Department of Zoology & Biomedical Technology

University School of Sciences,

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Director: Prof. S. K. Menon

Head, Zoology Dept. and Course Director, Biomedical Technology: Dr. M. V. Rao



Introduction

The Department of Zoology at School of Sciences, Gujarat University, Ahmedabad was started in 1964with humble beginnings and today, it is at the forefront as one of the leading, teaching and research centres in the country and abroad. This has been largely due to the efforts and dedication of a devoted band of teachers, researchers and students as well as the timely and appropriate financial backing of various National and International, Government and Non-Government Agencies viz. ICMR,DST, WHO, CSIR, Lady Tata Memorial Trust, Sir Dorabji Tata Trust, Jai Research Foundation, GEER Foundation, and especially University Grants Commission (UGC), Gujarat State Biotechnology Mission (GSBTM) and Government of Gujarat (GoG). The various research activities of the Department are highlighted, some of them being unique and the only one of their kind in the whole of the country in a University Department. The Department of Zoology had been started by only one member, a Reader. Another member joined as a Lecturer in October 1965. In 1968, three more lecturers were recruited. In 1970, a position of Professor was filled up. In June 1972 one more lecturer was taken in the Department. Now the department has Two Professors, Four Readers and One Lecturer.

Present Scenario

- 1. The Department has received an amount as good as 1.98 crores from GSBTM and GoG for the development of Genetic Diagnostic Center (GenDiCe)
- The Department organizes a Genetic Diagnostic Training programme for teaching the Medical field experts about Genetics of different diseases and further chromosomal studies.
- 3. The Department has received 10 lakhs in 10thFive year plan from which teaching aids and equipments are purchased.
- 4. The University has sanctioned to construct Human Genetic building in Zoology Department, which is one of its kinds in the University setup.
- 5. Five research projects are underway and 10 research papers are published in various National and International journals per year.
- Teaching positions (2 Professors, 4Readers & 1 Lecturer) are filled making total to
 7.
- Ph.D. students are 35 including NET qualified, Maulana Azad Scholarship and DST INSPIRE Fellowships working on various problems related to society.

- 8. Clinic facility for chromosomal, biochemical & hormonal analysis, after examination by our Doctors, is available. Prof. M. V. Rao is the Coordinator of the Clinic.
- 9. Genetic Disorders screening has been initiated at the department. These disorders include various conditions like Male & Female Infertility, Muscular Dystrophies, Diabetes and Thalassemia which seem to be prevailing in the society at a greater extent.

Infrastructure and Facilities

Electron Microscope (Zeiss EM 900), Zeiss Axiophot Microscope with Automatic Computer Karyotying System, Leitz Wetzlar Fluorescence Microscope and other research Microscope (Nikon, Reichert etc.), CASA (Computer Assisted Semen Analyser),2-D Electrophoresis system – Biorad, Gradient PCR- Applied Biosystems, Gel Documentation system - UVP, Ultrasonography - Sonosite, Illuminometer, Beckman Gamma Counter, Waters HPLC System, HPTLC -Camag, Spectrophotometers, Centrifuges- High speed, Cooling Centrifuge, microfuge. Lyophilizer, Hybridization Oven, PCR-Thermal cycler, transilluminator, Gel dryer and Blotter, DNA sequencer, Deep freezer at -80°C, Osmometer Submarine electrophoresis, and Incubators. Radioimmunoassay (RIA) setup BARC approved), Tissue Culture, Cryostat, Cell counter (Transasia) etc.

Highlights

Several basic and sophisticated research facilities have been established since the inception of the programme in the Department:

- 01. Clinic facility for clinical examination of patients referred to the Department for carrying out diagnosis of genetic and endocrine disorders. The clinic also has 3 Medical Consultants, a Gynaecologist, a Paediatrician, and a Radiologist as well as Ultrasound Scanning and Genetic counselling facilities are also available.
- Facilities for Semen Analysis with automated semen analyser. Cell soft CASA 2000, Cryo Resources, USA.

- 03. Facilities for ultrastructural studies using transmission Electron Microscopy, ZEISS EM 900.
- 04. Complete Cell and tissue culture set up for research in Cell Biologyand Genetics. Autoradiography facilities. The Department is currently in theprocess of establishing Molecular Biology facilities, for which a PCR thermalcycler, Microfuges, Osmometer, Lyophiliser, Hybridizatioon oven, DNA Sequencer, Complete Electrophoresis set up, Deep freeze (-80°); etc. have beenpurchased and other necessary equipment required are also being procured.
- 05. Radioimmunoassay set up BARC approved and ELISA.
- 06. Electrophoretic, Chromatographic (including TLC and HPLC) AnalyticalUnits.
- 07. UV and Visible Spectrophotometers.
- 08. Library facilities with basic and advanced books and journals.
- 09. Audio-visual facilities including a TV, VCR, Overhead Projector, Slide Projectors, Multimedia projector.
- 10. Museum facilities for preserved specimenstudies.
- 11. Semi Automated karyotyping system (IKAROS).
- 12. Computer Networking and Internet facility.
- 13. Indoor and Outdoor sports facilities are also available to the students and staff.
- 14. Cryostat for Immunocytochemical techniques.
- 15. 2 D Electrophoresis for finding out the abnormal proteins related with the pathophysiology of certain disorders and diseases.
- 16. Gel Documentation system to document the gels of the patients for further researches and studies.
- 17. Ultrasonography to find out the anomalies in a lady prone to familial genetic disorders like cleft lip and palate and Neural tube defects and other infertility related issues.
- 18. HPTLC for finding out the various components of the herb used for the ameliorative effects.

Courses Offered

COURSE 1

Course Name: Master's Degree in Zoology

Course Type: Grant in Aid Intake: 40 students

Eligibility: Bachelor Degree in Zoology with Minimum 2nd class

Subject offered/ specialization: 1. Cell and Molecular Biology

2. Endocrinology and Reproductive Physiology

Duration: Two years (Full Time)

Course Commencement: June

Admission Process: By merit

Fees: M. Sc. SEM I&III Rs. 3690.00 (Boys) per semester

M. Sc. SEM I&III Rs. 2190.00 (Girls) per semester M. Sc. SEM II&IV Rs. 3390.00(Boys) per semester M. Sc. SEM II&IV Rs. 1890.00 (Girls) per semester

Course offered at: Zoology Department, Gujarat University, Ahmedabad.

Future Career Opportunity: Through application, merit and Interview or Campus Interview.

ZOOLOGY SYLLABUS FOR CREDIT BASED SEMESTER SYSTEM (BASIC)

No.	Course Code	Name of the course	Hours	Credits
1	ZOO – 401	Cell Biology	3+1	04
2	ZOO - 402	Biochemistry	3+1	04
3	ZOO – 403	Animal Diversity	3+1	04
4	ZOO – 404	Physiology	3+1	04
5	ZOO – 405PR	Practical – 1	6	04
6	ZOO – 406PR	Practical – 2	6	04
		Total	28	24
1	ZOO – 407	Genetics	3+1	04
2	ZOO - 408	Radiation Biology & Biostatistics	3+1	04
3	ZOO – 409	Immunology & Toxicology	3+1	04
4	ZOO – 410	Animal Behaviour & Evolutionary Biology	3+1	04
5	ZOO – 411PR	Practical – 3	6	04
6	ZOO – 412PR	Practical – 4	6	04
		Total	28	24
1	ZOO – 501	Developmental Biology	3+1	04
2	ZOO - 502	Ecological Sciences	3+1	04
3	ZOO – 503EA	Molecular Cell Biology – I	3+1	04
	ZOO – 503EB	Molecular Endocrinology - I	5	
4	ZOO – 504EA	Molecular Cell Biology – II	3+1	04
	ZOO – 504EB	Molecular Endocrinology - II		
5	ZOO – 505PR	Practical – 5	6	04
6	ZOO – 506PR	Practical – 6	6	04
		Total	28	24
1	ZOO – 507S	Seminars / Industrial Visits	4	04
2	ZOO - 508A	Assignments / Group Discussions	4	04
3	ZOO – 509PT	Dissertation and Viva	20	16
		Total	28	24
		Grand Total	112	96

Course Name: Master's Degree in Biomedical Technology Course

(Course Director – Dr. M. V. Rao)

Course Type: Self-financed

Intake: 40 students

Eligibility: Bachelor Degree with minimum second class in

Biochemistry, Biotechnology, Biosciences, Bio Medical Technology, Microbiology, Zoology,

Chemistry, with 'B' Group in S.Y.B.Sc

Subject offered/ specialization: Nil

Duration: Two Year (Full Time)

Course Commencement: June

Admission Process: By merit

Fees: Rs. 15,000=00 per semester

Course offered at: Zoology Department, Gujarat University, Ahmedabad.

Future Career Opportunity: Through application, merit and Interview.

BIOMEDICAL TECHNOLOGY SYLLABUS FOR CREDIT BASED SEMESTER SYSTEM (BASIC)

No.	Course Code	Name of the course	Hours	Credits
1	BMT – 401	Instrumentation and Methodology	3+1	04
2	BMT - 402	Clinical Biochemistry and Serology I	3+1	04
3	BMT – 403	Parasitology	3+1	04
4	BMT – 404	Hematology	3+1	04
5	BMT – 405PR	Practical – 1	6	04
6	BMT – 406PR	Practical – 2	6	04
		Total	28	24
1	BMT – 407	Clinical Biochemistry and Serology II	3+1	04
2	BMT - 408	Toxicology	3+1	04
3	BMT – 409	Clinical Pathology	3+1	04
4	BMT – 410	General Microbiology	3+1	04
5	BMT – 411PR	Practical – 3	6	04
6	BMT – 412PR	Practical – 4	6	04
		Total	28	24
1	BMT – 501	Immunology	3+1	04
2	BMT - 502	Clinical Endocrinology	3+1	04
3	BMT – 503	Reproductive technologies and Radiation diagnostics	3+1	04
4	BMT – 504	Clinical Genetics	3+1	04
5	BMT – 505PR	Practical – 5	6	04
6	BMT – 506PR	Practical – 6	6	04
		Total	28	24
1	BMT – 507S	Seminars / Industrial Visits	4	04
2	BMT - 508A	Assignments / Group Discussions	4	04
3	BMT – 509PT	Dissertation and Viva	20	16
		Total	28	24
		Grand Total	112	96

Course Name: Master's Degree in Human Genetics

(Course Director – Dr. M. V. Rao)

Course Type: Self-financed

Intake: 10 students

Eligibility: Bachelor Degree with minimum second class in

Biochemistry, Biotechnology, Biosciences, Bio Medical Technology, Microbiology, Zoology,

Chemistry, with 'B' Group in S.Y.B.Sc

Subject offered/ specialization: Nil

Duration: Two Year (Full Time)

Course Commencement: June

Admission Process: By merit

Fees: Rs. 25,000=00 per semester

Course offered at: Human Genetics Centre (Annexure Zoology Department,

Gujarat University, Ahmedabad.)

Future Career Opportunity: Through application, merit and Interview.

HUMAN GENETICS SYLLABUS FOR CREDIT BASED SEMESTER SYSTEM (BASIC)

No.	Course Code	Name of the course	Hours	Credits
1	HG – 401	Cell Biology	3+1	04
2	HG - 402	Techniques in Cytogenetics and Tissue Culture	3+1	04
3	HG – 403	Genetics	3+1	04
4	HG – 404	Biological Chemistry	3+1	04
5	HG – 405PR	Practical – 1	6	04
6	HG – 406PR	Practical – 2	6	04
		Total	28	24
1	HG – 407	Molecular Biology	3+1	04
2	HG - 408	Bioinformatics and Biostatistics	3+1	04
3	HG – 409	Immunotechnology	3+1	04
4	HG – 410	Genetic Counseling and Management	3+1	04
5	HG – 411PR	Practical – 3	6	04
6	HG – 412PR	Practical – 4	6	04
		Total	28	24
1	HG – 501	Genetic Toxicology and Cancer Genetics	3+1	04
2	HG - 502	Genetic Engineering	3+1	04
3	HG – 503	Clinical and Molecular Genetics	3+1	04
4	HG – 504	Stem Cell Biology and Nanosciences	3+1	04
5	HG – 505PR	Practical – 5	6	04
6	HG – 506PR	Practical – 6	6	04
	_	Total	28	24
1	HG – 507S	Seminars / Industrial Visits	4	04
2	HG - 508A	Assignments / Group Discussions	4	04
3	HG – 509PT	Dissertation and Viva	20	16
		Total	28	24
		Grand Total	112	96

Course Name: Master of Philosophy in Zoology

Course Type: Grant in Aid

Intake: 10 students

Eligibility: M.Sc. with 55% in the respective subjects.

Subject offered/ specialization: Reproductive Physiology, Cell Biology, Toxicology

Duration: One Year

Course Commencement: June

Admission Process: By merit

Fees: Rs. 4,590 (Boys) 1stsemester.

Rs. 4,090 (Boys) 2nd semester. Rs. 3,090 (Girl) 1st semester. Rs. 2,590 (Girl) 2nd semester.

Course offered at: Zoology Department, Gujarat University, Ahmedabad.

Future Career Opportunity: Through application/merit/Interview.

COURSE 5

Course Name: Doctor of Philosophy

Course Type: Grant in Aid

Intake: 3-5 students per year

Eligibility: M.Sc. with 55% and/or NET qualified

Subject offered/ specialization: Zoology and Life Sciences including Biomedical

Technology Course.

Duration: 3- 5 years

Admission Process: By merit

Fees: Rs. 5,990 (Boys) 1stsemester.

Rs. 5,090 (Boys) 2ndto4thsemester.

Rs. 4,090 (Girl)1stsemester.

Rs. 3,590 (Girl) 2ndto 4thsemester.

Course offered at: Zoology Department, Gujarat University, Ahmedabad.

Future Career Opportunity: Through Application, Merit, Interview etc.

Course Name: Doctor of Philosophy in Life Sciences (BMTC)

Course Type: Grant in Aid

Intake: 3-5 students per year

Eligibility: M.Sc. with 55% and/or NET qualified

Subject offered/ specialization: Zoology and Life Sciences including Biomedical

Technology Course.

Duration: 3- 5 years

Admission Process: By merit

Fees: Rs. 5,990 (Boys) 1stsemester.

Rs. 5,090 (Boys) 2ndto4thsemester.

Rs. 4,090 (Girl)1stsemester.

Rs. 3,590 (Girl) 2ndto 4thsemester.

Course offered at: Zoology Department, Gujarat University, Ahmedabad.

Future Career Opportunity: Through Application, Merit, Interview etc.

COURSE 6

Course Name: Doctor of Philosophy in Human Genetics

Course Type: Grant in Aid

Intake: 3-5 students per year

Eligibility: M.Sc. with 55% and/or NET qualified

Subject offered/ specialization: Zoology and Life Sciences including Biomedical

Technology Course.

Duration: 3- 5 years

Admission Process: By merit

Fees: Rs. 5,990 (Boys) 1stsemester.

Rs. 5,090 (Boys) 2ndto4thsemester.

Rs. 4,090 (Girl)1stsemester.

Rs. 3,590 (Girl) 2ndto 4thsemester.

Course offered at: Zoology Department, Gujarat University, Ahmedabad.

Future Career Opportunity: Through Application, Merit, Interview etc.

Faculty (Zoology Course)

Name: Dr. M. V. Rao

Qualification: M.Sc., Ph.D.,F.G.S.A., M.R.E.

Designation: Professor & Head

Areas of Specialization: Zoology, Reproductive Physiology, Genetic Toxicology,

Cytogenetics

Contact No.: 26302362 (O) 27437920 (R) 9825736797(M)

Name: **Dr. R. J. Verma**Qualification: M.Sc., Ph.D.
Designation: Professor

Areas of Specialization: Zoology, Physiology, Endocrinology, Toxicology

Contact No.: 26302362 (O) 26306105 (R)

Name: Dr. (Mrs.) H. N. Highland

Qualification: M.Sc., Ph.D. Designation: Reader

Areas of Specialization: Zoology, Reproductive Physiology, Endocrinology

Contact No.: 26302362 (O) 26856399 (R)

Name: **Dr. Linz buoy George** Qualification: M.Sc., Ph.D.

Designation: Reader

Areas of Specialization: Zoology, Fishery Biology, Animal Biotechnology

Contact No.: 26302362 (O)

Name: Dr. (Mrs.) Ketaki R. Desai

Qualification: M.Sc., Ph.D. Designation: Sr. Lecturer

Areas of Specialization: Zoology, Reproductive Physiology, Endocrinology

Contact No.: 26302362 (O) 26308904 (R)

Name: Dr. (Mrs.) Divya Chandel

Qualification: M.Sc., Ph.D. Designation: Sr. Lecturer

Areas of Specialization: Zoology, Cell Biology, Cytogenetics

Contact No.: 26302362 (O) 26857254 (R)

Name: Dr. D. D. Jhala

Qualification: M.Sc., M.Phil., Ph.D.

Designation: Lecturer

Areas of Specialization: Zoology, Cell Biology, Cytogenetics

Contact No.: 26302362 (O) 27681048 (R)

Faculty (Biomedical Technology Course)

Name: Dr. M. V. Rao

Qualification: M.Sc., Ph.D.,F.G.S.A., M.R.E.

Designation: Professor&Head

Areas of Specialization: Zoology, Reproductive Physiology, Genetic Toxicology,

Cytogenetics

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Designation: Lecturer

Areas of Specialization: Zoology, Cell Biology, Cytogenetics

Contact No.: 26302362 (O) 27681048 (R)

Visiting/Guest Faculty:

Name: **Dr. S. R. Dave** Qualification:M.Sc., Ph.D.

Designation: Professor and Head, Microbiology Dept.

Areas of Specialization: Ind. Microbiology, Microbial technology, Environmental

Microbiology

Contact No.: 26303225 (O) 26853709 (R)

Name: **Dr. Nayan K. Jain** Qualification: M.Sc., Ph.D.

Designation: Professor and Head, Life Sciences Dept.

Areas of Specialization: Zoology -Molecular Cell Biology, Animal Behaviour,

Instrumentation, Ocular orphophysiology,

Reproductive Physiology

Contact No.: 26301491 (O) 23621101 (R)

Name: **Dr. Pranav Shrivastav** Qualification: M.Sc., M.Phil., Ph.D. Designation: Reader in Chemistry

Areas of Specialization: Analytical Chemistry Contact No.: 26300969 (O) 26751073 (R)

Name: **Dr. J. J. Trivedi** Qualification: M.Sc., Ph.D.

Designation: Ex. Head, Biochemistry Dept., K. M. School of Medicine

Areas of Specialization: Clinical Biochemistry

Contact No.: 26609979 (R)

Name: Dr. Ashwin Patel

Qualification: M.D.

Designation: Haematologist

Areas of Specialization: Haematology

Contact No.: 26402972 (O)

Name: Dr. Gaurang Banker

Qualification: M.D.

Designation: Paediatrician

Areas of Specialization: Child Specialist Contact No.: 26577963 (O), 26742655(R)

Name: Dr. Bhaskar Vyas

Qualification: M.D.

Designation: Pathologist

Areas of Specialization: Pathology

Contact No.: 26303090 (O), 26304010 (R)

Name: Dr. Chaitanya Nagori

Qualification: M.D.

Designation: Gynaecologist and Sonologist

Areas of Specialization: Gynaecology, Sonography.

Contact No.: 26401090 (O)

Name: **Dr. Sujal Munshi** Qualification: M.D., DNB

Designation: Obstetrician and Gynaecologist

Areas of Specialization: Gynaecology and Infertility.

Contact No.: 079 26463333 (O)

Name: **Dr. Bharti Mittal** Qualification: M.Sc., Ph.D.

Designation: HOD and Consultant – Supratech Genopath.

Areas of Specialization: Molecular Biology

Contact No.: 7698009903 (M)

Faculty (Human Genetics Course)

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Designation: Professor&Head

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Designation: Lecturer

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Designation: Professor and Head, Life Sciences Dept.

Areas of Specialization: Zoology – Molecular Cell Biology, Animal Behaviour,

Instrumentation, Ocular orphophysiology,

Reproductive Physiology

Contact No.: 26301491 (O) 23621101 (R)

Name: **Dr. J. J. Trivedi** Qualification: M.Sc., Ph.D.

Designation: Ex. Head, Biochemistry Dept., K. M. School of Medicine

Areas of Specialization: Clinical Biochemistry

Contact No.: 26609979 (R)

Name: Dr. Ashwin Patel

Qualification: M.D.

Designation: Haematologist

Areas of Specialization: Haematology

Contact No.: 26402972 (O)

Name: **Dr. Sujal Munshi** Qualification: M.D., DNB

Designation: Obstetrician and Gynaecologist

Areas of Specialization: Gynaecology and Infertility.

Contact No.: 079 26463333 (O)

Name: **Dr. Bharti Mittal** Qualification: M.Sc., Ph.D.

Designation: HOD and Consultant – Supratech Genopath.

Areas of Specialization: Molecular Biology

Contact No.: 7698009903 (M)

Name: **Dr. Vivek Upasani** Qualification: M.Sc., Ph.D.

Designation: Lecturer, M. G. Science College.

Areas of Specialization: Microbiology

Contact No.: 9427902704 (M)

Name: **Dr. Hem Desai** Qualification: M.B.B.S.

Designation: NHL Municipal Medical College

Contact No.: 9824555334 (M)