



# S.M.S. MEDICAL COLLEGE, JAIPUR

*Spoke*

## Research Group

Research group of Prof. Mathur includes faculty members and post-doctoral (D.M.) students from the department of endocrinology, S.M.S. Medical college, Jaipur as the core group along with support from faculty from other clinical and non-clinical departments of college like pediatrics, surgery, neurosurgery, orthopedics, urology, medicine, pathology, physiology and biochemistry etc.

The institution has signed MOU with various research organizations like Institute of Genomics and Integrative Biology (IGIB), New Delhi, Central Drug Research Laboratory (CDRI) Lucknow-both CSIR India labs. Dr. Vinod Scaria from IGIB and Dr. Anil Gayakwad from CDRI are our collaborators currently from these institutions.

Apart from these national labs, currently joint projects with institutions like Birla Institute of Scientific Research (BISR), Jaipur, Central University, Kishangarh, Rajasthan are ongoing. A joint project in collaboration with National Institute of Ayurveda, Jaipur is in progress. An MOU already exists between The University of Rajasthan, Jaipur and the SMS Medical College.

Currently we have multicenter projects where our clinical partners include senior clinicians/investigators from all over the country.

Spoke Coordinator, DIC-RU



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## Research activities

Research group is involved in clinical and translational medical research in the broad field of endocrinology, metabolism and molecular medicine. The broad guiding principle of our research initiatives is “think beyond medical literature and guidelines in the patients suffering”, “identify clinical problems/questions”, “think in depth it biology”, come out with a clue to solve the problem or “a research proposal” to answer the question. Update the “basic biology” and see how it be applied in solving a clinical problem.

Clinical and translational molecular research in the field of diabetes crystallized into some novel concepts like “adiposopathy” the common soil for modern life diseases like diabetes, hypertension, lipid problem and atherosclerotic cardiovascular diseases and stroke. Our data support the concept that the so called “thin fat” phenotype of Asian Indians can be conned down to one single cellular and molecular process of “adipogenesis”. We are looking for the master molecular regulator of this process as new molecular target for India specific new drug for control of diabetes and vascular disease. All our efforts in the area is a long-term project called AIM-INDIA program (Adiposopathy Assessment and Intervention To Control Dysmetabolism Underlying Insulin Resistance, Diabetes And Atherosclerosis).

Another major research initiative in progress with our group is project named “Genomic Research in Endocrine and other Tumors (GREAT). We have created an multicenter registry of endocrine tumors and using genome wide genomic tools for deep molecular genotypic and phenotyping of these tumors for understanding of these tumors. We aim to develop India specific panel for genetic testing for hereditary endocrine tumor syndrome and markers for prognosis and response to therapy in these tumors. Our remote goal is identification of novel drug therapy/gene therapy molecular targets for these tumors.

Genetic and genomics of growth and development disorders is one of area where we are developing a data-base of genetic mutations underlying genetic growth and development disorders.

Last and most important, we are taking advantage of large number of patients and their pedigrees suffering from rare hereditary endocrine and metabolic disorders for developing a large data-base of deep phenotyping and genotyping. We are expecting our population specific genetic diagnostic panels for these diseases.



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Young investigators are urged to come forward with novel hypothesis in the broad research areas mentioned above and execute projects to accomplish the goal of not any cutting age science but also develop technology for better care of patients including early diagnosis.

Some of the proposed projects are

- (1) Genetics and genomics of syndromic and idiopathic short stature. The expected outcome is pre-natal diagnosis of affected fetuses can be diagnosed intra uterine,
- (2) Identification of molecular markers of adiposopathy, so that it can diagnosed well before development of metabolic syndrome,
- (3) Development of a data base of genotype-phenotype correlation in hereditary endocrine tumor syndromes, so that a India specific gene panel for the diagnosis of these syndromes can be developed. Early asymptomatic diagnosis of these tumors can significantly reduce morbidity and mortality from these tumors.
- (4) Understanding the molecular basis of rare hormonal and metabolic disorders by analysis of large pedigrees,
- (5) Discovery of Indian population specific molecular targets doe new drug discovery in the field of diabetes and insulin resistance.
- (6) Basic research in the field of mesenchymal stem cell culture and biology of endocrine cancers.

