

# DAY 1

Scientific Tracks  
& Abstracts



European Conference on

# AGRICULTURE, HORTICULTURE & EPIGENETICS

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# DAY 1

February 25, 2019

## Sessions

Epigenetic Methylation | Epigenetic Therapy | Cancer Epigenetics | Population And Evolutionary Chromosome Biology | Epigenetics And Medicine | Crop Protection | Agriculture & Food safety | Postharvest Technology | Population And Evolutionary Chromosome Biology

### Session Chair

Richard L. Mompalmer  
Université de Montréal, Canada

### Session Co-Chair

Shashikant Udikeri  
University of Agriculture Sciences, India

### Session Introduction

**Title: Chromatin outside the cell: the new paradigm in biology**

Indraneel Mittra, Tata Memorial Centre, India

**Title: Sulphur nanoparticles: a promising solution to postharvest anthracnose disease of mango**

Khushi Mukherjee, University of Calcutta, India

**Title: Chromatin deregulation in prostate cancer**

Alfonso Urbanucci, Institute of Cancer Research and Radium Hospital, Norway

**Title: Assessing the effects of dietary L-Methionine supplementation induced epigenetic alterations in type 2 diabetic rats**

Umashanker Navik, National Institute of Pharmaceutical Education and Research, India

**Title: Targeting MYC overexpressing leukemia with cardiac glycoside proscillaridin through downregulation of histone acetyltransferases**

Noël J-M Raynal, Université de Montréal, Canada

**Title: Livelihood changes by women and youth engagement for tourism**

Ramraja Shrestha, Nepal Khadha Bank Ltd, Nepal

**Title: Perception of family planning use among married men and women in Anomabu Community**

Armah-Ansah, EK, Gwah Hospital, Ghana

**Title: Genetic studies and diversity analysis of maize (Zea mays L.) inbred lines for the development of high Fe and Zn genotypes**

Maria Kausar, University of Sargodha, Pakistan

EuroSciCon &  
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## CHROMATIN OUTSIDE THE CELL: THE NEW PARADIGM IN BIOLOGY

### Indraneel Mittra

Tata Memorial Centre, Mumbai, India

Since the discovery of the structure of DNA by Watson and Crick in 1953, "DNA inside the nucleus" has been the dominant biological paradigm which has spawned the complex science of molecular biology and genomics. Although this reductionist approach has been a commercial success, produced an enormous quantity of information and given us intricate insights into cellular functioning, it has provided little understanding of human health and disease and to that extent has been largely unproductive. This is primarily because this DNA-centric molecular approach has entirely ignored physiology. We know now that there is a huge amount of DNA in the form of extra-cellular cell-free chromatin (cfCh) that exists in the extracellular compartment of the body, including in circulation, that is derived from the billions of cells that die in the body every day. cfCh is fragmented but has extraordinary and diverse local and systemic biological functions which places cfCh in the realm of physiology. cfCh has the ability to integrate into genomes of healthy cells to damage their DNA and trigger apoptotic and inflammatory responses. DNA damage and inflammation are integral to ageing and ageing-related disorders such as cardio-vascular diseases, diabetes, stroke and neurodegenerative disorders. Cancer is another example which may be initiated and propagated via cfCh by its ability to bring about DNA damage, genomic instability and inflammation. Our recent finding that patho-physiological effects of cfCh can be abrogated by the use of appropriate cfCh inactivating agents suggests therapeutic possibilities. The above considerations lead me to propose that "DNA (chromatin) outside the cell" should now be considered the central paradigm in biology replacing the currently accepted model in which the DNA resides inside the nucleus.

### Biography

Indraneel (Neel) Mittra is with Dr. Ernest Borges Chair in Translational Research, Advanced Centre for Treatment, Research & Education in Cancer, Tata Memorial Centre, Mumbai, India. Professor Mittra obtained his medical degree from University of Delhi and is a Fellow of the Royal College of Surgeons of England and holds a PhD degree from University of London. He did his post-doctoral training with Dr Renato Dulbecco, Nobel Laureate, at the Imperial Cancer Research Laboratories in London. Professor Mittra's current research interests lie in the area of biology of extracellular nucleic acids and their role in ageing, inflammation, degenerative disorders and cancer.

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# SULPHUR NANOPARTICLES: A PROMISING SOLUTION TO POSTHARVEST ANTHRACNOSE DISEASE OF MANGO

**Khushi Mukherjee and Krishnendu Acharya**

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**M**ango is a worldwide popular fruit for its excellent delicacy and high nutritive value. At postharvest stage, the fruit suffers considerable loss due to anthracnose disease caused by *Colletotrichum gloeosporioides*. In this study, we propose a nanotechnology based solution for controlling the fungal disease without compromising the fruit quality. Sulphur is the choice of nano-element for its potential fungitoxicity and non-toxicity for human consumption at low doses. Chemically synthesized sulphur nanoparticles (SNP) were characterized by XRD analysis and electron microscopy. *In vitro*, the synthesized SNP showed >50% fungal growth retardation and ~70% fungal spore germination inhibition at 1  $\mu\text{M}$  concentration. The nanoparticle induced morphological deformities of fungal mycelia were recorded under scanning electron microscope (SEM). *In vivo*, SNP (1 $\mu\text{M}$ ) was employed to control the fungal infection on the fruit body. A popular mango cultivar in India namely Golap Khas was used for this purpose. SNP treated fruits were stored for 7 days at room temperature and compared to untreated and spore inoculated fruits. Disease severity of each group of fruits was calculated at regular intervals during the storage period. At 7th day of storage, SNP treated fruits developed no symptom of fungal infection while untreated and spore inoculated fruits were severely affected. Pathogenesis related enzymes like peroxidase, polyphenol oxidase, phenylalanine ammonia lyase and  $\beta$ -1, 3-glucanase activity and total polyphenol and flavonoid contents in all stored fruits were measured for better understanding the SNP induced infection control. However, in all cases, biochemical activities of SNP treated fruits were much higher than the untreated fruits which may be attributed as SNP induced biochemical boost of the fruit body resulting better immunity against fungal pathogens. This is the very first initiative to exploit SNP in postharvest management which can be extended to control fungal infection in many more fruits and vegetables.

## Biography

Khushi Mukherjee has earned her PhD from University of Calcutta, India in the year 2012 and has completed his Postdoctoral research from National Institute of Technology, Rourkela, India in 2015. Presently, she is serving as UGC sponsored Postdoctoral Fellow in University of Calcutta, India. Her research area comprises nanotechnology based fungicide formulation facilitating better control over the pre- and postharvest disease causing fungal pathogens. She has published a number of research papers in reputed journals and presented her work in many national and international seminars and conferences.

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## CHROMATIN DEREGULATION IN PROSTATE CANCER

**Alfonso Urbanucci<sup>1,2</sup>**

<sup>1</sup>Institute of Cancer Research and Radium Hospital, Norway

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**E**pigenetic reprogramming including altered transcription factor binding and altered patterns of chromatin and DNA modifications are now accepted as the hallmark of aggressive cancers. I will show that global changes in chromatin structure and chromatin accessibility in prostate tumour tissue can define castrate-resistant prostate cancer and present mechanistic insights of the effect of androgen receptor deregulation on the chromatin. Such effects translate into epigenetics reprogramming of tumor cells mediated by bromodomain containing proteins. Finally, I will present BROMO-10, a gene signature with high prognostic value and predictive of response to bromodomain inhibitors, which are now in clinical trials also for advanced prostate cancer. Bromodomain containing proteins can be used also as disease biomarkers, and I will show that BRD4 in particular can identify DNA stretches enriched in low p-value GWAS-significant disease/tissue-specific susceptibility loci including breast and prostate cancer.

### Biography

Alfonso Urbanucci graduated from the University of Perugia, in Italy, and got his PhD in Cancer Genetics and Molecular Biology of Cancer in Finland at the University of Tampere in 2012. His personal research interest is on the transcriptional and chromatin drivers underpinning prostate cancer progression with the androgen receptor as a focal point. He published a series of papers regarding the molecular effects of the deregulation of the androgen receptor on the chromatin and transcription, and how these drive prostate cancer progression. He then moved to Oslo at the Centre for Molecular Medicine Norway (EMBL partnership), and subsequently at the Oslo University Hospital, where he investigated the mechanism of action of bromodomain inhibitors and derived novel prognostic tools for patient stratification. He is currently Researcher at the Norwegian Radium Hospital.

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# ASSESSING THE EFFECTS OF DIETARY L-METHIONINE SUPPLEMENTATION INDUCED EPIGENETIC ALTERATIONS IN TYPE 2 DIABETIC RATS

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**B**alanced nutrition plays an important role in the maintenance of healthy life. Imbalance in any of it, results in various metabolic disorders. L-Methionine (L-Met) is one of the essential amino acids which play an important role in variety of cellular processes. Reports suggest that dietary methionine restriction as well as its supplementation both have beneficial effects in animal models. But in long run methionine restriction has prominent adverse effects on bone, immune system and can cause cardiac adverse event (via hyperhomocysteinemia). Here, we report the protective effect of L-Met (0.45% L-Met supplementation in diet) on T2DM induced hyperglycemia, dyslipidemia and other complications. Interestingly, L-Met supplementation also activates hepatic p-AMPK and its downstream signaling molecule SIRT1, mimicking anti-diabetic drug metformin, an AMPK activator. Real Time PCR, results show that L-Met supplementation prevents diabetes induced increase in expression of master regulator FOXO1, hepatic DNMT1 expression and global histone H3K36 di-methylation. Furthermore, FOXO1 regulated genes, involved in hepatic glucose metabolism and lipogenesis are also modulated by L-Met supplementation. Chromatin-immunoprecipitation assay shows that L-Met supplementation decreases the H3k36me2 abundance on FOXO1 promoter. We provide first evidence for the involvement of epigenetic alterations in preventing progression of diabetes by L-Met supplementation.

## Biography

Umashanker Navik has completed M. Pharmacy (Pharmacology and Toxicology) from NIPER SAS Nagar, B. Pharmacy from University Institute of Pharmaceutical Sciences (UIPS), Panjab University, Chandigarh, India and is currently associated with Laboratory of Epigenetics and Diseases at NIPER SAS Nagar as a PhD Scholar. He is working on L-Methionine induced epigenetic changes in type 2 diabetes and non-alcoholic steatohepatitis under the supervision of Prof Kulbhushan Tikoo. He has been trained extensively in in-vitro, preclinical experimental techniques like handling laboratory animals, animal surgeries, physiological and biochemical measurements, histological, molecular biology (western blotting, RT-qPCR, Bisulphite sequencing, Chromatin Immunoprecipitation etc.), statistical analysis of experimental data and scientific data retrieval. Besides, he played a significant role in carrying out consultancy projects related to T2DM, NASH and Toxicity studies in GLP-certified National Toxicology Centre at NIPER SAS Nagar. Further, he is also mentoring junior researchers in different field CVDs, diabetes, NAFLD, and role of probiotics in metabolic diseases. His key interest research areas are evaluation of Pharmacological Interventions, Targeting Pathophysiological Cascades in metabolic diseases such as obesity, diabetes, non-alcoholic fatty liver disease and elucidation of its link with epigenetics. He has one paper published in Indian J Pharmacol.

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# TARGETING MYC OVEREXPRESSING LEUKEMIA WITH CARDIAC GLYCOSIDE PROSCILLARIDIN THROUGH DOWNREGULATION OF HISTONE ACETYLTRANSFERASES

**Noël J-M Raynal**

Université de Montréal, Canada

**T**argeting MYC remains a major therapeutic goal in cancer chemotherapy. Here, we identified that proscillaridin, a cardiac glycoside approved for heart failure treatment, targets specifically leukemic cells overexpressing MYC at clinically relevant doses. Proscillaridin induced rapid downregulation of MYC proteins, reduced proliferation in leukemic cell lines and in leukemic stem cell populations. Transcriptomic profile of leukemic cells after treatment showed a downregulation of gene sets involved in cell replication, MYC pathways and an upregulation of genes involved in hematopoietic differentiation. Interestingly, low dose of proscillaridin treatment induced a significant loss of lysine acetylation on histone H3 at lysine 9, 14, 18 and 27. Acetylome profiling uncovered that acetylation loss included also non-histone proteins such as MYC itself, MYC target proteins, and a series of histone acetylation regulators. Loss of acetylation resulted from the rapid downregulation of histone acetyltransferase proteins after treatment. Overall, these results strongly support the re-purposing of proscillaridin in MYC overexpressing leukemia and suggest a novel strategy to target indirectly MYC by inducing the downregulation of a series of histone acetyltransferases involved in its stability.

## Biography

Noël J-M Raynal has completed his PhD from University of Québec and Postdoctoral studies from MD Anderson Cancer Center and Temple University. He is the Director of an academic laboratory at the Centre de recherche of CHU-Sainte-Justine in Montreal affiliated with the Department of pharmacology and physiology of the Université de Montréal. His research focuses on epigenetic therapy of pediatric cancers.

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## LIVELIHOOD CHANGES BY WOMEN AND YOUTH ENGAGEMENT FOR TOURISM

**Ramraja Shrestha**

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**W**hile we will always talk about advancement about industrial revolution or any business activities, at the end of the day we required bread and butter. Most of the country are still facing troubles for livelihood change because we do have women who are less educated, they always care us with whole heart but they don't know about food security, basic home science and nutrition so that in this age so many infant are facing malnutrition problems as well as unknown health hazards. I can see from early morning to bed there are several women in our daily as mother, as sister or friends but we never give them space and respect or wages as per their contribution. We man are always man who do have responsibility but full of egos while women are always dominant in our home and up to society, just think about her role, responsibility and caring. While the hunger take place it will bring disaster in our society, if there will be hunger, it will create anger, once the people will get anger which creates madness, finally mad man cannot think what is wrong or what is right, Madmen will damage himself and others too so let's fight against hunger so that our daily livelihood remain calm, peace, love and brotherhood. Before each industrial revolution inception, agriculture revolution had taken place which could be learn by history. Again! I would like to say "Every citizens have fundamental rights to live with bread and butter, No one should be hunger. Specially in agriculture we had transformed our mentorship not only produce the large scale of production but Agri Tourism is best method to make daily livelihood changes in socio economic growth for the nation. Each country should have to bring agro tourism model business which will give youth engagement, women empowerment and socio economic change. It is not a drama or illustration of my thought about Agri Tourism. This model can transform daily used gross domestic product and value added product in proper line. Most of the country are promoting tourism, hydropower, industry and software company Which capital investment will be huge and returns are very risk. Agri Tourism is simplify the agriculture and tourism towards "Back to Nature". So my focus for youth and women to engage in Tourism by making Agri Tourism by using ranch, farm house, farm stay or home stay because only few percentage of tourist can afford premium hotels and facilities but most of the people enjoy in nature, silent spots and eco friendly places. That's why each societies can build Agri Tourism projects in their nation by investment in low cost but it will bring not only profits gives the impact in society.

I would like to inspire youth and women engagement should be productive so that your country may cherish with peace, love and brotherhood.

### Biography

Ramraja Shrestha (born 11 April 1984) is a Nepalese First Commodity Banker who is Chairman of Nepal Khadhya Bank Ltd from August 2016 to Present Date. He was a long-time leading member of the anti hunger moments prior to founding a new institution, Nepal Khadhya Bank Ltd. Ramraja Shrestha was born in Kashitar, Belkotgadi Municipality. He was born in a low-middle class peasant family. He has three siblings: one elder sister, one younger sister and Two younger brother. He belongs to Newar group. Shrestha is Creative thinker and one of the best "Think Tank" for Innovative Ideas and Creative Thinking Process in Agriculture, Food Security and Agro Tourism. He is the First Person in Nepal who has launched Npaisa as Nepal's First Local Cryptocurrency but Due to the Government and Policy makers poor Stand It is unable to serve in Nepalese Market. Then, Ramraja Shrestha has started "Khadhya Bank" which is first Commodity and Derivative Bank in Nepal, Which is also serve in Grain Banking. It was the First Attempt to introduce Barter System in Banking Module.

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## PERCEPTION OF FAMILY PLANNING USE AMONG MARRIED MEN AND WOMEN IN ANOMABU COMMUNITY

**Armah-Ansah Ebenezer Kwesi**

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**D**espite the launching of a family planning programme in Ghana about 5 decades ago, the country's family planning prevalence rate remains relatively low and its total fertility rate is still considerably high compared with other African countries. One of the factors that may contribute to the low family planning prevalence rate and thus the slow fertility decline in Ghana is the perception of family planning use among married men and women in Ghana. This study sought to examine the perception of family planning use among married men and women at Anomabu community in the Mfantseman Municipality of the Central Region of Ghana. Data were collected among married men and women who were in their reproductive ages (15-49 years). Questionnaires were administered to 200 randomly selected respondents. The data collected were analysed with Statistical Product and Service Solution (SPSS) software version 21 and presented using graphs and tables. The results revealed that 82.5% of the respondents had knowledge about family planning with media (radio, TV and internet) being the major source of information about family planning. Fifty-two percent of the respondents had ever used at least a type of family planning with 59.5% ever used modern type of family planning. However, 81% of the respondents were currently using at least a type of family planning of which 87.5% were also using modern family planning method. In conclusion, the findings indicate that respondents had high knowledge about family planning, especially the modern family planning method.

### Biography

Armah-Ansah Ebenezer kwesi holds a Master of Philosophy Degree in Population and Health and its related issues who has experience in both qualitative and quantitative researches. His research interests are family planning, epilepsy, public health and international health.

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## GENETIC STUDIES AND DIVERSITY ANALYSIS OF MAIZE (ZEA MAYS L.) INBRED LINES FOR THE DEVELOPMENT OF HIGH FE AND ZN GENOTYPES

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**F**e and Zn deficiencies are most prevalent especially in children and females and is directly correlated with food insecurity. The aim of current study was to screen maize germplasm for micronutrient's level. Sixty-eight maize inbred lines were sown during autumn season-2017 and spring season-2018 in soil having optimal level of Fe and Zn. All agronomic practices were performed accordingly and well in time. Data was collected for plant height, no. of cobs per plant, cob length, no. of rows per cob, no. of seeds per row, no. of seeds per cob, 100 seed weight, grain yield, phytic acid, Fe and Zn contents. Results of genotypic variance, phenotypic variance and heritability suggested that Zn had higher values 262.49, 284.43 and 92.29 respectively than Fe 39.05, 62.06 and 62.93. Correlation estimates showed that Fe and Zn had positive correlation with each other, plant height and 100 seed weight, while had negative association with grain yield and phytic acid. Genotypes were grouped into 5 clusters on basis of genetic diversity. Cluster-4 showed highest values of Fe and Zn while Cluster-3 had lowest. High variability for Zn (12.99-81.31) and Fe (15.99-52.75) among Inbred lines and good heritability provide a basis for development of improved genotypes with good Zn and Fe levels. Positive association of Fe and Zn suggests that both can be improved simultaneously, as biofortification is the most feasible way to provide micronutrient rich food to consumers.

### Biography

Maria Kausar is a PhD scholar in Department of Plant Breeding and Genetics, College of Agriculture, University of Sargodha, currently working on "genetic studies of maize for micronutrient biofortification" as her research with 3.97 CGPA. She is the MPhil leading to PhD scholarship holder from Higher Education Commission of Pakistan. She has four publications in impacted journals, and has good knowledge of Microsoft Office. She has the research interest of breeding field crops.

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