



## **About the Department**

Department of Genetics was established in 2009 under Faculty of Life Sciences. The Department is internationally known for its contribution in Drosophila Genetics, identification of biological activities of various medicinal plants and microbial products for harnessing their potential values for nutraceutical and therapeutic applications. Department run two M.Sc. Courses i.e. M.Sc. Genetics and M.Sc. Forensic Sciences and Ph.D. Genetics and Ph.D. Forensic Science. The Department has been financially strengthened by DST-FIST grant, UGC-SAP DRS1 and UGC Innovative grant in the last five years. There are nine regular Teaching Faculty Members and one Professor Emeritus in the Department.

## **Vision**

Department of Genetics aims to be recognized world-wide for excellence in teaching and research catalyzing intellectual, scientific, social and economic development.

## **Mission**

The Department is committed to spread scientific knowledge and serve the society through pursuit of excellence in teaching, innovation and research.

## **Strategic Goals**

To achieve its Vision and Mission, the Department will endeavor to improve -

1. Academic standards by implementation of online courses such as MOOCS (Massive Open Online Courses) and GIAN (Global Initiative for Academic Network), smart classrooms and revision of syllabi.
2. Research outcome by publishing good quality of research papers in recognized journals. The faculty members will apply for research grants from different funding agencies
3. Course employability by revising syllabi as per the need of industries and institutions
4. Inclusiveness and social impact by organizing outreach programmes for societal awareness
5. Extension and collaboration by organizing invited lectures, seminars, conferences and workshops. The faculty members will collaborate with co-supervisor and co-investigators of other department and institutions.

## **SWOC analysis**

### **Strength**

- Faculty members with diverse field of specialization
- Adequate student-teacher ratio
- Organization of seminar, extension lectures, conferences etc. on regular basis
- Students are able to qualify competitive examination in different areas
- Each faculty member runs individual research projects
- Department has been financially supported by UGC-SAP, DST-FIST and UGC Innovative programmes
- Good quality research publications by faculty members
- Central Instrumentation Facility in the Department
- The syllabi are updated on regular basis

### **Weakness**

- Inadequate space/infrastructure for teaching and research
- Lack of trained technical and office staff
- Lack of fund for maintenance of instruments
- Lack of outreach programme

### **Opportunities**

- Students learn basic concept of Genetics in lieu of human welfare
- Department offers opportunity for students and in-service personals to study forensic science
- Department offers instrumentation facility to other institutions

### **Challenges**

- Establishment of Centre of Excellence
- Application for next stage of UGC-SAP and DST-FIST
- Implementation of research projects
- Dissertation programme of MSc students with fund

## **Action Plan**

### **Academic year 2018-19**

- ✓ Department has applied for GIAN programme and will be implemented if granted
- ✓ Application of research projects and publication of good quality papers
- ✓ Department will organize outreach programme for social awareness
- ✓ Organization of one day National Seminar funded by R. K. Funds
- ✓ Extension of building for space

### **Academic year 2019-20**

- ✓ Revision of Syllabi
- ✓ Application of research projects and publication of good quality papers
- ✓ Three days National Conference on Recent aspects of biological sciences
- ✓ Organize extension lecture on recent topics
- ✓ Pursue for extension of building for space

### **Academic year 2020-21**

- ✓ Organize outreach programme
- ✓ Collaboration with other institution for academic and research purpose
- ✓ Publication of good quality research papers
- ✓ Organization of seminar and workshops

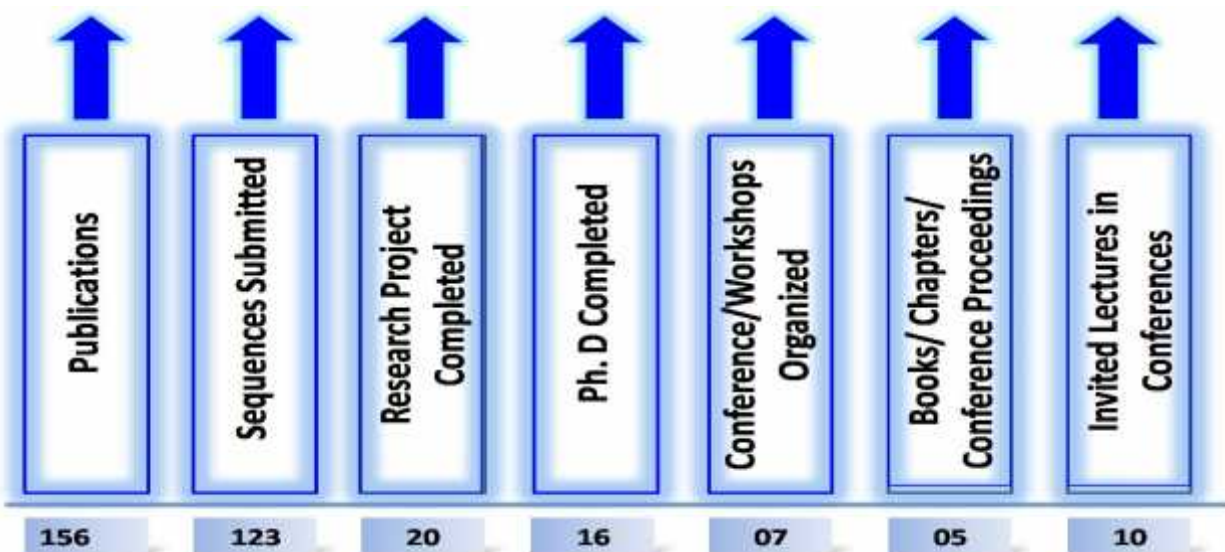
### **Academic year 2021-22**

- ✓ Teaching with online tools and available e-courses
- ✓ Application for MoU with other institution for academic and research purpose
- ✓ Application of research projects and publication of good quality papers
- ✓ Organization of International Conference in recent topics

### **Academic year 2022-23**

- ✓ Revision of Syllabi
- ✓ Application for research projects and publication of good quality papers
- ✓ Organize extension lecture on recent topics
- ✓ Preparation and application for Centre of Excellence

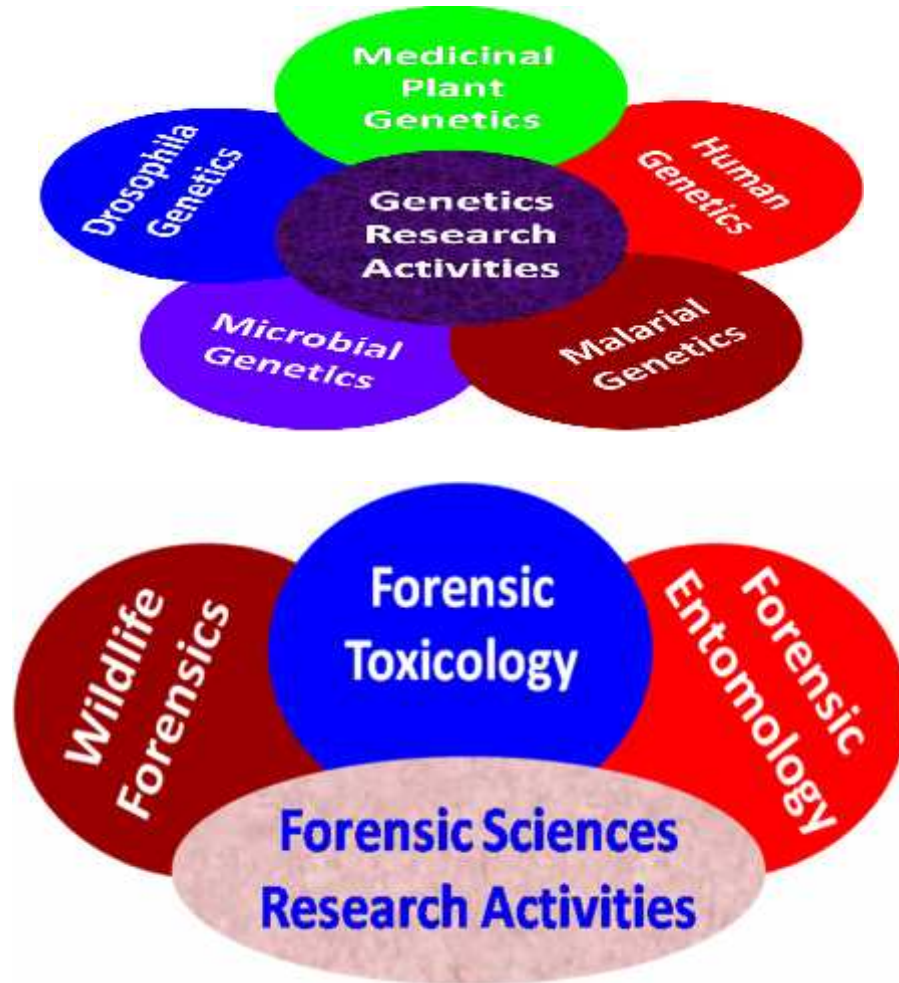
## Achievements of the Department in last five years



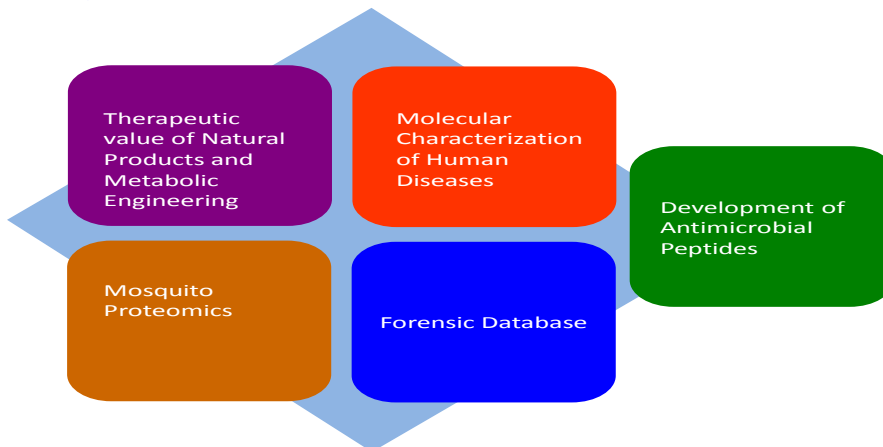
## Human Resource



# THRUST AREAS OF THE DEPARTMENT OF GENETICS



## Projected Research Areas Plan in next 5 Years



## PROJECTED TARGETS

Areas/Activity	2018-19	2019- 20	2020-21	2021-22	2022- 23
Strengthening of Department	Submission of UGC DRS II Proposal	i.)Revision of Syllabi ii) DST- FIST Proposal iii) MoUs	Organization of 3 days National/Int. Level Conf.	Outreach activities	DST Curi proposal submission
Research Project Submission by Teachers	Yes	Yes	Yes	Yes	Yes
Medicinal Plant Genetics	DNA fingerprinting of plants to control quality of medicinal herbs	1)Endophytic fungus and its therapeutic value. 2) Hairy Root Culture for Secondary metabolites	Chemical fingerprinting of herbs for quality control of therapeutic drugs	Metabolic engineering of the secondary metabolites of plants and microbes.	Plant DNA bar-coding.
Human Genetics	1) Genetic Characterization of miRNA as a diagnostic biomarker for ovarian cancer 2) Cancer Genetics with therapeutic value.	1) Genetic Screening of ovarian carcinoma, neurological & congenital anomalies 2) Biomarker for cancer identification 3) Research on Juvenile Open Angle Glaucoma	1)Validate the efficacy of YKL -40 as a Biomarker for early detection of carcinoma 2) Molecular characterization of gene related to cancer	Characterization of candidate gene affecting alcohol dependence in cases of alcohol abuse.& correlation of the STR genotypes	1) miRNAs as biomarkers for early diagnostic application 2) Establishment of DNA fingerprinting and Molecular Diagnostic lab.
Microbial Genetics	Characterization of probiotics for various properties	Isolation and purification of AMPs from probiotics	Characterization of AMPs for applications	Mode of action of AMPs against target bacteria	Applications of probiotics in food and therapeutics
Malarial Genetics	Molecular characterization of chymotrypsin gene in mosquito species	Cloning of Ansgu gene in expression vector and to predict homology and phylogenetic history	Plasmodium culture maintenance	Molecular characterization of other candidate gene/proteins	Proteome of different mosquito species
Forensic Chemical Sciences	Research on Snakebite and Plant poison cases.	Research on analysis on Snakebite and Plant poison cases & Book writing on Forensic Science	Collaboration with more Forensic Science Laboratories for R&D work	Establishing Research Centre for snakebite management.	Research Proposal for Departmental grant
Forensic Biological Sciences	1) Forensic entomology 2) Conservation of blackbuck population of Haryana 3) Forensic odontology	Develop and validate the precise statistical tool for age estimation	Database of forensic odontology and to study the fingerprint/footprints as a physical evidence	1) Geographical variation in <i>Cannabis sativa</i> 2) Outreach programs in Forensic Science	Database of <i>Cannabis sativa</i> cases

### Activity Calendar (2018-19)

<b>S. No.</b>	<b>Activities</b>	<b>Time</b>
1	Induction Programme	August, 2018
2	Teacher Day Celebration	September, 2018
3	Workshop/Seminar Funded by R. K. Foundation	October, 2018
4	Education Tours	October, 2018/February, 2019
5	MoU with Forensic Science Laboratory, Madhuban	October, 2018
6	Inter-departmental Science Quiz	November, 2018
7	Forensic Lab visits	November, 2018/February, 2019
8	Extension Lecture in Genetics	November, 2018
9	Extension Lectures in Forensic Science	November, 2018
10	Workshop/Seminar on Intellectual Property Rights	February, 2019
11	Lecture on Personality Development and CV writing	February, 2019
12	Outreach Programme	March, 2019