscriptomic sequencing, the taxonomic phylogeny and functional profile of the microbiome was identified. On using the Krona and GraPhlAn tools, the presence of the microbiome Nipah virus was confirmed. By using Normalised gene families, was able to get the functional profile of the microbiome. The receptor genes involved in the Nipah virus encephalitis mainly L protein and a P gene product – V protein were taken in this work.

**RESULTS:** Using computer- aided drug designing the novel ligands from the medicinal plant – *Centella asiatica* was further docked with the gene receptors that was taken and the novel drug was designed against nipah virus.



## **MICROBIAL ENDOPHYTIC DISTRIBUTION WITHIN THE PLANT**

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### **Abstract**

The endophytes are the microorganisms that reside inside healthy plant tissue. The endophytic microorganism is gaining attention for their intimate association and direct benefit to the host plant. They normally originate from rhizosphere to phyllosphere and some may be transmitted via seeds to different parts of plants. They play a major role in phytohormone stimulation, nutrient acquisition, tolerance in biotic stress and abiotic stress and production of bioactive compounds. To study them, their effective isolation is challenging, as these are transmitted horizontally and vertically in the host plant. For observing various plant endophytic populations there are various techniques designed for their sampling, isolation and culturing. The sampling technique includes selection of plant samples and selection of parts of the host plant sample. The isolation of endophytic microorganism includes surface sterilization, sterilization agent used and pretreatment for the selected plant sample, sterility check of the sample used for isolation using the aliquots of final rinse, the cultures of tissue from the sample, segments of roots or stem, macerate of different parts like roots, stem and seeds, plant exudate from stem and roots, centrifugation of root and stem samples to collect apoplast fluid and the media selection for the isolation fast growing and slow growing endophytic microorganism. Amalgamation of different techniques used for isolation and media selection increase the prospect of isolation and analyzing endophytic diversity and also can magnify our understanding of positive interaction of endophytic diversity such as modulation of phytohormones that work from the cellular level for growth and development of host plant.

# ***RHIZOCTONIA*, A PLANT PATHOGEN AND DIFFERENT CONTROL STRATEGIES**

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## **Abstract**

Plant pathogenic fungi causes major losses to agriculture. In which soil borne diseases are considered a major limitation to crop production. In soil borne plant diseases the *Rhizoctonia* genus is a most important plant pathogen. It belonging to domain Eukarya, kingdom Fungi, subkingdom Dikarya, phylum Basidiomycota, subphylum Agaricomycotina, class Agaricomycetes, order Cantharellales, family Ceratobasidiaceae. It has diversity in their host specificity, morphological, cultural characteristics. As it is a necrotrophic ubiquitous in nature and differentiated according to presence of anastomosis groups (AGs). Identification is based on septate multinuclear hyphae in young hyaline also turn brown with age. Branches of hyphae originates from distal dolipore septum. Most members produces moniloid cells and sclerotia. Vertical branching hymenium with layers of elongated slightly wider than basal hyphae structure observe in basidiomal sexual characters. *Rhizoctonia solani* can survive for many years in soils by way of sclerotia or as a saprophyte, colonizing soil organic matter. Sclerotia and/or mycelium present in soil and/or plant tissue can eventually activate to produce vegetative hyphae that can attack a wide range of crops. *Rhizoctonia species* infects to the members of the Solanaceae (e.g. potato, tobacco), Amaranthaceae (e.g. sugar beet), Brassicaceae (e.g. canola), Rubiaceae (e.g. coffee), Malvaceae (e.g. cotton), Asteraceae (e.g. lettuce), Araceae (e.g. pothos), Moraceae (e.g. ficus) and Linaceae (e.g. flax), Fabaceae (e.g. soybean, peanut, dry bean, alfalfa, chickpea, lentil, field pea), family. After infection symptoms are different according to host as root rot, stem rot, hypocotyl rot, Seed rot, pod and limb rot, black scurf, seedling blight, stem caner, pre- and post-emergence damping off. Plant also develops different defence mechanism against *Rhizoctonia*, in which cork layers forms by plants against *Rhizoctonia* which causes potato tuber disease. This layers helps in inhibit the invasion of the pathogen and also the flow of toxic substances secreted by the pathogen blocks, also helps in stop the flow of nutrients of the host therefore depletion of

nutrients to the pathogen occurs. In lettuce plant by shikimate pathway the phytoalexin benzoic acid and lettuceenin A get secreted against *Rhizoctonia solani*. In defense mechanism plant also secretes the pathogenesis related proteins (PR), in which the PR-3 and -4 families are comprised of chitinases which are responsible for hydrolyzing the  $\beta$ -1,4 linkages between N-acetylglucosamine residues of chitin, a structural polysaccharide of the cell wall of different fungi, such as *R. solani*. According to previous study the incidence of damping-off was increased from 19 to 90% with increasing inoculum levels of *Rhizoctonia solani*, while the incidence of root rots caused 10 to 80% losses in different vegetables. *Rhizoctonia* root rot of soybean has caused yield losses as high as 45% in the United States. Therefore effective management of plant infection require combine study of cultural and chemical control options. As in previous work explained, the seedling varieties susceptible to *Rhizoctonia* fungus contain a substance which initiates the formation of hyphal-cushion from which the fungus directs its penetration hyphae into the plant host but the resistant seedling varieties lack this essential substance and thus infection does not occur. Tobacco plants transformed with a chitinase gene from bean became resistant to infection by the soil borne fungus *Rhizoctonia solani*. In bean plants *Rhizoctonia solani* causes necrosis. In resistant developed varieties of bean, the entry of pathogen is responsible for separation of methyl group from methylated pectic substances and forms polyvalent cations of pectic salts which contain calcium. The calcium ions accumulate in infected and neighbouring healthy tissues and due to calcium ion accumulation, pathogen cannot disintegrate middle lamella by its polygalacturonase enzymes. Rice plant, normally lacks puroidolines transformed for expression of puroidoline genes, that transgenic rice showed increase in tolerance to *Rhizoctonia solani* with an reduction in symptoms upto 11-22%. As study has done the *Glomus etunicatum* mycorrhizal fungi can target *Rhizoctonia solani*. *Trichoderma* sp. also act in mycoparasitism against *Rhizoctonia solani*, and working as biocontrol agent.

**ESTIMATION OF PROTEIN IN SOME VARIETIES OF SOYBEAN  
[*GLYCINE MAX (L.) MERR.*] AND THEIR HYBRIDS**

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Seed protein is one of the major traits in soybean. Soybean contains 38 to 40% good quality protein. New high yield varieties with improved quality traits are required to fulfill the rise of global demands for soybeans for food and feed consumption. Diverse genetic background provides desirable allelic variation among parental lines to produce new and worthwhile combinations. The present study reveals that the estimated proteins among the newly developed eleven intervarietal hybrids along with five mother genotypes of soybean showed high levels of variations. The protein was estimated using Bradford method. This may be attributed by heterosis as degree of heterosis is closely associated with the genetic diversity of parental forms. Hence, heterosis breeding involving population improvement exercise may be useful for improvement of protein in soybean.

**Key words:** Soybean, Protein, Bradford Method, Heterosis.

सर्वसुमना

# **DIVERSITY OF ENDOPHYTIC FUNGI IN SOYABEAN (GLYCINE MAX)**

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An understanding of the Endophytic fungi present in glycine max, through direct isolation techniques or molecular measurement such as DNA Extraction, PCR , ITS sequences is important . Cladosporium was the endophytic fungal genus most frequently identified from leaves and stems of Glycine Max. There is the isolation and identification of unknown endophytic fungi for bioactive compound analysis. In the last 25 years, it has been revealed that all plants have endophytes while in newer findings it has been found that the endophytic microorganisms can also produce plant metabolites and this ability of endophytes is considered as the major factor responsible for establishment and evolution of mutualistic interrelations”Endophytic fungus isolation from plants may result in methods to produce bioactive agents for biological exploitation on a commercial scale. Fungi can be used in the production of natural drugs and pesticides and biofertilizers in order to decrease the risk and hazards of synthetic chemicals. The recent increase in demand for natural products and difficulties in accumulating them from plants makes endophytes interesting targets for upcoming research.

Endophytic fungi are biotechnologically important due to their potential as a source of secondary metabolites which are proved to be useful for novel drug discovery.

सर्वसुमना

# BIODEGRADATION OF PLASTIC BY USING MICROORGANISMS

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Biodegradation of plastic is most important for minimum plastic pollution, it causes harm to domestic as well as terrestrial life also plastic take more time for degradation. when ever it burn it causes air pollution when it mix with soil causes soil pollution in water degradation it causes water pollution.

The plastics after this change continue to interact with the environment and biota. It is a dynamic situation with continuous changing parameters. Polyethylene, polypropylene, and polyethylene terephthalate (PET) degrade through the mechanisms of photo-, thermal, and biodegradation.

To check the activity of plastic, isolate bacteria from many year old dump area {Naregao Dump Area, Aurangabad, Maharashtra} check activity of bacteria into various plastic strips, initial and final weight was calculated to check the exact percentages of degradation various Bacteria shows various activity against plastic

In biodegradation process bacteria release Sulphur, Carbon, Carbon Dioxide, Water, Methane most important application of that technique is methane gas, this gas can be stored as biofuel and the process is cost effective, If we mutate bacteria by using radiation and some mutagens for increase biodegradation capacity in bacteria it will take less time for degradation 91% of plastic remains in nature that not degrade naturally, such type of plastic can be degraded by this microorganism. Studies with environmental samples agree with these findings but the degradation of plastics is very subjective to the local environmental conditions that are usually a combination of those simulated in laboratory conditions.

**Keywords:** Plastic, Naregao Dump Area, Pollution.

# ***IN-VITRO* CALLUS INDUCTION OF KARTELU (*MOMORDICA DIOICA ROXB.*) ENRICHED WITH VARIOUS CONCENTRATION OF BA**

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## **Abstract**

Present research project entitled “*In-vitro* callus induction of *Kartelu* (*Momordica dioica*) enriched with various concentration of BA ” was carried out in-vitro conditions during December 2015-May 2016 in Department of Plant Biotechnology, MGM College of Agriculture Biotechnology, Gandheli, Aurangabad. Experiment was carried out in Completely Randomized Design with seven treatments (BA conc. of 1,2,3,4,5,6,7 mg/L and NAA 0.01 mg/L constant) with three replication. For experimentation seeds of *Kartelu* were collected from MGM Krishi Vigyan Kendra (KVK), Gandheli, Aurangabad, and used as experimental materials.

The callus initiation was found superior in concentration of BA 4 mg/L in combination with NAA 0.1mg/L in 40 days (DAI) and significant yield of fresh weight of 32.00 gm, dry weight 324.67 mg and diameter 20.00 mm produced in *Momordica dioica. L.* The concentrations exceeds or below that BA 1.67 mg/L and NAA 0.1 mg/L shows inhibitory effect on growth rate of callus. After that seeds were soaked in sulfuric acid (98%) for 20 minutes at room temperature for breaking the seed dormancy. This protocol could be useful for raising genetically uniform planting material and molecular breeding program for commercial cultivation.

**Keywords:** *Momordica dioica*, Dioecious, callus, cotyledonary explants, *Kartelu*.

सर्वसुमना

# COMPARATIVE STUDY OF PHYTOCHEMICAL ACTIVITY PRESENT IN VARIOUS FLOWERS.

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## ABSTRACT

**Background:** Plants possess capacity to synthesize different organic molecules called Secondary metabolites. That includes the alkaloids, flavonoids, saponins, terpenoids and steroids. Which helps to protect themselves from attack of naturally occurring pathogen, insects and environmental stresses. As well as these compounds are used as drugs or a dietary supplement to cure or prevent diseases.

Above activity of those compound is depend on the method and solvent used for extraction. CHAMPA (*plumeria alba*) is a genus of flowering plant in the family apocynaceae. Its have antibiotics activities. approximately 60% of the drugs from plant origin are from alkaloids.

AFRICAN TULIP (*beauvais*) is a genus of flowering plant in the family bignoniaceae. It is traditionally used in treatment of various disorders also includes antimicrobial, anti-complement and anti-hiv activities, antioxidant and cytotoxicity activities.

PAPER FLOWER (*bougainella glabra*) it belongs to the family nyctaginaceae. It is used for the treatment of several diseases like helminthiasis, diabetes, respiratory illness, cough and cold, bronchitis and diarrhea.

WESTERN INDIAN JASMINE (*ixora coccinea*) it belongs to the family rubiaceae. It is used for diverse pharmacological properties including anti-inflammatory, antioxidant and antimutagenic activities

**METHODOLOGY:** All the samples ( Champa, African Tulip, Paper flower and West Indian jasmine) flower were collected from MGM campus .

- Flowers was collected and washed and air dried for 5 days at room temperature and was grind to form powder
- Sequential extraction of sample – 3 Solvents (Methanol, Ethyl acetate and Chloroform) extraction was done and then filtered
- Qualitative determination of secondary metabolites-
- Alkaloids test – 0.5 ml extracted sample mix with 2 ml of Hcl and 6 drops of Mayer's reagent. A yellow to red colour indicate presence of alkaloids



- Flavonoids test – A few drops of 1% liquid ammonia taken in test tube which contains sample. White coloration or ppt of the solution confirms presence of Flavonoids
- Terpenoids test – In 0.5 ml sample, around 2 ml of chloroform and few drops of copper acetate taken. A green colour indicates in the solution denotes presence of terpenoids
- Phenol test – In 0.5 ml sample, few drops of lead acetate were added the white ppt indicates the presence of phenol.
- Steroids test - In 0.5 ml of sample, equal volume of concentrated sulphuric acid was added. Red to brown colour indicated the presence of steroids
- Quantitative determination of secondary metabolites- Folin-Ciocalteu test (FC test)
- Antioxidant test – DPPH method.

**RESULTS:**

<b>Qualitative determination of secondary metabolites</b>					
<b>Sample name</b>	<b>Alkaloid</b>	<b>Flavonoid</b>	<b>Terpenoid</b>	<b>Phenol</b>	<b>Steroids</b>
Champa	+ E	+ M	+ M	+ M, E	+ M, C
African tulip	+ M	+ M, C	+ M	+ M, C	+ M, E, C
Paper flower	+ E, C	+ M, C	+M, E	+ M, C	+ M, E
West Indian jasmine	+ M, E	+ M, E, C	+ M	+ M, E, C	+ E, C

(+) – PRESENT (M)– METHANOL, (E)– ETHYL ACETATE, (C)- CHLOROFORM

सर्वसुमना

# IN VITRO REGENERATION OF SANDAL (*SANTALUM ALBUM L.*) BY USING LEAVES AND STEM.

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**Abstract:** Sandalwood (*Santalum album L.*) is one of the highly beneficial Indian tree species in the world and economically valued for its imperative oil, extracted mainly from heartwood and roots. Its products are used in fragrance, cosmetic, and therapeutic industries. These slow-growing Sandalwood trees have been overharvested in the past centuries, leading to a condition of being endangered. The tissue culture of Indian sandalwood (*Santalum album L.*) has been extensively studied, mainly for its rapid propagation technology. The inducible accumulation of desired product via in vitro culture provides an experimental system for researching secondary metabolism in woody plants. The central successful inductive of adventitious shoot buds on *Santalum album L.* leaves is reported. De novo shoots were induced directly on leaves without any callusing stage. A leaf length of 0.5-1.5 cm only showed bud inducing possible. This system is convenient because environmental conditions can be strictly controlled. This is specially important for East Indian Sandalwood. (*Santalum album L.*) We established a method to induce and proliferate callus from sandalwood leaf and stem explants. Explant treated with different concentration of Bavistin and further treated with mercury chloride and inoculated on (MS) basal media Supplement with hormones Auxin (2-4D, NAA, IAA) Silver Nitrate and Adenine sulphate. Callus induction from leaf explant was initiated within 15 days. Callus induction from stem explant was initiated within 7 days and complete callus regenerate within 15-20 days. Following callus Subculture in Murashige and Skoog (MS) basal medium supplement with (2-4D, 0.1 to 0.9 mg/L) of NAA, IAA.

**Key Word-**MS medium , 2-4D, NAA, IAA, *Santalum album L.*

# ***MUTATION BREEDING AS A TOOL FOR PLANT IMPROVEMENT***

Krutika Shriram Dhondge and N. M. Maske

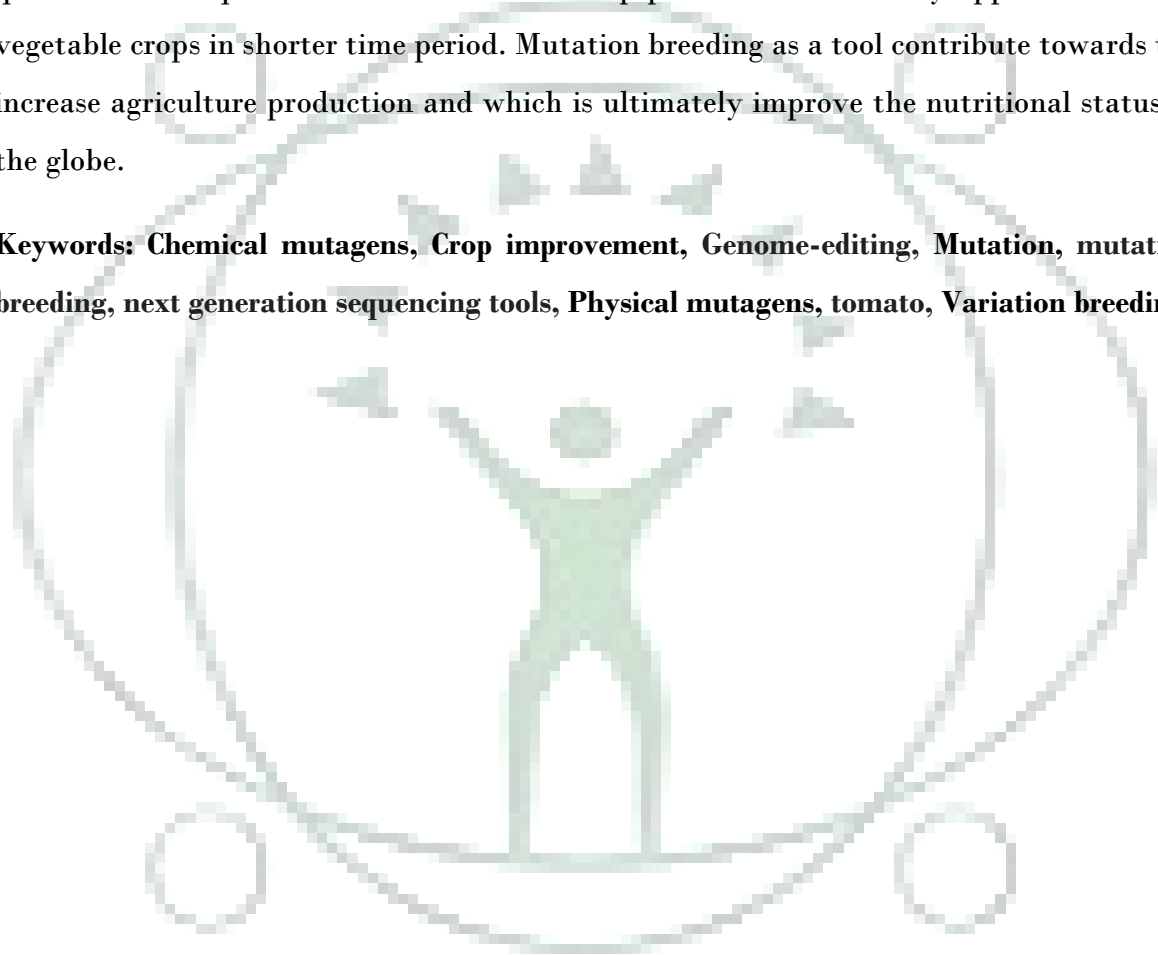
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**Abstract:** Identifying plants with desirable traits among existing plant varieties is the initial and most important step in plant breeding. Plant breeding requires the genetic variation of useful traits for crop improvement. We all know that the plant breeding depends upon the genetic variation among the cultivars. In nature variation occurs mainly as a result of mutation and without it plant breeding would be impossible. Mutation as a mechanism of creating variability was identified by Hugo de Vries (1901) while experimenting on the rediscovery of Mendel's law of inheritance. Mutation arises in two ways; Firstly, spontaneous mutation, which occurs without treatment of the organism with an exogenous mutagen and secondly induced mutation which occurs due to the treatment of a plant or plant parts such as seed, stem, cuttings, pollens and ovules with the help of mutagens. The purposeful utilization of the induced mutation for crop improvement is called as the mutation breeding. Mutation breeding is also called as variation breeding which is known for exposing seeds to chemicals, radiation or enzymes in order to generate mutants with desirable traits to be bred with other cultivars. Mutation breeding is the purposeful application of mutations in plant breeding. Unlike hybridization and selection, mutation breeding has the advantage of improving a defect in an otherwise elite cultivar, without losing its agronomic and quality characteristics. Mutation breeding is the only straightforward alternative for improving seedless crops. Induced mutagenesis is one of the most effective strategies for trait improvement without altering the well-optimized genetic background of the cultivars. Several currently accessible methods such as physical, chemical and insertional mutagenesis have been discussed concerning their efficient exploration for the tomato crop improvement. Several efforts of genome-editing have been demonstrated in tomato and other crops, exploring its effectiveness and convenience for crop improvement. Precise identification of casual mutation is a prerequisite for the molecular understanding of the trait development as well as its utilization for the breeding program. Recent advances in sequencing techniques provide an opportunity for the precise detection of mutagenesis-induced sequence variations at a large scale in the genome. Here, we reviewed several novel next-generation

sequencing based mutation mapping approaches including Mutmap, MutChromeSeq and whole-genome sequencing-based mapping which has enormous potential to accelerate the mutation breeding in tomato. The proper utilization of the existing well-characterized tomato mutant resources combined with novel mapping approaches would inevitably lead to rapid enhancement of tomato quality and yield. Mutation breeding in improvement of qualitative and quantitative characters of crop plant and successfully applied in several vegetable crops in shorter time period. Mutation breeding as a tool contribute towards the increase agriculture production and which is ultimately improve the nutritional status of the globe.

**Keywords:** Chemical mutagens, Crop improvement, Genome-editing, Mutation, mutation breeding, next generation sequencing tools, Physical mutagens, tomato, Variation breeding.



सर्वसुमना