

**Centre for Genomics
Molecular & Human Genetics
Jiwaji University, Gwalior**

The Master's program in Molecular & Human Genetics was inducted in 2003. The main objective of the program is to impart quality teaching and training to the students on various aspects of Molecular Human Genetics, covering molecular and clinical biology of Human health in detail. The department has received extra mural research grants from various Govt. funding agencies (DBT, DST, DAE, CSIR, ICMR and MPCST.) to work upon various communicable (e.g., Tuberculosis) and non-communicable diseases (e.g., cancer). It also received one-time financial support from DBT. These research and developmental grants have helped develop the departmental teaching and research facility to an advanced level, comparable to any national level teaching department. The department is running programs in

Master of Science (M.Sc.)

Doctor of Philosophy (Ph.D.)

Programme Outcomes (POs)

The purpose of inducting Molecular & Human Genetics program at the University was to provide students Theoretical and Practical knowledge in various areas of Molecular genetics, Human genetics and Human genetic diseases to help them build-up strong carrier in biomedical science. The faculty members are putting all efforts to fulfil the requirement of students of this course.

The major objectives of the department are as follows:

1. To bring innovation and excellence in teaching and research in the area of Human Genetics.
2. To organize community health services, including genetic diagnosis and counselling of genetic diseases in the region.
3. To generate possible employment opportunities for the students.
4. To train the students in various tools and techniques in biomedical sciences to develop expertise in them for advanced research and professionalism.

Programme Specific Outcomes (PSOs)

The course curriculum of Molecular and Human Genetics has been designed to prepare the Master's students to attend the following program specific outcomes.

PSO1. The ability to understand and interpret the various molecular and genetic principles related to fundamental structure and functions of cells, with special emphasis on human health and diseases.

PSO2. To apply the skill developed during the studies in their future teaching and research activities and to increase their employability.

PSO3. Develop critical thinking power and innovative ideas of translational importance.

PSO4. To build-up confidence in venturing in to basic and advance research leading to academic achievements at national as well as international levels.

PSO5. To make the students competent enough to teach and train others later in their academic lives.

PSO6. To inculcate ethics and professionalism in the students to perform and extend services to the peoples and communities for their betterment.

Course Outcomes (COs) I-M.Sc. Programmes

1st MHG-101-108

CO1. To develop advance knowledge on cellular and molecular organization of living cells.

CO2. To understand the fundamental principles of Genetics and Genetics variations (mutations or genetic polymorphism) and the pattern of inheritance of traits.

CO3. To learn about the pattern of inheritance of genetic diseases and develop skills in the pedigree analysis of genetic abnormalities.

CO4. To obtain practical training in genetic analysis, human cytogenetics and cell culture.

CO5. Trained to work independently on any experimental problem relevant to the subject.

2nd MHG-201-208

CO1. To understand the molecular organization and expression of genes and genomes.

CO2. To learn molecular genetic methods of human disease gene mapping and understanding the molecular basis of genetic disorders.

CO2. To understand the immunological process of the body in relation to health and diseases.

CO3. To understand the cellular expression of various biomolecules and their relation with human health and diseases.

CO4. To train experimentally the theoretical aspects of biochemistry, immunology and molecular biology.

CO5. Trained to work independently on any experimental problem relevant to the subject.

3rd MHG-301-308

CO1. To learn the biology of organismal development, from embryo to adult.

CO2. To understand the basic and genetic mechanisms of human development.

CO3. To learn the reproductive and developmental abnormalities.

CO4. To learn the mechanisms and aetiology of various genetic diseases and methods of genetic counselling and risk assessment.

CO5. To know, in detail, the origin, mechanisms of evolution and genetic diversity in natural populations, including human.

CO6. To learn about the genetics of behaviour and behavioural diseases in human.

CO7. To provide theoretical and practical exposure to various methods in biomedical technology and molecular diagnosis.

CO9. Trained to work independently on any experimental problem relevant to the subject.

4th MHG-401-405

CO1. To understand the principle and working of various tools used in biological research.

CO2. To learn various tools and techniques in bioinformatics and their applications in the analysis of gene structure and functions.

CO3. To provide professional hands-on research experience of 4-5 months, as a small research dissertation work.

CO4. Trained to work independently on any experimental problem relevant to the subject.