

Molecular research as a platform for capacity building for interdisciplinary collaborative research

Research is the means by which a teacher/scientist gains/ contributes to new knowledge. Collaboration and interdisciplinary approach are the hallmarks of modern research. Upon establishment in 2007, the Academy endeavoured to achieve these goals by establishing a collaborative research centre with the Genome Foundation of India under the mentorship of Late Padmashree Prof. Lalji Singh. The vision of this centre was to elucidate the genomic landscape of the rural population in Kolar district and neighbouring area. This centre then evolved into the Central Research facility of the Academy so as to serve as a hub for interdisciplinary research between the Departments of the Academy. The Centre was elevated as a full-fledged statutory Department in the year 2013 for promoting academic programmes in the subjects of genomics and molecular biology with a aim to generate manpower for interdisciplinary research. In the year 2016-17 the centre was shifted to a dedicated centrally air-conditioned area measuring 8000 square feet. The capability of the Centre was recognised through the selection for support under a HRD programme of DHR aimed for conducting training programmes for faculty of medical colleges in India.

CAPABILITIES

1. The Central Research Laboratory (CRL) has state-of-the-art facilities to undertake inter-disciplinary research projects of both basic science and translational nature in the area of Genetics, Molecular Biology, Genomics, Proteomics and Cell Biology.
2. The facilities and the faculties of the lab provide a platform for clinicians to undertake rare and complicated research questions which are otherwise unanswerable in a traditional hospital set-up.

3. The lab is equipped with state-of-the-art cytogenetics facility for studying chromosomal abnormalities.
4. The lab has in-house DNA sequencing facility for mutational studies.
5. The facilities of the lab are also utilised to provide free genetic diagnostic tests and professional counselling to the patients.
6. The lab provides experimental facilities for research scholars pursuing Ph.D. and M.Phil. Programmes.
7. The lab provides experimental facilities and technical guidance for postgraduate medical students to conduct dissertation projects .
8. The lab supports the training of undergraduate and postgraduate medical students in advanced molecular techniques.

Post Graduate Programs

1. Master of Science in Molecular Biology and Human Genetics [M.Sc]
2. Ph.D. in Cytogenetics and Molecular Genetics [Ph.D.]

Key publications in 2016-17.

1. Bose D, D V, Shetty M, J K, Kutty AVM. Identification of intronic-splice site mutations in GATA4 gene in Indian patients with congenital heart disease. *Mutation Research*. 2017 Oct;803-805:26-34.
2. Rajesh D, Mohiyuddin SMA, Kutty AVM, Balakrishna S. Prevalence of human papillomavirus in oral squamous cell carcinoma: A rural teaching hospital-based cross-sectional study. *Indian Journal of Cancer*. 2017 Jul-Sep;54(3):498-501.
3. Rajesh D, Gurumurthy R, Kutty AV, Balakrishna S. Tumor necrosis factor alpha gene promoter 238G/ A polymorphism increases the risk of psoriasis vulgaris in Indian patients. *International Journal of Dermatology*. 2017 Mar;56(3):307-311.
4. Rajesh D, Chowdappa C, Gurumurthy R, Moideen Kutty AV, Balakrishna S. Profile of tumour necrosis factor alpha -308 G/ A gene polymorphism in psoriatic patients in Karnataka, India. *Journal of Clinical and Diagnostic Research*. 2017;11(2):1-4.

5. Chengalvala K, Kotur P, Shetty M, Kumar P, TV J, Sivaraj N, Balakrishna S. Association of maternal angiotensinogen gene M235T polymorphism with preeclampsia in South India: A tertiary care hospital based case-control study. *Meta Gene*. 2017; 11:108-110.

6. Nelaturi PD, Sriramaia NH, Nagaraj S, Kotakadi VS, Veeran Moideen Kutty AV, Pamidimukkala K. An in-vitro cytotoxic and genotoxic properties of Allamanda Cathartica L. Latex Green NPs on human peripheral blood mononuclear cells. *Nano Biomedicine and Engineering*. 2017;9(4):314-323.

7. Vijaykumar BR, Lekshmi SU, Sai Kant R, Vaigundan D, Mahadevan A, Rajendran C, Shankar SK, Jayshree RS. Genetic characterization of *Toxoplasma gondii* from autopsy proven cases of AIDS associated cerebral toxoplasmosis in South India. *Infection, Genetics and Evolution*. 2016 Apr;39:106-112.