Devi Ahilya Vishwavidyalaya, Indore

Profile of the Department

School of Life Sciences

Submitted to

National Assessment & Accredition Council
[NAAC]
Bengaluru
(31st July-2013)

SCHOOL OF LIFE SCIENCE, DAVV, INDORE: NAAC 150 POINT REPORT

1. Name of the Department: **School of Life Science** Faculty of **Life Sciences**
2. Year of establishment: **1971**

A.1 Academic programmes offered by the department at present, under the following categories and Sanctions Pertaining to each of the Courses.

Programmes	**Number**	**Course/Subjects**
UG	-	
PG	**02**	M.Sc. Life Science M.Sc. Industrial Microbiology
Integrated Masters	-	-
M.Phil.	01	Life Science
Ph.D.	01	Life Science
Integrated Ph.D.	-	-
Certificate	-	-
Diploma	-	-
PG Diploma	-	-
Any other (please specify)	-	-
Total	**04**	

A.1.1 Details approval/recognition and recommendations issued by the statutory body (for example, (UGC, AICTE, NCTE, PCI, MCI, DCI) governing the programme in case of Professional Programmes letters for the first time and Last Academic Year recognitions: **All programs are regular and UGC approved.**

1.2 If the department offers Distance Education Programmes (DEP): **NO**
1.3 Number of programmes offered: 04
1.4 Name of Each Programme: (1) M.Sc. Life Science
(2) M.Sc. Industrial Microbiology
(3) M. Phil Life Science
(4) Ph. D. Life Science

A.2 Copy of Ordinances related to the courses in the department: **Yes** √

Industrial Microbiology- **Ordinance No. 70** **(Kept in the file A.2)**

M. Phil Life Science- **Ordinance No. 21** **(Kept in the file A.2)**

Ph. D.- **Ordinance No. 18** **(Kept in the file A.2)**

A.3 Number of working days during the last academic year (2012-2013): **186 Days**.

Number of teaching days during the past four academic years: (2008-2013)

(182, 183, 185, 181, 185)

A.4 Number of positions in the Department, their appointment letters, joining reports and sanctions of Each **(Available with University Establishment Section.)**

Positions	**Teaching faculty**				
	Professor	Associate Professor	Assistant Professor		
Sanctioned by the UGC / University / State Government	2+1	4	4	**20**	**8**
Recruited	1 (Direct) 2 (MPS) 1 (CAS)	1 (MPS) 2 (CAS)	4+3	1 LDC 14 Class IV	**5**
Yet to recruit	2	2	-	5	3
Number of persons working on contract basis	-	-	-	-	-

A.4.1 Qualifications of Teaching staff:

Highest qualification	**Professor**		**Associate Professor (Reader)**		**Assistant Professor (Lecturer)**		
	Male	Female	Male	Female	Male	Female	
Permanent teachers							
D.Sc./D.Litt.							
Ph.D.	04	-	02	01	02	-	09
M.Phil.	-	-	-	-	01	-	01
PG M.Sc.	√	√	√	√	√		√
Temporary teachers: Under process							
Ph.D.	-	-	-	-	-	-	-
M.Phil.	-	-	-	-	-	-	-
PG	-	-	-	-	-	-	-
Part-time teachers (Courses Visiting Faculty)							
M.Tech./Ph.D.	-	-	-	-	-	-	-
M.Phil.	-	-	-	-	-	-	-
PG	-	-	-	-	-	-	-

Emeritus, Adjunct and Visiting Professors and their sanctions:

S.N.	Emeritus	Adjunct	Visiting
01.		-	**Prof. Govindjee** US-Full Bright Fellow, Emeritus Professor, Albana University, USA. **15/10/2012 to 5/11/2012-**

Semester-wise Record of Courses Visiting Faculty and their Sanctions:

S.No.	Academic Session	Semester	Course	Name	Qualification	Teaching/ Research/ Industry Experience	Number of Hours in the Semester
1.	2012-2013	I	M. Phil	Mr. Niranjan Srivastava	M. Sc, M.B.A	20 years	22 Lectures
2.	2012-2013	-	Ph.D. course work	Ms. Nikita Chouradiya	M. Sc, M. Tech	3 years	8 Lectures

A.6 Copies of Latest Biodata of Faculty in positions in the Department: **Yes (Kept in File No. A6)**

Name of Faculty	Qualification	Designation	Field of specialization
Dr. S. Chand	Ph.D	Professor and Head	Plant Biotechnology/Tissue & Cell Culture /Somatic Cell Genetics
Dr.K.N.Guruprasad	Ph.D	Professor	Plant Physiology, Photobiology
Dr. S. Patil	Ph.D	Professor	Microbial Technology
Dr. A. Kar	Ph.D	Professor	Animal Physiology, Endocrinology
Dr. G.P. Pandey	Ph.D.	Professor	Environmental Science, Eco-physiology
Dr. K. Hajela	Ph.D	Reader	Immunology, Biochemistry
Dr. A. Jajoo	Ph.D	Reader	Plant Physiology, Biochemistry
Dr. T. Banerjee	Ph.D	Lecturer	Industrial Microbiology, Biotechnology
Dr. R. Jatwa	Ph.D	Lecturer	Endocrinology, Pharmacology
Mr. V. Thakur	M.Phil	Lecturer	Environmental Biology

A7.1. Copies of Yearly Performa Based Assessment Records of Faculty in positions in the Department: **Yes** (Available with University Establishment section)

A. 7.2. Number of teaching posts sanctioned and filled (Professors/Associate Professors/Asst. Professors)

	Sanctioned	Filled
Professors	**3**	**1**
Associate Professors(Reader)	**4**	**3**
Asst. Professors(Lecturers)	**4**	**6**

A7.3 Faculty profile with name, qualification, designation and specialization (D.Sc./D.Litt./ Ph.D./M.Phil., etc.)

Name of the faculty	Qualification	Designation	Specialization	No. of Years of Experience	No. of Ph.D. students guided for the last 4 years
Dr. S. Chand	Ph.D	Professor & Head	Plant Biotechnology/Tissue & Cell Culture / somatic cell Genetics	32 (Teaching) 37 (Research)	05
Dr.K.N.Guruprasad	Ph.D	Professor	Plant Physiology, Photobiology	32	06
Dr. S. Patil	Ph.D	Professor	Microbial Technology	32	03
Dr. A. Kar	Ph.D	Professor	Animal Physiology, Endocrinology	28	04
Dr. G.P. Pandey	Ph.D.	Professor	EnvironmentalScience,Ecophysiology	30	03
Dr. K. Hajela	Ph.D	Reader	Immunology, Biochemistry	24	03
Dr. A. Jajoo	Ph.D	Reader	Plant Physiology, Biochemistry	14	05
Dr. T. Banerjee	Ph.D	Lecturer	IndustrialMicrobiology,Biotechnology	09	-
Dr. R. Jatwa	Ph.D	Lecturer	Endocrinology, Molecular Pharmacology, Animal Physiology	05	-
Mr. V. Thakur	M.Phil	Lecturer	Environmental Biology	05	-

A7.4 List of senior Visiting Fellows, faculty, adjunct faculty, emeritus professors. Visited department:

(1) Prof. Govindjee, US-Full Bright Fellow, Emeritus Professor, Albana University, USA.(Oct-Nov,2012)

(2) Prof. A. K. Tyagi, Director, National Institute of Plant Genomic Research, New Delhi.(Feb.2012,March,2013)

(3) Prof. N. K. Singh, National Professor, ICAR & Dr. B. P. Pal Chair, New Delhi.

(4) Prof. R. K. Kohli, Vice Chancellor, DAU, Jalandhar. (March,2013)

(5) Prof. Y. S. Ahlawat, Emeritus Professor, IARI, New Delhi.(February,2012)

(6) Prof. Paramjeet Khurana, University of Delhi South Campus, New Delhi.(March,2013)

(7) Prof. B. C Das, Director, Ambedkar Research Institute, New Delhi.(February,2012)

(8) Prof. H.S. Gupta, Director, IARI, New Delhi.(Jan-2013)

(9) Prof. S.S. Sharma Shimla University, H.P.(Jan-2013)

(10)Prof. L. C. Rai, Banaras Hindu University, Varanasi.(March,2013)

(11)Prof. T.R. Sharma, IARI, New Delhi.(March,2013)

(12) Prof.B.C.Tripathi,Vice-Chancellor, Ravenshaw University Cuttack.(April-2013)

((13) Dr. Pankaj Srivastava, I.F.S. Chief Commissioner of Forest, Indore.

(14) Dr. Afroz Ahmad, Ministry of Water Resource, Govt. of India, New Delhi.(May,2013)

(15) Prof. Usha Vijay Raghwan, IISC, Bangalore.

(16) Prof. Pulok Mukherjee, Director, Natural Products, Institutes, Kolkata.

A7.5 Percentage of classes taken by temporary faculty – **0.5%**

A7.6 Percentage of classes taken by temporary faculty – 2 **%**

A7.7 Programme-wise Student:Teacher Ratio: **12.2:1** (M. Sc. I and III Sem+ M. Phil + Ph. D.)

Total number of faculty = **10**

(M. Sc. Life Science) = 33 (13- III Sem) +20 -I Sem) 2012-13

(M.Sc. Industrial Microbiology)= 21 (15-III Sem) +06- Isem) 2012-13

(M. Sc. Life Science) = 39 (19- III Sem) +20 -I Sem) 2013-14

(M.Sc. Industrial Microbiology)= 30 (15-III Sem) +15- ISem) 2013-14

(including.F.F. & Employee quota) **1.7:1** (M. Phil Life Science) = 18 (I Sem)

3.6:1 (Ph. D.) =36 (23 old Registered + 13 DET qualified)

Faculty from School of Life Sciences (Prof. Anand Kar, Dr. K. Hajela and Dr. Rameshwar Jatwa also engaged classes and covered 60% syllabus of Ph. D. Zoology Course work.

A7.8 Number of academic support staff (technical) and administrative staff: sanctioned and filled: **Total 28 sanctioned (20 non-teaching and 08 Technical)**

Filled: Non-teaching:14

Technical: 5 Vacant : 9

A8. Students enrolled in the department during the current academic year, with the following details:

Students	UG	PG M. Sc. Life Science (LS) and M. Sc. Industrial Microbiology (IM)	Integrated Masters	M.Phil.	Ph.D.	D.Litt./ D.Sc.
	MF	*M *F	*M *F	*M *F	*M *F	*M *F
From the state where the university is located	-	LS: 10 F+13 M(2012-13) IM: 10 F+M 04(2012-13) Upto 31st JULY2013-14 LS : 13 F+04 M =17 IM : 12F+03 M=15	-	5M 11F (2012-13) MPhil IN Life Sc. (2013-14) 12M+ 27F M.Phil in Zoology 05M+09F	17M 15F (2012-13)	-
From other states of India	-	LS: 01F+M11 (2012-13) IM: 02F+M02 (2012-13) LS:03F+02M (2013-14) IM Nil. (2013-14)	-	1M (2012-13)	1M 3F (2012-13)	-
NRI students		-	-	-		
Foreign students		-	-	-		
Total		94 (55F+39M)		23M+47	36(18M 18F)	

LS= Life Sciences ; IM= Industrial Microbiology
*M-Male *F-Female

Externally registered students? **NO**

A7. Calculation of 'Unit cost' of education

(Unit cost = total annual recurring expenditure (actual) divided by total number of students enrolled)

(a) including the salary component =89,702.65/-

(b) excluding the salary component =6,212/-

A8. A. Faculty recharging strategies

B. Number and list of faculty with course details of faculty development programmes, academic staff college programs or other faculty recharge programs: **Yes**

1. Teacher Empowerment and ICT Champion: Dr. Rameshwar Jatwa and Dr. T. Banerjee participated in 10 days programme sponsored by MHRD, New Delhi and organized by SCSIT, IT Center and Computer Center, DAVV, Indore, June. 2013.

2. Refresher Course in Life Sciences: Dr. Rameshwar Jatwa and Dr. T. Banerjee completed 21 days long course in 2013 at UGC-Academic Staff Colelge, DAVV, Indore. (January-2013).
3. Orientation Course: Dr. Rameshwer Jatwa and Mr. Vinod Thakur completed 21 days long Orientation Course in 2011 at UGC-Academic Staff College, DAVV, Indore.(2011).
4. Dr. Rameshwar Jatwa completed 3 days course on "Data Analysis & Data Interpretation" organized by at UGC-Academic Staff College, DAVV, Indore (2011).
5. Dr. Rameshwar Jatwa attended 6 days Training program on "Transformation and Molecular Characterization of Medicinal Plants and Animals" organized by Jamia Hamdard, New Delhi (2010).
6. Dr. Rameshwar Jatwa attended 14 days long NRCBS-UGC Workshop on Animal Behavior and Chronobiology at Madurai Kamaraj University, Madurai, Tamilnadu (2009).

A.9 . Student projects :Percentage of students who have done in-house projects including inter-departmental projects:

As per the course curriculum M. Sc. Life Science and M. Sc. Industrial Microbiology students require to undertake project dissertation work in IV semester. The student of IV Sem batch pursue the projects from outside the department in national Lab / Institutes of repute. M. Phil Life Science students are doing in-house project in the department. (List of students & project titles, place where project work carried out is maintained in. **(File A.9)**

Percentage of students doing projects in collaboration with other universities / industry / institute:

100% students of M.Sc. IV Sem Life Science and Industrial Microbiology

A.10 Awards / recognitions received at the national and international level by Faculty:

Dr. Suresh Chand

1. Member, NAAC peer team for accreditations to Universities and Colleges.(since 2011).
2. Member UGC Expert committee IX,X,IX,XII Plan.
3. Member Expert Committee Board of studies,RDC,in various Universities.
4. Member Educational Board & Review committees of various Universities.
5. Selected as Post -Doctoral Fellow The Australian National University, Canberra,(1982).
6. Awarded Commonwealth Academic Staff Fellowship by the Common-wealth
7. Awarded Visiting Fellowship under Indian National Science Academy &

Hungarian Academy of Sciences Scientific Exchange Programme (BRC,Szeged,Hungary)(1991).

8. Awarded Govt. of India Biotechnology Overseas Associateship Award, Ministry of Sciences and Technology, DBT (IPK,Germany)2004.
9. Awarded Visiting Fellowship under International Collaboration Scientific Exchange Programme, INSA -DFG (Tuebingen, Germany) (2005)
10. Awarded Dr. R. B. Ekbote Prize by the Maharashtra Association for the Cultivation of Science , DST, Govt. of India. (2003).

Dr. K. N. Guruprasad

1. Member, NAAC peer team for accreditations of Universities and Colleges.
2. Visiting Scientist, Biophysics Department, Moscow University, Russia.
3. Consultant, BASF India Ltd, Mumbai.

Dr. Anand Kar

1. Awarded best science research award for teachers in Biological sciences, DAVV,Indore by M.P Council of Science and Technology (MPCST) (2010)
2. Invited Plenary lecture In "International symposium on Constitutional Medicine" at Daizon, South Korea. (2009).

Dr. K. Hajela

1. Awarded Marie Curie International Incoming Fellowship (2007-2009).
2. Awarded Hungarian Scholarship Board Visiting Fellowship 2010.
3. Member Project Approval Committee MP Biotech Council, Bhopal (2010-2013).

Dr. Anjana Jajoo

1. Awarded Hungarian State Scholarship from Hungarian State Board (HSB)to carry out research work in Hungary, (2009).
2. Awarded DST-DAAD fellowship to visit Germany under Exchange of Senior Scientist to visit Germany to discuss possibility of future collaborative projects.(2010).
3. Awarded best science research award for teachers in Biological sciences, DAVV by M.P Council of Science and Technology (MPCST), (2012).
4. Awarded DBT-CREST(Cutting-edge Research Enhancement and Scientific Training) award(2012) to carry our research work abroad. (2012)
5. Member, Board of Studies, North Saurashtra University, Jalgaon, Maharashtra
6. Member, UGC committee for credit transfer policy, UGC, New Delhi
7. Delivered invited lectures in international conferences in Australia, Korea, Azerbaizan, Eurasia

Dr. Rameshwar Jatwa

1. UGC-Career Research Award (2012)

Award (Student):

Dr. Vivek Chandra, INSA Young Scientist Medal (2012). He did Ph.D. under Dr. K. Hajela, Reader, School of Life Sciences.

A.11 Record of each of Seminar/ Conference/Workshop organized and the source of funding (national / international) with details of outstanding participants, if any **(File A.11).**

Year	National	International
2009-10	Shanti Swaroop Bhatnagar Awardees' conference, July 17-19, 2009	
2011-12	Recent Trends in Life Science, 25-26th Feb 2012 (U.G.C.-D.A.V.V.).	
2012-13	(1) Refresher Course in Life Science, (Jan 2-22, 2013) (2) Distinguished Scientists Lecture series, (March 19-20, 2013). (3)Popular Lectures on Biodiversity conservation (22nd May'2013)	

Participants for Conferences with their addresses:

I: "Recent Trends in Life Science,25-26 Feb 2012".

1. **Prof. Akhilesh K.Tyagi, FNA, FASc, FAAS,FTWAS,**
   Director & J.C. Bose National Fellow, National Institute of Plant Genome Research (DBT,Govt.of India),New Delhi-110067.
   Topic of Lecture: Plant Genomics Moves Ahead.
1. **Prof. N.K.Singh, FNA,FNASc, FAAS.**
   National Professor, Dr.B.S.Pal Chair,
   Lal Bahadur Shastri National Centre for Biotechnology,
   Indian Agricultural Research Institute Pusa, New Delhi-110012.
   Topic of Lecture: Pigeonepea Genome Initiative.

2. **Professor Bhudev C.Das, FNA,FNASc,FASc,FAMS**
   Professor,Dr. Gurbakhsh Singh, Chair: JC.Bose National Fellow,
   Dr.B.R.Ambedekar Research Centre for Biological Research,
   University of Delhi, North Campus, New Delhi-110007.
   Topic of Lecture: Infections and Humans Cancer:Cellular Control of Viral Oncogene Expression.

3. **Professor YS Ahlawat,FAAS.**
   Emeritus Scientist (DST) & Professor of Virology, Advanced Centre for Plant Virology. Indian Agricultural Research Institute, New Delhi-110012.
   Topic of Lecure : Virus and Virus like diseases of plants and their management.
   School of Life Sciences, D.A.V.V.Indore.

II. Shanti Swaroop Bhatnagar Awardees' conference (July 17-19, 2009)

The distinguished scientists from Biological Sciences who participated in the conference were 1. Dr. Javed Agrewala, 2. Dr. Rama Govind Rajan, 3.Dr. B. S. Murthy, 4.Dr. Shashikant Shastri, 5. Dr. Amlendu Chandra,6. Dr. Anil Bhardwaj 7. Dr. Subhasis Choudhary.

III. Recent trends in Life Sciences (Feb 25-26, 2012)

The list of speakers in the conference includes Prof. N. K. Singh, National Professor, ICAR, Dr. B. P. Pal Chair, New Delhi, Prof. Akhilesh Tyagi, Director, National Institute of Plant Genome Research, New Delhi, Prof. R. N. Singh, NIPGR and Prof. B. C. Das, Director, Ambedkar Research Institute, New Delhi.

IV : Eminent speakers of the Distinguished Scientist Lecture Series (March 19-20, 2013)

The eminent speakers in the lecture included:

1. **Dr. Paramjit Khurana**, **FNA, FNASc, FASc**
   Professor, Department of Plant Molecular Biology,
   University of Delhi (South Campus) New Delhi.
2. **Dr. T. R. Sharma, FNA, FNASc, FAAS**
   Principal Scientist (Biotechnology),
   National Research Centre of Plant Biotechnology, IARI, New Delhi.
3. **Professor R. K. Kohli, FNA,FNASc,FNAAS**
   Vice Chancellor, D.A.University, Jalandhar, Punjab.
4. **Professor L. C. Rai, FNA,FNASc, FNAAS.**
   Molecular Biology Section for advanced study in Botany,
   BHU Varanasi.
5. **Prof. A.K. Tyagi, FNA,FNASc,FASc, FTWAS**
   Director & JC Bose National Fellow
   National Institute of Plant Genome Research, New Delhi.

V. International Day for Biological Diversity celebrated in the department on 22nd May,2013.

Speakers :

1. **Dr. Pankaj Srivastava, IFS**
   Chief Conservator of Forest, Indore.
2. **Dr. Afroz Ahmad,**
   Ministry of Water Resources,Govt.of India.

3. Prof.D.P.Singh,

Hon'ble Vice Chancellor,DAVV,Indore presided over the function.

A.12 Write up of Code of ethics for research followed by the departments:

(1) Guidelines of CPCSEA and institutional ethical committee to perform experimentation on laboratory animals (mice and rats) are being followed.

(2) Faculty is working on the topics closely associated in the areas of basic sciences and with the direct benefits to society and end users including microbial technologies, agricultural aspects, understanding of pathologies and drug discovery & therapeutics.

(3) No work is being carried out on transgenic Animals/Plants/Microbes.

A.12 Student profile course-wise:

	Total applications received	**Selected**		**Pass percentage**	
		Male	Female	Male	Female
M. Sc.-I sem (i) Life Science (ii) Ind. Microbiology	Admission through CET-2012	 14 10	 6 8	 14	 06
M. Phil.	84	6	11	30	21
Ph. D. (Course work)	124	8	5	16.66	6.57

A.13 Diversity of students

Name of the Course	**% of students from the same university**	**% of students from other universities within the State**	**% of students from universities outside the State**	**% of students from other countries**
M.Sc. Life Science	**(2013-14) 52 %**	**17%**	**29 %**	Nil
M. Sc. IndustrialMicrobiology	**(2013-14) 86 %**	**13 %**	**Nil**	Nil
M. Phil. Life Science	94.12	-	5.88	Nil
Ph. D. Life Science	81	10	9	Nil

A.14 Record of how many students have cleared Civil Services and Defense Services examinations, NET, SET, GATE and other competitive examinations? Give details category-wise.

UGC-NET/SLET (2008 onwards): (List of the students whose information is available to the department):

1. Mr. Manjul Singh (2008)
2. Ms. Aditee Gupta (2008)
3. Mr. Atul Agarwal (2009)
4. Ms. Megha Goyal (NET-2009)
5. Mr. Narendra Kumar (2010)
6. Mr. Kanchan Jumerani (2010)
7. Mr. Ram Kumar Singh (2010)
8. Mr. Shadab Khan (2010)
9. Mr. Komal Chodhary (2011)
10. Mr. Pankaj Patel (2012)
11. Ms. Rachna Tripathi (GATE-2012)
12. Mr. Maliram Hindala (GATE-2012)
13. Ms. Kainat Zehra Rizwi (GATE-2012)

A.15 Record of Student progression (2012-2013)

Student progression	**Percentage against enrolled**
UG to PG	**-**
PG to M.Phil.	2 %
PG to Ph.D.	4 %
Ph.D. to Post-Doctoral	2 %
Employed 1. Campus selection 2. Other than campus recruitment -Enterpreneurs	___

A.16 Record of Diversity of staff

Percentage of faculty who are graduates	
of the same University	**60**
from other Universities within the State	—
from Universities from other States	**40**
from Universities outside the country	—

A.17 Number of faculty who were awarded Ph.D., D.Sc. and D.Litt. during the last four years: **01 (Dr. Rameshwar Jatwa awarded Ph. D. in May 2009)**

A.18 Present details of infrastructural facilities in the department, with regard to:

a) Library: School of Life Sciences has its own departmental library with 1355 titles & books relevant to Life Sciences, Microbiology, Molecular Biology, Immunology, Genetics, Bioinformatics, Plant Physiology, Animal Physiology, Biotechnology and Genetic engineering. This is in addition to the books available on these subjects in the main library of the University.

b) Internet facilities for staff and students: School of Life Sciences is equipped with 36 desktop; 10 notebooks; 22 printers; 05 scanners and 01 photocopier for students and staff. All the computers are having access of internet facilities.

c) Total number of class rooms: **03**

d) Class rooms with ICT facility: **03**

e) Students' laboratories: **03**

f) Research laboratories: **07** (Plant Physiology, Photobiology, Microbiology, Immunology, Animal Physiology, Molecular Medicine &Toxicology and Ecology).,with equipments of more than 2 crores.

A.19 List of doctoral, post-doctoral students and Research Associates

a) from the host university

Name of Principal Investigator	**Name of Research Scholars**	**Category**	**Name of Co-PI**
1 Dr. S.Chand	1. Ms. Rachana Tripathi 2. Ms. Arati yadav 3. Mr. Ashu pandey 4. Mr. Bhagat Singh 5. Ms. Niharika Marmat 6. Ms. RichaAganihotri	General OBC General ST SC General	____
2 Dr.K.N.Guruprasad	2. Ms.Priya Mani 3. Ms. Sonika Sharma 4. Ms.Juhie Joshi 5. Mr.Lokesh Baghel 6. Mr.Ritesh Raipuria 7. Ms. Mansi Kanungo	General General ST SC General	____
3 Dr. S.Patil	1.Girish Pendharkar 2. Sayed Danish Anjum	OBC General	_____
4 Dr. A.Kar	1. Ms.Neha Sharma 2. Mr.Narendra Kumar 3. Ms. S. Notwani 4. Mr. N. Dhingra 5. Ms. Jyoti Agrawal 6. Ms. M. Diyalani	General SC General General General General	_____
5. Dr.G.P.Pandey	1. Kanchan Jumerani	General	Dr.V.S.Bhatia
6.Dr. K.Hajela	1. Mrs.Bavita Khosla 2. Mr. Mritunjya Saxena 3. Mr. Pankaj Patel 4.Mr. Md. Zafarab	General General OBC General	-
7. Dr. Anjana Jajoo	1. Ms. Divya Agrawal 2.Mr. Vimal Semval 3. Ms. Tina Tongya 4. Ms. Rupal Singh Tomar 5. Mr. Amit Goutam	General General General General General	Dr.S.Bharti Dr. Renu K Chopra Dr.S.Bharti Dr.S.Bharti Dr. Sai Prasad
8. Dr.Tushar Banerjee	1. Mr. P. Awadhiya 2. Mr. Shadab Khan	OBC General	_____

List of Post Doctoral: working in the School of Life Sciecnes

1. Dr. Sunita Kataria, DST-WOS-A (Worked till Dec. 2012)Awarded Woman scientist (2010-12) (2013-15).

2. Dr. Sunanda Panda, DST-WOS-A (2011-13)

A.19 Records of financial assistance and Number of post graduate students getting financial assistance from the university, UGC, State, AICTE.

The students are admitted through National level entrance exam/CET.

Besides, SC/ST/ OBC students are getting fellowships from State government and UGC.

Post Metric Scholarship of M.Sc. and M. Phil Students for the session of 2012-13

List of Renewal Scholarship

	Number of Students	Category of Students
	03	OBC
	01	ST
	01	SC

List of New Scholarship

	Number of Students	Category of Students
	09	OBC
	06	ST
	05	SC

A.20 Methodology of need assessment exercise undertaken before the development of new programme(s) **Based on the requirement of students and as per U.G.C.guidelines**.

A.21 Records of feedback from

(a) Faculty on curriculum as well as teaching-learning-evaluation? If yes, how does the department utilize the feedback? **Yes**

Following Faculties are involved in curriculum up gradation/ revision

(1) Dr. S. Chand, Professor and Head

(2) Dr. K.N. Guruprasad, Professor

(3) Dr. S. Patil, Professor

(4) Dr. A. Kar, Professor

(5) Dr. G. P. Pandey,Reader

(6) Dr. K. Hajela, Reader

(7) Dr.Anjana Jajoo, Reader

(8) Dr.Tushar Banerjee, Lecturer

(9) Dr.Rameshwar Jatwa, Lecturer,

(10) Mr.Vinod Thakur., Lecturer.

(a).The suggestions/feedback analyzed by a committee constituted for the purpose after discussion discussed in the departmental committee. The curriculum is changed periodically according to the suggestions and need of the students. Teacher student meetings also conducted to resolve the problems as well as grievances.

(b) Students on staff, curriculum and teaching-learning-evaluation and how does the department utilize the feedback?

Department uses the feedback as indicator of the overall quality of the teaching and learning, infrastructure, behavior of the staff and faculties to students and using this indicator the required changes implemented.

(c) Alumni and employers on the programmes offered and how does the department utilize the feedback? Department improves the program by incorporating the suggestions from feedbacks.

A22. **List the Distinguished Alumni of the Department:**

1. Dr. V. S. Bhatia, Principal Scientist, Directorate of Soybean Research, Indore.(1985)
2. Dr. Pradeep Kumar G, Scientist-G, RGCB, Trivandrum (Ph. D. 1988)
3. Dr. Malini Laloraya, Scientist F, RGCB, Trivandrum (M. Sc. 1986, Ph. D. 1990)
4. Dr. Mahendra Darokar, Scientist, CIMAP, Lucknow (M. Sc. 1991)
5. Dr. Alok Dubey, Scientist, RRCAT, Indore (Ph.D.1993).
6.. Dr. D.V.S.S.R. Prakash, Director, PMI Institute, Bangalore.(1998)
7. Dr. Abhay Kumar Pandey, Scientist, NIPER, Mohali (Ph. D 2000)
8. Dr. Ashok Kumar Seharawat, Senior Scientist, Edmanton, Canada.(Ph.D.2000)
9. Dr. Krishna Pal Karmodiya, Scientist, IISER, Pune (M. Sc. 2003)
10. Dr. A.K. Singh, Senior Scientist, ICAR, Pune. (2004)
11. Dr. Purnima Basu, Scientist, California USA.(Ph.D.2005)
12. Dr. Rajesh Kumar Jha, Scientist C, CDRI, Lucknow (M. Sc. 2001, Ph. D. 2007)7.
13. Dr. Krishna Chaitanya Gulla, Senior Scientist, BIOCON, Bangalore(M.Sc. 2000,Ph.D.2008)
14. Dr. Hamendra Singh Parmar, Lecturer, DAVV, Indore (M. Sc. 2002, Ph.D. 2009)
15. Dr. Kshitij Gupta, Scientist, University of Pensilvania, USA (M. Sc. 2002, Ph. D. 2009)

16. Dr. Vivek Chandra, Scientist, University of California-San Diego,USA (M.Sc. 2004, Ph.D.2010).

A.23 Details of student enrichment programmes (special lectures / workshops / seminar) involving external experts:

1. Shanti Swaroop Bhatnagar Awardees lecture series, July17-19, 2009.
2. National Seminar on Recent Trends in Life Sciences (2012)
3. Lecture on Photosynthesis delivered by Prof. Govindjee, Full Bright Fellow, Albana University, USA (2012).
4. Distinguished Scientists Lecture Series (2013).

A.24 Record and List of the teaching methods adopted by the faculty for different programmes.

1. Teaching of advanced topics in details by using International research paper, review articles, reviews, and online journals & literature provided to the students.
2. To improve communication and research skills of the students, seminar presentations are incorporated in to the course curriculum of M.Sc.,M.Phil and Ph.D.Course work students.

A.25 Record of Monitoring by the department ensure that programme objectives are constantly met and learning outcomes are monitored:

The key objectives of our curriculum are to enhance the theoretical and practical understanding as well as skills of students in the area of basic and advance Life Sciences. School of Life Sciences is shaping the career of students in such a way that after the completion of their course they are absorbed in higher education, government and corporate sectors. School not only develops professional competencies, but also shapes the overall personality of students to become a responsible citizen of country.

A.26 . Details and Highlight of the participation of students and faculty in extension activities in the department:

School of Life Sciences celebrated "International Day for Biological Diversity" on 22nd May 2013 and Dr. Pankaj Srivastava, IFS, Chief Conservator of Forests, Indore and Dr. Afroz Ahmad, Ministry of Water Resources, Govt. of India, New Delhi delivered lectures in the department.

A.27. Details of "beyond syllabus scholarly activities" of the department:

a. Participation in various conferences, seminars and lectures by faculty and students.

b. Students counseling on the personal problems, life style, career and to teach them to become good human being.

c. Remedial and tutorial classes.

d. Interaction with eminent scientists.

A.28 Information about programme/ department accreditation / grading by other agencies? If yes, give details: **Yes (UGC-SAP and DST-FIST)**

UGC-SAP research fellows in the department:

1. Ms. Yamini Dixit (Ph. D. awarded in 2011)
2. Ms. Neha Sharma (from 16th March,2009-Present)
3. Ms Teena Tongra (from 09th March,2009-Present)
4. Ms Divya Agrawal(from 09th March,2009-Present)

A.29 Write up of highlight the contributions of the department in generating new knowledge, basic or applied.

Since inception of the department, Ph.D. and PG students have been educated they are serving the nation in higher education and research. Department is making significant contribution in the the following areas : Plant tissue culture and somatic cell genetics; Photosynthesis and Photobiology; Microbiology, Immunology; Animal Physiology etc.

Research facility in the following areas are available in the department.

1. Plant Tissue culture & somatic cell genetics- Somatic embryogenesis of medicinal, tree and cereal species. Synthetic seed technology.
2. Immunology and Biochemistry.
3. RIA facility for T3, T4, TSH estimations.
4. Flourometer facility for stress response studies.
5. IRGA for plant physiology experiments.
6. Phytochemical analysis technology.
7. EPR for basic research.
8. Basic understanding of metabolic disorders.
9. Drug discoveries & therapeutics development.
10. Lab scale technology for Steroid bioconversion.

Research contribution of Prof. S. Chand :

Ph.D. Awarded:

1. Dr.Asad Ali (2013)
2. Dr. Sangita Singh (2012).
3. Dr. Ram Sewak Singh Tomar (2012)
4. Dr.Sapna Punia (2011)
5. Dr.Suresh Tiwari (2010)

Research contribution of Prof. K.N. Guruprasad

The impact of magnetic fields on the physiology of crop plants is being investigated. The role of ROS in the signal transduction of magnetic fields has been worked out. The enhancement of photosynthesis and crop yield after magneto-priming of seeds is one of the major contributions. The lab is also working on the physiological effects of Pyaclostrobin, a fungicide which has shown beneficial effects on healthy plants.

Ph.D. Awarded:

1. Dr. Anshuman Tiwari (2008)
2. Dr. Rajkumar Raipuria (2009)
3. Dr. Fatema Hussain (2010)
4. Dr. Kanchan Chauhan (2010)
5. Dr. Shine M. B. (2011)
6. Dr.Anand Sharma (2011)

Research contribution of Prof. S. Patil

Efforts to develop a bacterial strain that can be used for large scale production of intermediates required for the production of steroidal drugs extensively used in allopathic system of medicine. As a result of chemical and physical mutagenesis and subsequent screening, a bacterial strain was developed and deposited in National Collection of Industrial Microorganisms, NCL, Pune. Another area of research work was to study the distribution of Multidrug Resistant (MDR) enterobacterial pathogens in Indore area. Large number of MDR bacteria was isolated from different sources and methods to control these pathogens with essential oils were proposed.

Ph.D. Awarded :

1. Ms. Vrushali Kolhe (2010).
2. Mrs. Preeti Vyas (2012).

Research contribution of Prof. A.Kar

Dr.Anand Kar worked on different aspects of drug discovery and phytomedicine involving isolation, identification and efficacy evaluation of novel phytochemicals with respect to the regulation of thyroid, cardiac, diabetic and breast cancer problems. Recently proteomic study was also considered.

Ph. D awarded.

1. Rameshwar Jatwa (2009)
2. Hamendra Singh Parmar (2009)
3. Yamini Dixit (2011)
4. Prachi Mishra (2012)
5. Asha Thomas (2013).

Research contribution of Dr. G.P. Pandey

Research group headed by Dr. G. P. Pandey is actively engaged on the basic understanding of eco-physiological studies using two economically important crops namely Soybean (*Glycine max*) and Cotton (*Gossypium hirsutum*) of Madhya Pradesh and medicinal plants Brahmi (*Bacopa monniera* with response to Solar radiation reference to Spectral quality and UV exclusion experiments. His research is published in various international journal of repute.

Ph. D. awarded

1. Ms. Monica Jain (2011).
2. Ms. Priyanka Singh (2012).
3. Mr. Sanjay Singh Baroniya (2013).

Research contribution of Dr. K. Hajela

Main interest is to study the the role of lectin carbohydrate interactions in immune responses. We have found that the binding of various mono–di-trisaccharides to membrane lectins reduces the rotational motion of membrane proteins and lipids indicating a decrease in membrane fluidity . It was also found that cross linking of cell memebrane glycoproteins by exogenous lectin increases the susceptibility of the RBC lysis by free radical damage. Our current work involves study of

Mannose Binding Lectin (MBL) associated serine proteases MASP-1 and MASP-2. We have demonstrated that MASP-1 is capable of cleaving fibrinogen and generation of fibrin clot. This work has been cited more then hundred times by other workers in this field. The association of polymorphism of Mannose Binding Lectin exon 1 and promoter region was also studied in vitiligo patients.

List of Ph.D. since 2009

1. Mr Kshitij Gupta (2009).
2. Mr Satish Vedi 2009 (co-guide)
3. Vivek Chandra (co-guide) 2010
4. Shilpi Jayaswal (co-guide) 2011.
5. Asgar Ali (co guide) thesis submitted in 2012. viva awaited.

Research contribution of Dr. Anjana Jajoo

Photosynthesis group lead by Dr. Jajoo has been working on the effects of abiotic stresses on photosynthetic processes. Changes in the heterogeneity of Photosystem II under the influence of abiotic stresses like high temperature, salinity, environmental pollutants etc. were first reported by us and have been published in international journals of repute.

List of Ph. D students (2009-2013)

1. Pooja Singh-Rawal (2009)
2. Sulbha Sharma (2011)
3. Pooja Mehta-Dubey (2012)
4. Sonal Mathur (2013)
5. Vajinder Kumar (2013)

Research contribution of Dr. Tushar Banerjee

Improvement and optimization of steroidal substrate biotransformation, including Soy sterols to 17-ketosteroids. Reactions optimized include Phtosterol to Androstenedione/ androstadienedione, 9-alpha-hydroxy AD/ADD, 11-alpha hydroxylation of 17-ketosteroids. Mycobacterial membrane modifications to enhance the fluidity of the otherwise rigid cell wall cytoskeleton. The enhanced fluidity increases the substrate uptake and increased nutrient

sequestration.Studies on Avermectin production. Cheaper and highly effective methodologies for higher production of these secondary metabolites was achieved.

Students pursuing: Ph.D. Mr. Pushpendra Awadhiya : Mycobacterial membrane modifications.

Mr. Shadab Khan : Avermectin Production.

Research contribution of Dr. Rameshwar Jatwa

Dr. Jatwa and his group is actively engaged in the understanding of etiology of metabolic syndrome and type 2 diabetes mellitus. Recently we have also started work on the exploration of novel pharmacological agents for metabolic disorders. In our lab, research work is in full swing to develop / isolate potent, effective and safe DPP-IV inhibitors from anti-diabetic plants as therapeutic molecules for type 2 diabetes mellitus and metabolic syndrome. Looking into the need of research work on theses aspects research projects are sanctioned by three prestigious funding agencies namely M.P. Biotechnology Council, Bhopal; UGC, New Delhi and Science and Engineering Research Board (SERB), New Delhi with a cumulative cost of over 40 lakhs.

Following research papers / chapter in book have been published by faculty (2009-2013).

List of Publications: Dr. S. Chand

1. Mravec, J. Kubes, M., Gaykova,V., Bielach, A., Petrasek, J., **Chand, Suresh,** Benkova, E., Zazimalova, E. & Friml,J. (2008). Genetic interaction of PIN and PGP transport mechanisms in auxin distribution-dependent development**. Development (UK),** 135, 3345-3354.CN-95, [IF: 7.69]
2. Tiwari, S., Singh, B., Vinod, Tomar, S.M.S., Singh, N.K., **Chand, S.** (2009). Molecular validation and screening of *Triticumdicoccoides* Korn. accessions for stripe rust resistance gene Yr 15 with SSR marker. **Indian J. Genet.,** 69 (1), 66-68. [IF: 0.184]
3. Sivasamy, M., Vinod, Tiwari, S., Tomar, R.S., Singh, B., Sharma, J.B., Tomar, S.M.S., & **Chand, S.** (2009). Introgression of useful linked genes for resistance to stem rust, leaf rust and powdery mildew and their molecular validation in wheat (*Triticumaestivum* L.). **Indian J. Genet.**, 69 (1), 17-27, [IF: 0.184]
4. Sonah, H., Deshmukh, R.K., Parida, S.K., **Chand, S**., & Kotasthane, A. (2009). Morphological and genetic variation among different isolates of Magnaporthegrisea collected from Chhattisgarh. **Indian Phytopath**. 62 (4), 469-477.

5. Verma, SK, **Chand, S. (**2009**).** Somatic embryogenesis and histological study in cotyledonary callus of Hyoscyamus muticus L. **Journal of Medicinal and Aromatic Plant Sciences**, 31 (3), 234-237.

6. Singh, AK**, Chand, S**. (2010). Plant regeneration from alginate-encapsulated somatic embryos of a leguminous tree, *Dalbergiasissoo* Roxb. **Indian J. Biotechnology**, (9), , 319-324. [IF: 0.477]

7. Channamalkarjuna, V, Sonah, H.,.,Prasad, M., Rao, G.J.N., **Chand, S.,** Upriti,H.C., Singh, N.K. & Sharma, T.R. (2010). Identification and fine mapping of major quantitative trait loci, q SBR11-1, for sheath blight resistance in rice. **Molecular Breeding**, 25, 155-166.CN-31 [IF: 2.193]

8. Asad Ali, Vinod, S.M.S., Tomar & **Chand, S.** (2011).Genetics of fertility restoration and test for allelism of restorer genes in wheat (Triticumaestivum L.). **Indian J. Genet**., 71 (3), 223-230. [IF: 0.184]

9. Sonah, H., Deshmukh, R.K., **Chand, S**., Srinivasprasad, M., Rao, G.J.N., Upreti, H.C.,Singh, A.K., Singh, N.K., Sharma, T. (2012).Molecular mapping of quantitative trait locus qLL12.1 for flag leaf length in rice (*Oryza sativa*). **JOURNAL OF CEREAL SCIENCE** (Elsevier)**,** 40:362-372. [IF: 2.971]

10. Tomar R.S., Vinod, Tomar S.M.S., Prasad S.V. Sai, Naik K. Bhojraraja, Jha, Girish K., Singh N.K., **Chand, S**. (2012). Development of mapping populations and their characterizations for drought tolerance in wheat. **Indian J. Genet**., 72 (2), 195-207. [IF: 0.184]

11. Sangeeta Singh, N.K. Singh, **S. Chand**, T.R. Sharma. (2013). Genome wide Distribution, Organisation and Functional Characterization of Disease Resistance and Defence Response Genes in Rice. **PLoS one**, Accepted. [IF: 4.411]

12. Jyotika Bhati, H. Chandrashekaran, **S. Chand**. (2013). Comparative Analysis of EST Mining Reveal High Degree of Conservation among Eight *Leguminosea* Species. **Journal of Agricultural Science and Technology, (USA**). Accepted. [IF: 0.685]

13. Jyotika Bhati, H. Chandrashekaran, **S. Chand.** (2013). In Silico EST Mining of five *Fabaceae* species. **Indian Journal of Biotechnology.** [IF: 0.477]

List of Publications: Dr. K. N. Guruprasad

1. Lakshmi N and Guruprasad K.N. (2009a) Cryptic red light signal regulates ascorbic acid in soybean. J.Plant.Physiol 166, 329 -332.[IF:2.699]
2. Lakshmi N and Guruprasad K.N. (2009b) Amplification of phytochrome induced morphogenesis in plants by the cryptic red signal (CRS). Plant Signalling and Behaviour, 4,-5,1-2 .[IF:2.0]
3. A. Sharma and K. N. Guruprasad (2009) Similarities in the biochemical changes between solar UV exclusion and GA application in *Amaranthus caudatus*. Physiol. Mol. Biol. Plants 15, 367–370.[NA]
4. V.S. Bhatia, Sanjeev Yadav, Kanchan Jumrani and K.N. Guruprasad (2010) Field deterioration of soybean seed: role of oxidative stresses and antioxidant defense mechanism. Journal of Plant Biology 37, 179-190. .[IF:091]
5. K.N.Guruprasad and Kanchan Chauhan Juyal (2010) Cryptic Red Signal: A hidden cellular signal that responds to red light. Journal of Plant Biology 37, 201-207. .[IF:099]
6. Karishma Jain, Sunita Kataria and K.N. Guruprasad (2011) Interaction of lycorine with UV-B and kinetin in cucumber (*Cucumis sativus* L.) cotyledons. International Journal of Plant Physiology and Biochemistry Vol. 3(1) 1-5. .[IF:2.775]
7. Dehariya Priti, Kataria Sunita, Pandey G.P., Guruprasad K.N. (2011) Assessment of impact of solar UV components on growth and antioxidant enzyme activity in cotton plant. Physiol. Mol. Biol. Plants. 17(3), 223–229. [N.A.]
8. Sanjay S. Baroniya, Kataria S., Pandey G.P., Guruprasad K.N. (2011) Intraspecific variation in sensitivity to ambient ultraviolet-B radiation in growth and yield characteristics of eight soybean cultivars grown under field conditions. Braz. J. Plant Physiol. 23(3), 197-202. .[IF:0.0825]
9. Shine M.B., Guruprasad K.N., Anjali A. (2011) Superoxide radical production and performance index of Photosystem II in leaves from magnetoprimed soybean seeds. Plant Signaling & Behavior 6-11, 1636-1638. .[IF:2.0]
10. Shine M.B., Guruprasad K.N., Anjali A. (2011) Enhancement of germination, growth, and photosynthesis in soybean by pre-treatment of seeds with magnetic field. Bioelectromagnetics 32(6), 474-84. .[IF:2.759]

11. Dehariya P., Kataria S., Pandey G.P., Guruprasad K.N. (2012) Photosynthesis and yield in cotton (*Gossypium hirsutum* l.) var. vikram after exclusion of ambient solar UV-B/A. Acta Physiol. Plant. 34, 1133-1144. .[IF:1.64]
12. Kataria S., Guruprasad K.N. (2012) Solar UV-B and UV-A/B exclusion effects on intraspecific variations in crop growth and yield of wheat varieties. Field Crops Res. 125, 8-13. .[IF:2.474]
13. Shine M.B., Guruprasad K.N. (2012) Impact of pre-sowing magnetic field exposure of seeds to stationary magnetic field on growth, reactive oxygen species and photosynthesis of maize under field conditions Acta Physiol Plant. 34, 255–265. .[IF:1.305]
14. Shine M.B., Guruprasad K.N., Anjali A. (2012) Effect of Stationary Magnetic Field Strengths of 150 and 200 mT on Reactive Oxygen Species Production in Soybean. Bioelectromagnetics 33, 428-437. .[IF:2.759]
15. Kataria S., Guruprasad K.N. (2012) Intraspecific variations in growth, yield and photosynthesis of sorghum varieties to ambient UV (280–400 nm) radiation. Plant Science 196, 85-92. .[IF:2.922]
16. Sonika Sharma, Guruprasad K.N (2012) Enhancement of root growth and nitrogen fixation in *Trigonella* by UV-exclusion from solar radiation. Plant Physiology and Biochem. 61, 97-102. .[IF:2.775]
17. Shine M.B., Guruprasad K.N. (2012) Oxyradicals and PSII activity in maize leaves in the absence of UV components of solar spectrum. Journal of Biosciences 37,703-712. .[IF:1.759]
18. Kataria Sunita, Dehariya P, Guruprasad K.N., Pandey G. P. (2012) Impact of exclusion of ambient solar UV-A/UV-B components on growth and antioxidant response of cotton (*Gossypium hirsutum*). Acta Biologica Cracoviensia Series Botanica 54 (2): 1-7. .[IF:0.612]
19. S.S.Baroniya, S.Kataria**,** Pandey G.P., Guruprasad K.N. (2013) Intraspecific variations in antioxidant defense responses and sensitivity of soybean varieties to ambient UV radiation. Acta Physiol. Plant. 35:1521–1530. .[IF:1.6359]

List of Publications: Dr. S. Patil :

1. Panda, S. Kar, A. and **Patil, S.** (2009) Soy sterols in the regulation of thyroid functions, glucose homeostasis and hepatic lipid peroxidation in mice. *Food Res. Inter.* **42**: 1087-1092. .[IF:3.59]
2. Suhail, M. **Patil, S.** and Khan, S. And Siddiqui, S. (2010) Antioxidant vitamins and lipoperoxidation in non-pregnant, pregnant, and gestational diabetic women: erythrocytes osmotic fragility profiles. *J. clin. med. Res.* **2 :** 266-273. doi:10.4021/jocmr454w.[N.A.]
3. Gulla, V., Banerjee, T. and **Patil, S**. (2010) Bioconversion of soysterols to androstenedione by *Mycobacterium fortuitum* subsp. *fortuitum* NCIM 5239, a mutant derived from total sterol degrader strain. *J. Chem Tech. Biotechnol.* **85** : 1135-1141. .[IF:1.818]
4. Vyas, P. and **Patil, S.** (2011) Isolation and identification of antibiotic resistance pattern in enterobacterial pathogens from juices and water in Indore city. *National J. Life Sc.* **8** : 21-24. [N.A.]
5. Vyas, P & Patil, S. (2012) Sources, Distribution and Control of MDR Enterobacterial Pathogens (LAP Lambert Academic Publishing GmbH), Deutschland., Germany. ISBN 10: 3848481111.(A Book)
6. Vyas, P. and **Patil, S.** (2012) Effect of essential oils on MDR pathogens: a comparative study *J. Environtl. Res. Devp.* 6: 1-6. Vyas, P. and **Patil, S.** (2011) Antimicrobial activity of essential oils against multidrug resistant enterobacterial pathogens. *Trends Biosci.* **4** (1): 23-24. .[IF:3.59]

List of Publications: Dr. A. Kar : No. of H.Index – 14

No. of Citation of articles-394 .

1. Panda S, Jafri M, **Kar A**, and Meheta BK (2009) Thyroid inhibitory, anti-peroxidative and hypoglycemic effects of Stigmasterol, isolated from *Butea monosperma , Fitoterapia 80(2)123-126. CN-16.* .[IF:2.00]
2. Sunanda Panda, **Anand Kar**, Sridhar Patil (2009) Soy sterols in the regulation of thyroid functions, glucose homeostasis and hepatic lipid peroxidation in mice" *Food Research International,* 42,1087-1092. CN-11. .[IF:3.59]

3. Jatwa R and **Kar A** (2009) Amelioration of Metformin-induced hypothyroidism by Wi*thania somnifera* and *Bauhinia purpurea* extracts in Type 2 Diabetic Mice" *Phytotherapy Research,* 23(8):1140-1145.CN-20 [IF :2.08]
4. **Kar A,** Panda S and Parmar HS (2009) Some plant extracts may prove to be thyrotoxic and peroxidative in nature, In " Molecular and Physiological aspects of Toxicology". Ed. K.Shah, Published by Mahila Mahavidyalaya, B.H.U., Varanasi,ISBN# 81-85403-09-2.
5. Panda S and Kar A(2009) Periplogenin-3-O- -D-glucopyranosyl (1→6)- -D-glucopyaranosyl - - (1→4) -D- Cymaropyranoside, Isolated from *Aegle marmelos* Protects Doxorubicin Induced Cardiovascular Problems and hepatotoxicity in Rats. *Cardiovascular therapeutics*, 27,108-116. CN-05. [IF :2.852]
6. Mishra Prachi, **Kar Anand** and Kale Raosaheb (2009) Prevention of chemically induced mammary tumorigenesis by diaidzein in prepubertal rats: the role of peroxidative damage and antioxidants. *Mol Cell Biochem*. 325,149-157.CN-17[IF :2.329]
7. Parmar HS & **Kar A** (2009b).Comparative analysis of free radical scavenging potential of several fruit peel extracts by invitro methods. *Drug Discovery therapeutics*,3 (2)49-55.CN-04.
8. Parmar HS, **Kar A** (2009a). Protective role of *Mangifera indica, Cucumis melo and Citrullus vulgaris* peel extracts in chemically induced hypothyroidism. *Chemico-Biological Interactions* ,177 (3):254-258.CN-14. [IF :2]
9. Dixit Y and **Kar A** (2009). Antioxidative activity of some vegetable peels determined in vitro by inducing liver lipid peroxidation. *Food Research International* 42:1351-54.CN.09[IF :2.967]
10. Mishra P, **Kar A** & Kale P (2009) Modulatory influence of pre-pubertal Biochanin A exposure on mammary gland differentiation and expression ofEstrogen receptor – α and apoptotic proteins. *Phytotherapy Research*, 23(7):972-9.CN-03. [IF :2.08]
11. Jatwa R and Kar A(2009**)** Anti-inflammatory and anti-peroxidative roles of diacerein re possibly mediated through an alteration in thyroid functions in animal model of inflammation" the Journal "*Fundamental & Clinical Pharmacology*"23,465-471.CN02. [IF :2.16]
12. Panda S, **Kar A** (**2010)** A Novel Phytochemical, Digoxigenin-3-O-Rutin in the Amelioration of Isoproterenol-Induced Myocardial Infarction in Rat: A Comparison with

Digoxin. Cardiovasc Ther, 20. doi: 10.1111/j.1755-5922.2010.00242. .[IF:2.852]

13. Jayasekera S, Thomas A, **Kar A** and Ramamurthy VV. 2010. Host correlated morphometric variations in the populations of *Bemisia tabaci* (Gennadius). *Oriental Insects* 44: 193-204. [N.A.]
14. Parmar HS, Dixit Y, **Kar A.** (2010). Fruit and vegetable peels : Paving the way towards the development of new generation therapeutics. Drug Discoveries &Therapeutics 4: 314-325 (Review).CN-04
15. Dixit Y, **Kar** A. **(2010)** Protective role of three vegetable peels in alloxan induced diabetes mellitus in male mice. Plant Foods Hum Nutr. 65 (3):284-9. CN.03.[IF:2.505]
16. Jatwa R, **Kar** A(**2010)**. Effect of metformin on renal microsomal proteins, lipid peroxidation and antioxidant status in dexamethasone-induced type-2 diabetic mice. *Indian J Biochem Biophys.* 47(1):44-8. CN-16.[IF:1.14]
17. Panda S, **Kar** A **(2011).** Periplogenin, isolated from *Lagenaria siceraria,* ameliorates L-T□-induced hyperthyroidism and associated cardiovascular problems. *Horm Metab Res* 43(3):188-93. [IF :2.41]
18. Mishra P, **Kar A** & Kale P (**2011)** Prepubertal daidzein exposure enhances mammary gland differentiation and regulates the expression of estrogen receptor-alpha and apoptotic proteins. ISRN Oncol. 896826. Epub 2011 Sep 4. .[IF:3.17]
19. Thomas A, Chaubey R, Naveen NC, **Kar A** and Ramamurthy VV. (2011). *Bemisia tabaci* (Gennadius) on *Leucaena leucocephala*: New host record from India and a comparative study with cotton populations. *International Journal of Tropical Insect Science*, 31, 4, 235–241.[H index=13]
20. Panda S, Kar A, Sharma P & Sharma A(2012)Cardioprotective potential of N, <alpha>-L-rhamnopyranosyl vincosamide, an indole alkaloid, isolated from the leaves of Moringa olefera in isoproterenol induced cardiotoxic rats: In vivo and in vitro studies . *Bioorganic & Medicinal Chemistry Letters* (accepted)*ISSN 0960-894X.* .[IF:2.338]
21. Sunanda Panda. **Anand Kar**. Tushar Banerjee.Neha Sharma **(2012)** Combined Effects of Quercetin and Atenolol in Reducing Isoproterenol Induced Cardiotoxicity in Rats: Possible Mediation Through Scavenging Free Radicals, Cardiovascular Toxicology, 12(3):235-42.CN-03. .[IF:2.351]
22. Sharma N, Panda S and **Kar A (2012**) Additional advantage with Fenugreek seed

extract in the glibenclamide induced inhibition in hepatic lipid peroxidation: An *in vitro* study.*Chinese Journal of Integrative Medicine*(accepted) CN3 .[IF:7.059]

23. Thomas A, R Chaubey R, Naveen NC, **Kar A**, Ramamurthy VV **(2012)** *Bemisia tabaci* (Hemiptera: Aleyrodidae) on *Leucaena leucocephala* (Fabaceae): a new host record from India and a comparative study with a population from cotton *International Journal of Tropical Insect Science* .31 (4), 235. H.index 13.

List of Publications: Dr. G. P. Pandey

1. Monica Jain, Sharad Tiwari, K. N. Guruprasad and **G. P. Pandey (2010)** Influence of media types on efficient somatic embryogenesis from different accessions of *Bacopa monnieri,* Journal of Tropical Medicinal Plants, Vol. 11(2) 163-168. [IF:0.0]
2. Monica Jain, Sharad Tiwari, K. N. Guruprasad and **G. P. Pandey (2011)** Micropropagation and Encapsulation of Two Accessions of *Bacopa Monnieri*: An Endangered Medicinal Plant, Vol. 1(1) 11-19. [IF:0.0]
3. Priti Dehariya, Sunita Kataria, **G.P. Pandey** and K.N. Guruprasad,**(2011)** Assement of impact of solar UV components on growth and antioxidant enzyme activity in cotton plant, Physiol Mol Biol Plants (July-September 2011) 17(3):223-229. [IF:0.0]
4. Sanjay S. Baroniya, Sunita Kataria, **G.P. Pandey** and K.N. Guruprasad, **(2011)** Intraspecific variation in sensitivity to ambient ultraviolet-B radiation in growth and yield characteristics of eight soybean cultivars grown under field conditions. Braz. J. Plant Physiol., 23(3): 197-202. [IF:0.0825]
5. Sunita Kataria, Priti Dehariya, K.N. Guruprasad, and **G.P. Pandey** (2012) Effect of exclusion of ambient solar UV-A/B components on growth and antioxidant response of cotton (*Gossypium hirsutum*). Acta Biologica Cracoviensia Series Botanica 54/2: 1–7. [IF:0.56]
6. Priti Dehariya, Sunita Kataria, K. N. Guruprasad and **G.P. Pandey, (2012)** Photosynthesis and Yield in Cotton (*Gossypium hirsutum Ls.)* Var. Vikram after Exclusion of Ambient Solar UV-B/A. Acta Physiol. Plantarum. 34:1133–1144. [IF:1.612]
7. Sanjay S. Baroniya, Sunita Kataria, **G.P. Pandey** and K.N. Guruprasad, **(2013)** Intraspecific variations in antioxidant defense responses and sensitivity of soybean varieties to ambient UV radiation. Acta Physiol. Plantarum 35:1521–1530. [IF:1.6339]

List of Publications: Dr. K. Hajela: No.of Citation since 2008 = 396
H index=11 i10 index=13

1. Diwedi M, Gupta K, Gulla K.C., Laddha N.C., **Hajela K** and Begum R (2009) Lack of genetic association of promoter and structural variants of mannan binding lectin (MBL) gene with susceptibility to generalized vitiligo ,B.J.Dermatol. 161(1):63-9**.** [IF :3.66]
2. Krishana Chaitanya Gulla, Kshitij Gupta , and **Krishnan Hajela** (2009)Functional estimation of MBL MASPs mediated complement activation in human serum) Ind. J.Med Res.130,428-432. [IF :1.837]
3. Activation of mannan-binding lectin-associated serine proteases leads to generation of a fibrin clot.Gulla KC, Gupta K, Krarup A, Gal P, Schwaeble WJ, Sim RB, O'Connor CD, **Hajela K**. Immunology. 2010 Apr;129(4):482-95. [IF :3.32]
4. The ORF3 protein of hepatitis E virus delays degradation of activated growth factor receptors by interacting with CIN85 and blocking formation of the Cbl-CIN85 complex.Chandra V, Kalia M, **Hajela K**, Jameel S.J Virol. 2010 Apr;84(8):3857-6. [IF : 5.40]
5. Cleavage of Kininogen and Subsequent Bradykinin Release by the complement Component: Mannose-Binding Lectin-Associated Serine Protease (MASP)-1".József Dobó; Balázs Major; Katalin Kékesi; István Szabó; Márton Megyeri; **Krishnan Hajela**; Gábor Juhász; Péter Závodszky; Péter Gál PLoS one (2011) 6(5)e 20036. [IF :4.35]
6. Mutational and expressional analysis of PTEN gene in colorectal cancer from northen India. Ali A, Saluja SS, **Hajela K**, Mishra PK and Rizvi M A. Mole. Carcinog.2013, in press.
7. Immune Responses to Defined Plasmodium falciparum Antigens and Disease Susceptibility in Two Subpopulations of Northern India. Mritunjay Saxena, Ratanesh K. Seth, **Krishnan Hajela**, Sukla Biswas, Journal of Advanced Laboratory Research in Biology, 2013,vol IV, 36-44.
8. Monoclonal antibodies in malarial diagnosis to monitor antimalarial resistance: an overview. Mritunjay Saxena, Ratnesh K Seth, **Krishnan Hajela** and Sukla Biswas.

Chapter in Book "Antimicrobial Resistance, a cause for global concern. Eds. Rubina Lawrence, Ebenzer Jaykumar, George Thomas, 2014, Narosa Publishing House Pvt Ltd.

List of Publications: Dr. A. Jajoo : Total citation in last 5 yrs. : 240; H index 9 I index 8

1. P. Mehta, **A. Jajoo**, S. Mathur, S.I. Allakhverdiev and S. Bharti (2009) High salt stress in coupled and uncoupled thylakoid membranes: A comparative study. **Biochemistry (Moscow)**, 74(6): 620-624.A. Jajoo, K.N. Guruprasad, S. Bharti and P. Mohanty (2009) A report on International Conference "Photosynthesis in the Global Perspective" held in honor of Govindjee, November 27-29, 2008, Indore, India. **Photosynthesis Research** 100: 49-55. [IF :3.1]
2. M. Khatoon, K. Inagawa, P. Pospíšil, A. Yamashita, M. Yoshioka, B. Lundin, J. Horie, N. Morita, **A. Jajoo**, Y. Yamamoto and Y. Yamamoto (2009) Quality control of photosystem II: thylakoid unstacking is necessary to avoid further damage to the D1 protein and to facilitate D1 degradation under light stress in spinach thylakoids. **Journal of Biological Chemistry**, 284: 25343-25352. [IF :5.6]
3. P. Mehta, **A. Jajoo**, S. Mathur and S. Bharti (2010) Chlorophyll *a* fluorescence studies revealing effects of high salt stress on Photosystem II. **Plant Physiology and Biochemistry**, 48: 16-20. [IF :2.8]
4. **A. Jajoo**, S. Mathur, P. Mehta, M. Yoshioka, S.I. Allakhverdiev and Y. Yamamoto (2010) Study on the effects of chloride depletion on photosystem II using different chloride-depletion methods.**Journal of Bioenergetics and Biomembranes**, 42: 47–53[IF:2.8]
5. P. Singh - Rawal, **A. Jajoo** and S. Bharti (2010) Fluoride distributes the absorbed excitation energy more in favor of Photosystem I. **BiologiaPlantarum,** 54(3): 556-560. IF :1.7]
6. P. Singh, **A. Jajoo**, S. Mathur, P. Mehta and S. Bharti (2010) Evidence that pH can drive state transitions in isolated thylakoid membranes from spinach. **Photochemical Photobiological Sciences,9**: 830-837. [IF :2.4]

7. P. Mehta, S.I. Allakhverdiev and **A. Jajoo** (2010) Characterization of Photosystem II heterogeneities in response to high salt stress in wheat leaves during early developmental stage. ***Photosynthesis Research,*****105: 249-255. IF 2.41. 3.1**

8. P. Mehta, S.I. Allakhverdiev and **A. Jajoo** (2010) Characterization of Photosystem II heterogeneities in response to high salt stress in wheat leaves during early developmental stage. ***Photosynthesis Research,*****105: 249-255. IF 2.41.**

9. S. Mathur, S.I. Allakhverdiev and **A. Jajoo** (2011) Analysis of high temperature stress on the dynamics of antenna size and reducing side heterogeneity of Photosystem II in Wheat leaves (*Triticumaestivum*). ***BiochimicaetBiophysicaActa,*** **1807: 22-29**. [IF :5.1]

10. S. Mathur, **A. Jajoo**, P. Mehta and S. Bharti (2011) Analysis of elevated temperature induced inhibition of Photosystem II using Chlorophyll a fluorescence induction kinetics in Wheat leaves. **Plant Biology,13:1-6.** [IF:2.8]

11. S. Mathur, P. Singh, P. Mehta and A. Jajoo (2011) A comparative study to evaluate the effects of high temperature and low pH on PSII photochemistry in spinach thylakoid membranes. **BiologiaPlantarum,** 55 (4): 747-751. [IF: 2.4]

12. T. Tongra, P. Mehta, S. Mathur, D. Agrawal, S. Bharti, D. Los, S.I. Allakhverdiev and **A. Jajoo**(2011) Computational analysis of pH induced changes in Chlorophyll *a* fluorescence transients. ***Biosystems*****, 103(2): 285-290**. [IF:2.4]

13. P. Singh., O. Ziros., S. Bharti., G. Garab and **A. Jajoo.** (2011) Mechanism of action of Anions on the electron transport chain in thylakoid membranes of higher plants. **Journal of Bioenergetics Biomembranes**. DOI 10.1007/s10863-011-9346-7. [IF :2.8]

14. P. Mehta, V. Krasnovsky, S. Bharti, S.I. Allakhverdiev and **A. Jajoo**(2011) Analysis of salt-stress induced changes in Photosystem II heterogeneity by prompt fluorescence and delayed fluorescence in wheat (*Triticumvulgare*) leaves. ***Journal of Photochemistry Photobiology B:Biology***, 104: 308-313. [IF :3.1]

15. R. Khanna-Chopra, **A. Jajooand** V. Semwal (2011) Chloroplasts and mitochondria have multiple heat tolerant isozymes of SOD and APX in leaf and inflorescence in *Chenopodium album*, **Biochemical Biophysical Research Communications**, doi:10.1016/j.bbrc.2011. [IF :2.8]

16. **A. Jajoo** and S. Bharti (2012). A comprehensive study of the effects of nitrite anion on photosynthetic electron transport chain. In: Photosynthesis: Overviews on recent progress and future prospective, Eds. Itoh S, Mohanty P, Guruprasad KN, I. K. Publishers, India. Book.

17. V. Kumar, D.R. Thakare, D.N. Saha, **A. Jajoo**, P.K. Jain, S.R. Bhat and R. Srinivasan (2012) Characterization of Atprx18 a peroxidase gene and its upstream sequence from Arabidopsis thaliana. **Journal Plant Biochemistry and Biotechnology,**doi: 10.2007/s13562-011-0068-z. [IF:2.8]

18. **A. Jajoo**, M. Szabom, Z. Otto and G. Garab (2012) Low pH induced structural reorganizations in thylakoid membranes of higher plants. ***Biochimica et Biophysica Acta,*** doi:10.1016/j.bbabio.2012.01.002. [IF :5.1]

19. **A. Jajoo** (2012) Changes in Photosystem II in response to salt stress. Book Chapter published in "Ecophysiology and Responses of Plants under Salt Stress", Ed. P. Ahmad, 149. DOI 10.1007/978-1-4614-4747-4_5, Springer publishers (USA).Book.

20. R. Singh-Tomar, S. Mathur, SI. Allakhverdiev, **A. Jajoo** (2012) Changes in PS II heterogeneity in response to osmotic and ionic stress in wheat leaves *(Triticumaestivum)*. **Journal of Biomembranes and Bioenergetics.** DOI: 10.1007/s10863-012-9444-1. [IF :2.8]

21. S. Mathur, P. Mehta, **A. Jajoo** (2012) Effects of dual stress (high salt and high temperature) in wheat leaves (Triticumaestivum) **Physiology and Molecular *Biology of Plants***, *DOI 10.1007/s12298-012-0151-5* . [IF :0.6]

22. AnjanaJajoo (2013) Changes in photosystem II heterogeneity in response to high salt stress. Book Chapter submitted to "Modern (Current) Problems Of Photosynthesis" (In press, Moscow). Book.

23. S. Mathur and **A. Jajoo**(2013) Effect of high temperature stress on growth and crop yield of Wheat (Triticumaestivum). Book chapter (In press) Springer publishers.Book.

24. R. Singh - Tomar and **A. Jajoo** (2013) Alterations in PS II heterogeneity under the influence of Polycyclic Aromatic Hydrocarbon (Fluoranthene)in wheat leaves (*T. aestivum*).**Plant Science,** doi 10.1016/j.plantsci.2013.04.007 . [IF :2.7]

List of publications: Dr. T. Banerjee ; Total citation in last 5 yrs 56 H index=4

1. Vrushali Gulla, **Tushar Banerjee** and Shridhar Patil (2010) : Bioconversion of soysterols to androstenedione by Mycobacterium fortuitum subsp. fortuitum NCIM 5239, a mutant derived from total sterol degrader strain. *J. Chem. Technol. Biotechnol.* **Published Online:** 6 May 2010. IF :2.504]

2. Sunanda Panda, Anand Kar, **Tushar Banerjee** and Neha Sharma (2012) : Combined effects of Quercetin and Atenolol in reducing Isoproterenol-induced cardiotoxicity in rats: Possible mediation through scavenging free radicals. *Cardiovasc. Toxicol.* 12 235-242. [IF :2.351]

List of publications: Dr. R. Jatwa

1. Jatwa R (2009). Influence of chronic medication with some anti-diabetic drugs on endogenous antioxidants and thyroid metabolism. In: Manoharan S (Ed); Diabetes and Cancer-09, New India Publishing House, New Delhi, India.
2. Jatwa R and Kar A (2009a). Amelioration of metformin-induced hypothyroidism by *Withania somnifera* and *Bauhinia purpurea* extracts in type 2 diabetic mice. Phytotherapy Research 23(8):1140-5. .[IF: 2.068]
3. Jatwa R and Kar A (2009b). Anti-inflammatory and anti-peroxidative roles of diacerein are possibly mediated through an alteration in thyroid functions in animal model of inflammation. Fundamental and Clinical Pharmacology 23(4):465-71. [IF:1.988]
4. Jatwa R and Kar A (2010). Effect of metformin on renal microsomal proteins, lipid peroxidation and antioxidant status in dexamethasone-induced type-2 diabetic mice. Indian Journal of Biochemistry and Biophysics 47:44-8.[IF: 1.026]
5. Singh AK and Jatwa R (2012). Comparative assessment of diapeptidyl peptidase IV (DPP-IV) inhibitory and anti-peroxidative profile of *Allium sativum* and *Bauhinia pupurea* extract. In: Bhadange DG and Koche DK (Eds); Innovative Research Trends in Biological Sciences, Pravin Creation, Akola, India, pp. 563-566 (ISBN:978-81-923621-0-6).

30. Write up of Future plans of the department:

a. New collaboration and exchange program for students and faculty.

b. Consultancies with Pharma and biotech industries.

c. Enhancement of ICT tools, virtual class rooms, 24x7 learning places and new student-centric teaching.

d. Addition in permanent faculty, in recent areas like genomics, proteomics, molecular genetics, medical microbiology etc.

A.31 Record of any five Strengths, Weaknesses, Opportunities and Challenges (SWOC) of the department.

Strengths:

1 International collaborations in the field of plant physiology and photobiology

2 Students placement (National and International)

3 Renowned faculty, who has published research papers in reputed journals.

4 Involvement of faculty in various national funding agencies/bodies like UGC, UGC-NAAC, CSIR, DST etc.

5 Interdisciplinary courses offered in the department.

Weaknesses

1 Need of collaborations with other faculty within University (like Medical Engineering, Management, Medicine etc.)

2 Need of supporting and administrative staff..

3 Decreasing number of research students pursuing biological science due to reduced opportunities in the area of Biological sciences (in Industry, Teaching).

4.Colloboration with industry, pharma companies and ICAR/CSIR institutions.

5. Recuritment policies of the Govt.

Opportunities

1 International and National collaborations will improve research standards and opportunities to students.

2 Research skills and aptitude of faculties and students will further improve the quality of teaching and research.

3 Sandwich research programme of various funding agencies will be beneficial to start consultancy services.

4 Adjunct faculty positions will improve teaching

5 International fellowships for faculties will enhance the communication and research skills.

Challenges:

1 To develop global level research labs.

2 Attract students and researchers for Life Sciences courses, as at present there is lack of motivation for science among students.

3 Lack of motivation for research and development activities.

A.32 Write up of efforts for Quality Sustenance and Assurance in the department:

School of Life Science is updating syllabi as per requirement of students and on the guidance of expert and UGC-CSIR. NET Syllabi. The students are sent to summer training and project work in reputed national laboratories and institutions. The students feedback is obtained in each semester and the suggestions rendered by the students of M. Sc., M. Phil and research scholars are pass on to the individual teachers for improvement. Recently, PhD course work and M. Phil programme started in the department and faculty from School of Computer Sciences, IMS, School of Biotechnology are involved in teaching, interdisciplineary courses.

It is proposed from the 2013-14 session to introduce Bioinformatics, computer application paper in M.Sc. and to attach a small group of students to individual faculty for guidance and mentoring. Anti-ragging cell already exist in the department. The department regularly conduct departmental committee and faculty meetings to discuss the academic matters.

Participated in workshops on: (1) Fostering Excellence in Research, January 15, 2013.

(2). Workshop on Quality issues in Paper Setting and Evaluation, Sep. 26, 2012.

(3). Workshop in Quality in Teaching Learning Processes, May 15, 2013.

(4). C.B.C.S. March, 2013.

SCHOOL OF LIFE SCIENCE, DAVV, INDORE: Criterion1-7

CRITERION I: Curriculum Design and Development:

1.1.1 Academic Year of Revision, Curriculum of Each Course, Objective and Course plans of each paper taught in the course in year 2012.

Whether uploaded on website

Yes √

1.1.1.A Eligibility for admission to each course

Course	Eligibility
M. Sc. Life Science	B. Sc. in Biological Sciences with minimum 55% marks and passed the qualifying entrance examination conducted by the department. Reservation and age rules as per State Govt.
M. Sc. Industrial Microbiology	B. Sc. in Biological Sciences with minimum 60% marks and passed the qualifying entrance examination conducted by the department. Reservation and age rules as per State Govt.
M. Phil. Life Science	M. Sc. in Biological Sciences with minimum 55% marks and passed the qualifying entrance examination conducted by the department as per Ordinance No. 21. Reservation and age rules as per State Govt.
Ph.D. Life Science	M. Sc. in Biological Sciences with minimum 55% marks and has passed the qualifying entrance examination conducted by the university for course work (Eligibility as per UGC, University Ordinance No. 18).

1.1.1.B Whether reflects Vision and mission reflection

Yes √

1.1.1.C Write on reflection of vision and mission

Vision: The School of Life Sciences will be known as a premier destination, offering comprehensive, collaborative, interdisciplinary and sustainable training to the students and researchers of biological sciences.

Mission: To provide an environment conducive to learning, working, and conducting research through Professionalism, Excellence, and Teamwork in the basic and applied life sciences arena.

Objectives:

i. To generate trained manpower for the field of Basic and Applied Biological Sciences for the institutes/Universities/ MNC of national and international repute.

ii. To develop heath consciousness among people through the leaders of Life Science education.

iii. To provide scientific professional service to the workers of different organization and establishments.

iv To develop the personality through advanced biological sciences education.

1.1.2 Details of process followed in last revision of Curriculum

A. Need Assessment: **Need assessment was based on the student feedback, advice of external experts and faculty members of the department.**

B. Faculty involved in curriculum design

Dr. S. Chand
Dr. K.N. Guruprasad
Dr. Shridhar Patil
Dr. Anand Kar
Dr. G.P. Pandey
Dr. K. Hajela
Dr. Anjaja Jajoo
Dr. T. Banerjee
Dr. R. Jatwa
Mr. Vinod Thakur

C. Records of Departmental Committees/Board approvals of the designed curriculum: **Yes**

D. Records of External Experts Opinion of the designed curriculum: Yes

E. Records of External Experts Feedback of the designed curriculum: Yes

F. Records of Student Feedback opinion on the existing curriculum: Yes

G. Records of Syllabi of National tests, Eligibility Tests and Examinations for example, GATE, NET, Service Commissions, National Councils, for the each curriculum, if any: **Yes**

1.1.3 Detailed write up out each course in reference to

1 Employability
2 Innovation
3 Research

M.Sc. Life Science course

Employability

M. Sc. Life Sciences syllabus has a number of components encompassing the syllabi of national level examinations such as NET, GATE, ICMR etc. Thus providing opportunities in higher education sector. Also advance subjects including genomics and proteomics, protein engineering and stem cell biology that provide fair chances to get opportunities in corporate sector.

Innovation

The IV semester is completely dedicated for research / dissertation work. It is expected that the students will perform some novel work, therefore, it may provide opportunity to enhance practical and experimental skills among students to make them able for innovation.

Research

M. Sc. Life Science student worked very hard under the supervision of faculties from our department as well as faculties/scientist of various national laboratories and Universities of repute. The research work of some students is published in peer reviewed journals.

M.Sc. Industrial Microbiology course

Employability

The syllabus of M. Sc Industrial Microbiology course is aimed to cater the demand of Biotech and Pharma Industries. IN addition the syllabus has substantial components of national level examinations such as NET, GATE, ICMR etc. Also advance subjects including Genetic Engineering and Bioinformatics that provide fair chances to get opportunities corporate sector.

Innovation

In the curriculum the IV semester is completely dedicated for research / dissertation work. The work should be novel, therefore, it provide opportunity to enhance practical and experimental skills among students to make them able for innovation.

Self Study Report School of Life Sciences 2009-2013.

Research

The M. Sc. Industrial Microbiology student worked very hard under the supervision of faculties from our department as well as outside the institution where they go for the

dissertation work in the IV semester of the course.

M. Phil Life Science course

Employability

M. Phil Life Sciences syllabus is designed to trend the skilled manpower for the national and international institutes and Universities working in the relevant areas.

Innovation

The II semester is completely dedicated for research / dissertation work. It is expected that the students will perform some novel work therefore, it may provide opportunity to enhance practical and experimental skills among students to make them able for innovation. Students of M. Phil Life Sciences of current batch are working under departmental faculty on the advanced topics.

Research

M. Phil Life Science student are working with full dedication and devotion under the supervision of faculties of our. Students are being trained the contemporary areas of Life Sciences.

Ph. D. Life Science

Employability

Students of Ph. D. Life Science have fair chance of getting placement in various Universities at entry level. In addition, the graduates are competent for getting into various national and international laboratories and R & D sector as well.

Innovation

Ph. D. candidates worked independently in various labs.

Research

Ph. D. Life Science student are working with full dedication and devotion under the supervision of faculties of our. Students are being trained the contemporary areas of Life Sciences, they also gain training in other national and international Labs

Self Study Report School of Life Sciences 2009-2013.

1.1.4 Records of UGC/AICTE/National Council, Regulating bodies Guidelines for the development and restructuring the curriculum, if any,

Department Faculty members, if any, involved in leading any curricular reform which

has created a national impact? **NA.**

1.1.5 A. Record of Interactions, Opinions and Feedbacks for the designed curriculum with External Research Bodies. **NA.**

B. Records of Interactions, Opinions and Feedbacks for the designed curriculum with Industrial Experts, particularly in case of Professional Courses. NA

C. Records of Interactions, Opinions and Feedbacks for the designed curriculum with Stake Holders, such as eminent personalities, Visitors to the departments, parents. **Yes.**

D. Records of Alumni opinion on the existing curriculum (may be taken in an Alumni Register). **NA.**

1.1.6 List of Department Courses which are also introduced in University affiliated colleges also. **NA.**

1.1.7 Details of additional skill-oriented programme designed for the colleges, Employees, Faculty relevant to regional needs: **NA**

1.2 Academic Flexibility

1.2.1 List of Courses taught in Department on campus: **M.Sc. Life Science, Industrial Microbiology and M. Phil Life Science and Ph.D. in Life Science.**

1 Overseas programmes offered on campus: NA

2 Programmes available for colleges to choose from: NA

3 1.2.2 Records on the following provisions with reference to academic flexibility

a. List of Core/ Elective options: NA

b. List of Enrichment courses: **Faculties attend these courses at Academic Staff College.**

c. List of Courses offered in modular form: **Our Course of Life Science is overlapping course with M. Sc. Biotechnology and M. Sc. Biochemistry.**

d. List of courses/papers with Credit accumulation and transfer facility. **N.A.**

e. Details of Lateral and vertical mobility within and across programmes, courses and disciplines. **N.A.**

1.2.3 Records of International students: NA

1.2.4 Records of Courses developed targeting international students, if any. **NO**

1.2.5 Record of dual degree and twinning programmes. **NA.**

1.2.6 A. List of students, Admission Process, Fee structure of each programme **(List enclosed). M Sc, M Phil, Ph D**

B. Record of Teacher qualification and salary parity and differences (if any) at par with the aided programmes: **All faculties are regular and salaries are as per UGC pay scale.**

Dr. S. Chand, Professor
Dr. K.N. Guruprasad, Professor
Dr. Shridhar Patil, Professor
Dr. Anand Kar, Professor
Dr. G.P. Pandey, Reader
Dr. K. Hajela, Reader
Dr. Anjaja Jajoo, Reader
Dr. Tushar Banerjee, Lecturer
Dr. Rameshwar Jatwa, Lecturer
Mr. Vinod Thakur, Lecturer

1.2.7 Operational details of distance Education Course in the department (if applicable). **N.A.**

1.2.8 Details of Choice Based Credit System (CBCS): **NA**

1.2.9 Records of Departmental Academic Calendars of each semester: **Enclosed.**

1.2.10 Records of Inter-disciplinary programmes, Name of interdisciplinary program and details of students undertaken those programmes. **NA.**

1.3 Curriculum Enrichment

1.3.1 A. Record of academic years in which each of the courses was revised **2012. (Documents attached).**

B. Records of review, up-gradation: **NA**

C. Records of social relevancy,

D. Records of job orientation: **NA**

E. Records of knowledge intensive nature of each course: **Syllabus is vast to cover major areas on the other hand also provide deep insights of topics covered.**

F. Records of meeting the emerging need of students: NA

G. Records of meeting the emerging need of stakeholders: NA

Self Study Report School of Life Sciences 2009-2013.

1.3.2 Details of the last four years during which how many new programmes at UG and PG levels were introduced.

1 Inter-disciplinary

2 programmes in emerging areas: **M. Phil. Life Science (2012)**.

1.3.3 A. Details of strategies adopted for the revision of the existing programmes: **Placement profile, assessment of emerging trends as per UGC guidelines.**

B. Percentage of courses underwent a syllabus revision in last four years: **100%**

1.3.4 A. Details of Value-added courses offered: M. Phil Life Science (2012)

B. Details of these courses access to students: **100% seats are filled every year**

1.3.5 Details of higher order skill development programmes in consonance with the national requirements (for example, innovative M. Tech. /M.E. courses, CCNA, CCSP, ….): **NA**

1.4 Feedback System

1.4.1 A. Copy of Feedback form to obtain feedback from students/student class representatives regarding the curriculum: **Copies and analyses enclosed**.

B. Details of action and use of on feedback from students: **Feedback was on an average Good. However, strategies to further improving our programmes made through departmental committees.**

1.4.2 A. Method used for eliciting feedback on the curriculum from national and international faculty

B. Conducting webinars

C. Curriculum development Workshops

D. Curriculum development online discussions

E. Impact of Workshop and discussions

1.4.3 Specify the mechanism through which affiliated institutions give feedback on curriculum enrichment and the extent to which it is made use of. **NA**

1.4.4 What are the quality sustenance and quality enhancement measures undertaken by the Department in ensuring the effective development of the curricula?

Usually one departmental committee meeting is held monthly at our School. Syllabi revised on an average annually through Board of studies. We focus the percent students absorbed for higher education after M.Sc. and placement profile as an indicator of good curricula.

1.4.5 Any other information regarding Curricular Aspects which the UTD would like to include.

CRITERION II: TEACHING-LEARNING AND EVALUATION

2.1 Student Enrolment and Profile.

2.1.1 Copy of Advertisements and website info for ensuring publicity and transparency in the admission process**: A separate file maintained**

2.1.2 **A. Write up** details of the process of admission put in place by the department

B. List of the criteria for admission: (*e.g.*: (i) merit, (ii) merit with entrance test, (iii) merit, entrance test and interview, (iv) common entrance test conducted by state agencies and national agencies (v) other criteria followed.

School of Life Sciences admits students following merit with entrance test. Qualification and eligibility are as follow:

Course	Qualification and eligibility for admission
M. Sc. Life Science	B. Sc. in Biological Sciences with minimum 55% marks and passed the qualifying entrance examination conducted by the department. Reservation and age rules as per State Govt.
M. Sc. Industrial Microbiology	B. Sc. in Biological Sciences with minimum 60% marks and passed the qualifying entrance examination conducted by the department. Reservation and age rules as per State Govt.
M. Phil. Life Science	M. Sc. in Biological Sciences with minimum 55% marks and passed the qualifying entrance examination conducted by the department as per Ordinance No. 21. Reservation and age rules as per State Govt.
Ph.D. Life Science	M. Sc. in Biological Sciences with minimum 55% marks and has passed the qualifying entrance examination conducted by the university for course work (Eligibility as per UGC, University Ordinance No. 18).

2.1.3 Details of admission process in the affiliated colleges if department is monitoring the same: **None of the affiliated college/institution is running the M. Sc. courses except Ph. D. Admission in Ph.D. is through DET for both UTD and affiliated college/Institute.**

2.1.4 Student profile analysis: Analysis can be done in the department itself as follows

Course	Batch	Range of Pass % in Qualifying Exams.			
		Maximum		Minimum	
		M	F	M	F
M.Sc. Life Science					
M.Sc. Indust. Microbiology					
M.Phil in Life Sciences					
Ph.D.Course work.					

2.1.5 Strategies adopted to increase/improve access for students belonging to the following categories:

- SC/ST : State Govt. freeships/scholarships.
- OBC : State Govt. freeships.
- Women : 33 % seats reserved in each category.
- Persons with varied disabilities: 3 % seats reserved.
- Economically weaker sections : Assistance is given by student welfare section.
- Outstanding achievers in sports and other extracurricular activities. Granted as per UGC regulations.

School of Life Sciences follows the rules of Central / State Government to facilitate the admission of the above-mentioned sections. Students are encouraged to apply for the fellowships under various schemes of Government.

2.1.6 Number of students admitted in department in the last four academic years: **(List enclosed)**: **M.Sc. Life Science**

Categories	**Year 1 (2009-2011)**		**Year 2 (2010-2012)**		**Year 3 (2011-2013)**		**Year 4 (2012-2014)**		**Year 5 (2013-2015)**	
	M	F	M	F	M	F	M	F	M	F
SC	00	02	02	00	02	00	01	00	01	03
ST	00	01	02	01	02	00	01	00	01	02
OBC	02	00	04	01	03	00	03	03	03	03

General	09	01	04	01	03	04	09	03	01	06
Others	-----	-----	-----	-----	-----	-----	-----	-----		

M.Sc. Industrial Microbiology

Categories	**Year 1 (2009-2011)**		**Year 2 (2010-2012)**		**Year 3 (2011-2013)**		**Year 4 (2012-2014)**		**Year 5 (2013-2015)**	
	M	F	M	F	M	F	M	F	M	F
SC	01	03	01	01	00	01	01	01	01	02
ST	00	00	02	00	00	00	01	01	01	01
OBC	01	00	00	01	00	00	01	01	01	06
General	02	03	03	02	02	03	03	07	00	03
Others	----	----	-----	-----	-----	----	----	----	--	--

Self Study Report School of Life Sciences 2009-2013.

M. Phil Life Science (programme started in 2012)

Categories	**Year 1 (2009-2011)**		**Year 2 (2010-2012)**		**Year 3 (2011-2013)**		**Year 4 (2012-2014)**		**Year 5 (2013-2015)**	
	M	F	M	F	M	F	M	F	M	F
SC	---	---	----	----	----	----	00	02	awaited	awaited
ST	----	----	----	----	----	----	02	01		
OBC	----	----	----	----	----	----	01	01		
General	----	----	----	----	----	----	03	07		
Others	----	----	----	----	----	----	----	----		

2.1.7 A. Record of demand ratio for the various programmes of the university departments: **Usually out of 10 students one student gets select in the entrance examination of our courses.**

B. If yes then highlight the significant trends explaining the reasons for increase /decrease: N.A.

Programmes	Number of applications (2012-13)	Number of students admitted (2012-13)	Demand Ratio
UG	_	_	_
PG	175	**35**	
Integrated Masters			
M.Phil.	84	17	
Ph.D.	DET-2012	13	
Integrated Ph.D.			
Certificate			
Diploma			
PG Diploma			
Any other (please specify)			

2.1.8 A. Record of any programme discontinued/staggered in the last four years? **Nil**

B. If yes, write-up of the reasons. **NA**

Self Study Report School of Life Sciences 2009-2013.

2.1.9 Record of Admissions

Programmes	Total Number of admissions	Number of 1st division pass students in qualifying	Number of 2nd division pass students in qualifying	Qualifying Marks% (Min)
UG	NA	NA	NA	
PG (M. Sc. LS+IM) 2013 2012 2011 2010 2009	 20 36 19 24 23	 15 26 18 24 23	 05 10 01 00 00	B.Sc. with Biology 55% For M.Sc.Lifesc. B.Sc.with Bio./Microbiow ith 60% for M.Sc.Ind.Mic-robiology.

Integrated Masters				
M. Phil.	17			List enclosed
Ph.D.	13			Not known
Integrated Ph.D.				
Certificate				
Diploma				
PG Diploma				
Any other (please specify)				

2.2 Catering to Diverse Needs of Students

2.2.1 A. Record of organization of orientation/ induction programme for fresher: **Orientation was conducted for fresher's dated on 25.08.2012. Induction programme for freshers of M.Sc.Life Sciences and Industrial Microbiology this year (2013) organized on 06.08.2013.**

B. Details such as the duration, issues covered, experts involved and mechanism for using the feedback in subsequent years:

04 hrs long programme was held where the issues of ragging, study, career prospects and information about the department were discussed with the students.

2.2.2 A. Record of analysis of the "differential requirements of the student population" after admission and before the commencement of classes: **Students were made aware about the course content, mode of instruction of teaching and reference books.**

B. Record of key issues identified and addressed: **Communication skills, scientific interests and inclination towards diversified areas of science, career prospects and financial problems etc.**

2.2.3 A. Record of bridge/remedial/ add-on courses: **Remedial classes were arranged for poor/needy students. (Copy of time table is enclosed in a separate file)**

B. Time table and details of the courses offered in the department-wise for all courses: **Copies of time tables along with academic calendar enclosed.**

2.2.4 A. Record of the academic growth of students from disadvantaged sections of society, economically disadvantaged, physically handicapped, slow learners, etc

B. Main findings?

Most of the students were enabled by department and presently pursuing higher education in the deptt. and in other institutes of repute.

2.2.5 Record of identification and responses to the learning needs of advanced learners

Excellent grades in all courses were the major criterion. Departmental faculty also emphases and trained the students on How to crack competitive examinations? How to write SOP? What are the features required to enter in corporate sector?

How to think, write and communicate research proposals and papers? etc.

2.3 Teaching-Learning Process

2.3.1 Records of Plan and organisation of the teaching, learning and evaluation schedules (teaching plan, evaluation schedules and methods, etc.)

*** Teaching plan and schedule of examinations being provided in the time table itself (copies enclosed).**

*** Faculty evaluated the copies within the 07 days of the commencement of the examination.**

*** Faculty provides freedom to students to observe their evaluated copies and can discuss as well as they can also see copies of the other students, if want to see.**

2.3.2 A. Record and website info of providing course outlines and course schedules prior to the commencement of the academic session

*** School provides syllabus and schedule of teaching is mainly in the same order as mentioned in syllabus.**

B. Methods used for effective implementation

*** Regular classes and if required extra classes are conducted.**

2.3.3 A. Record of difficulties in completing the curriculum within the stipulated time frame and calendar

*** Most of the time syllabus covered completely, if needed due to certain course taking extended time the course is completed by taking extra classes by the faculty.**

B. Write up of the challenges encountered and the departmental measures to overcome these.

*** Extra classes and to provide freedom to ask any query after class to any teacher during working hours and in remedial classes.**

2.3.4 A. Record of student-centric learning activities

B. List of participatory learning activities which are adopted by the faculty that contributes to holistic development and improved student learning, besides facilitating life-long learning and knowledge management.

School of Life Sciences has constituted number of committees for this purpose.

(A separate file is maintained for the list and proceedings of the committees)

2.3.5 List, record with photographs of activities such as invited experts/people of eminence to deliver lectures and/or organize seminars for students **(Documents enclosed)**

Year	National	International
2009-10	Shanti Swaroop Bhatnagar Awardees' conference, July 17-19, 2009	-
2011-12	Recent Trends in Life Science, 25-26th Feb 2012	-
2012-13	(1) Refresher Course in Life Science, Jan 2-22, 2013 (2) Distinguished Scientists Lecture series, March 19-20, 2013 (3)Lecture on International Day for Biological Diversity, May 22nd 2013	-

2.3.6 Record of Encouragement to blended learning by using e-learning resources

Teaching using e-content/modules and power point presentation mode of lecture delivery is commonly adopted by the faculty

2.3.7 Record of facilities such as virtual laboratories, e-learning, open educational resources and mobile education used by the faculty for effective teaching:

School has a well equipped computer lab freely accessible to the students.

2.3.8 Record of activities of designated group among the faculty to monitor the trends and issues regarding developments in Open Source Community and integrate its benefits in the university's educational processes: **N.A.**

2.3.9 Record of steps taken to convert traditional classrooms into 24x7 learning places

This is under progress.

2.3.10 A. Record of actions taken to avail the services of counselors/mentors/advisors for each class or group of students for academic, personal and psycho-social guidance (please refer conference/ seminar). This has been incorporated from the session 2013-14.

B. Details of the process and the number of students who have benefitted.

2.3.11 A. Record of innovative teaching approaches/methods/practices adopted/put to use by the faculty during the last four years?

*** Advanced topics taught in more details using research articles.**

***Used e-books and animations to teach various molecular signaling pathways.**

B. Write up of improvement in learning by innovative methods

It is an urgent need of time to equipped students with advanced methods to learn and explore. In fact, number of advance topics being added in our course

curricula.

C. Record of recognition to the faculty due recognition for innovation in teaching

Yes, Dr. S. Chand, Dr. K.N. Guruprasad, Dr. S. Patil, Dr. A. Kar, Dr. G.P. Pandey, Dr. K. Hajela and Dr. A. Jajoo is member of several committees meant to design syllabus for UGC-NET/ICAR/DBT, New Delhi and many other Universities.

2.3.12 Record of actions for creating a culture of instilling and nurturing creativity and scientific temper among the learners:

1 How to design an experiment?-- Lectures were delivered to students
2 How to decide research problem? -- Lectures were delivered to students
3 What are the steps involved in drug designing and development? Lectures were delivered to students
4 How to write Scientific papers, technical notes, research proposals and SOPs. Lectures were delivered to students

2.3.13 A. Record of student projects (if mandatory in each of the learning programme) : **Yes, (A separate file is maintained)**

B. Number of projects executed within the university (department): **9**

C. Names of external institutions associated with the University for Student Project Work: **Number of institutes including NCBS, Bangalore, IISc, Bangalore, CCMB, Hyderabad, Delhi University, JNU, New Delhi, IIT, Delhi, NII, Delhi, CDFD, Hyderabad, IGIB, Delhi, NCCS, Pune, NCL, Pune etc. Besides many Universities and institutes across the country.**

D. Role of faculty in facilitating such projects:

As a policy decision of the faculty; now M.Sc. projects are not allowed in the department. Earlier students pursued dissertation work in IV Sem under departmental faculty.

2.3.14 A. Record of shortfall in qualified faculty to meet the requirements of the curriculum: **Nil.**

B. Record of actions for shortfall supplementation : **NA.**

2.3.15 Number of percentage of faculty enabled to prepare computer-aided teaching/ learning materials: **100 %. (10).**

2.3.16 A. Record of Student feedback for evaluation of teachers by the students:

(A separate file is maintained for the purpose)

B. Record of Alumni feedback for evaluation of teachers by the students:

(A separate file is maintained for the purpose)

C. Methods used and Impact of the evaluation feedback used to improve the quality of the teaching-learning process: **Faculty discusses these issues in departmental**

committee meetings and solves (Minutes of committee enclosed).

2.4 Teacher Quality

2.4.1 Record of how the plan and management of human resources was done to meet the changing requirements of the curriculum. School has increased the number of faculties. Faculty is equipped to deal with the increased amount of work assignments and thus meet the changing need of requirement.

2.4.2. List of academic recharge and rejuvenation of teachers: **Dr. Tushar Banerjee and Dr. Rameshwar Jatwa attended Refresher course in Life Sciences and Orientation course and Teacher empowerment workshop. (A separate file is maintained for the purpose)**

A. List of faculty availed and provided research grants by the University: **Nil.**

B. List of faculty availed and on study leave: Dr. K. Hajeka, Dr. Anajan Jajoo and Dr. Rameshwar Jatwa **(A separate file is maintained for the purpose).**

C. List of faculty nominated to national/international conferences/seminars, in-service training, organizing national/international conferences etc.: **Faculty Organizes National Seminars, Expert Lecture Series and were also Invited /nominated by several agencies.**

2.4.3 List of faculty received awards / recognitions for excellence in teaching at the state, national and international level during the last four years **Yes, Dr. K. Hajela, Dr. Anjana Jajoo, Dr. A. Kar and Dr. Rameshwar Jatwa received awards by various national and International Agencies of repute (A separate file is maintained for the purpose)**

2.4.4 List of faculty underwent staff development programmes during the last four years (add any other programme if necessary)?

Academic Staff Development Programmes	**Number of faculty**
Refresher courses	**02** **Dr.TusharBanerjee** **Dr. Rameshwar Jatwa**
HRD programmes	
Orientation programmes	02 **Dr. Rameshwar Jatwa** **Mr. Vinod Tahkur**
Staff training conducted by the university	

Staff training conducted by other institutions	**02** **Dr.TusharBanerjee** **Dr. Rameshwar Jatwa**
Summer / Winter schools, workshops, etc.	

2.4.5 Percentage of the faculty have

* been invited as resource persons in Workshops / Seminars / Conferences organized by external professional agencies = **80**%
* participated in external Workshops / Seminars / Conferences recognized by national/ international professional bodies = **100%**
* presented papers in Workshops / Seminars / Conferences conducted or recognized by professional agencies = **100** %
* teaching experience in other universities / national institutions and other institutions = **50%**
* industrial engagement = **l0**%
* international experience in teaching = **10**%

2.4.6 List and details of organization of academic development programmes (*e.g.*: curriculum development, teaching-learning methods, examination reforms, content / knowledge management, etc.) for its faculty aimed at enriching the teaching-learning process:

Yes, Faculty involved in number of activities (A separate file is maintained for the purpose)

2.4.7 A. List of faculty encouraged:

1 Mobility of faculty between universities for teaching

2 Faculty exchange programmes with national and international bodies: **Dr. S. Chand, Dr. K.N. Guruprasad and Dr. K. Hajela.**

B. Record of schemes helping in enriching the quality of the faculty by such mobility and faculty exchanges

2.5 Evaluation Process and Reforms

2.5.1 A. Record of time taken by the department for declaration of examination results each semester: **Record available in forms of Time table and grade cards.**

B. Record of means adopted for the mode / media adopted for the publication of examination results (Website, SMS, email, etc.): **Website and Printed sheets**

2.5.2. A. Record of ensuring transparency in the evaluation process: **Students are free to see their evaluated answer sheets and also can discuss with concern faculty. They can also compare with other student's copies, if feel so.**

B. Measures taken to ensure confidentiality: **School has separate room with restricted entry for examination related issues.**

C. Record of the Pre-examination processes – Examination Time table generation, student list generation, Invigilators, Attendance sheet, :

Faculty discusses and decide all the above mentioned issues in departmental committee and to decide time table and schedule students also suggest their ease on time table (Copies of minutes enclosed).

D. Results of students course wise and its analysis: **Copies available in department record.**

2.6. Student Performance and Learning Outcomes

2.6.1 A. Write up of articulation of its Graduate Attributes of the department:

Students are guided by faculty in such a way that they can utilize their soft and hard skills to perform good research and quality publications. Teachers provide theoretical concepts and practical skills to students and that is the reason that fair number of students crack various national/ international examinations.

B. Record of facilitation of monitor the implementation and outcome

2.6.2 A. Record of learning outcomes for its academic programmes: **Placement profile of M.Sc. students enclosed.**

B. Record of making students and staff are made aware of these: **Placement profile is available on website.**

2.6.3 Write up of department teaching, learning and assessment strategies structured to facilitate the achievement of the intended learning outcomes:

Board of studies designed and revise the syllabus to target three aspects one is the basic concepts second is advance course and subjects components and third is the employability. Faculty access the students in form of examination, scientific discussions and power point based presentations delivered by students (especially on advance topics preferably not part of syllabus). To access scientific temperament, practical and theoretical skills, fourth semester is completely dedicated to research work followed by presentation and viva-voce. These criteria provide overall personality and intellectual assessment of the students. Faculty is success on the intended outcomes, as most of our students pursuing higher education and research and few are serving corporate sector and public services.

2.6.4 Record of collection and analysis of data on student learning outcomes and use it to overcome the barriers to learning: **Student placement profile enclosed.**

School of Life Sciences, D.A.V.V.,INDORE.

M.Sc Life Science and Industrial Microbiology–IV Semester,2013

Project : Dissertation Titles and Place of work

S. N.	Name of Student	Title :	Place of Work	Name of Supervisor
01.	Kainat Z.Rizvi	"Cloning, expression, purification and in-silico analysis of Rv0859 and Rv 0860 gene of *Mycobacterium tuberculosis* H3TRv.	Structural Biology,Laboratory, CCMB,Hyderabad (A.P.)India.	Dr. Rajan Sankaranarayanan
02	Jyothis John	"Isolation, antifungal potential and mode of action of a plant origin diteropenoid".	Biochemical Sciences Division,CSIR,National chemical Laboratory,PUNE-411008.	Dr.M.V.Deshpandey, Scientist,G.
03.	Pavan Kumar	"Studies on microbes for hydrogen production from bio-waste".	Microbial Biotechnology and Genomics, CSIR, Instt.of Genomic & Integrative Biology, Delhi University Campus, Mall Road,Delhi-110007.	Dr.V.C.Kalia.
04.	Ankur Gupta	"Purification and characterization of γ-glutamyl transpeptidase from *Bacillus sp*."	Department of Microbiology, University of Delhi,South campus.	Prof. Rani Gupta.
05.	Steffi Cherian	"Identification of INPP4A Associated proteins in p13k-AKT signaling".	Molecular Immunogenetics laboratory,CSIR, Institute of Genomics and Integrative Biology, Mall Road, New Delhi-110007.	Dr.Balaram Ghosh,Scientist H.

S. N.	Name of Student	Title :	Place of Work	Name of Supervisor
01.	ADITI SHARMA	"Studies on the role of g10b1 in Drosophila development and generation of UAS-g10b1 transgenic".	Department of Genetics, University of Delhi, South Campus,New Delhi.110021.	Dr.Surjeet Sarkar.
02.	TARUN ANIYA	"Stable complex formation between the oncoprotein Gankyrin and its interacting partness for crystallization".	Advance centre for Treatment,Research And Education in Cancer,Kharghar, Navi Mumbai	Dr. Prasanna Venkatraman. Principal Investigator.
03.	OMPRAKASH SHRIWAS	"Expression, purification and biophysical characterization of BARD1-BRcT".	Advance centre for Treatment,Research And Education in Cancer,Kharghar, Navi Mumbai.	Dr.Ashok Varma, Principal Investigator.
04.	ASHISH JAISWAL	"Role of RAD 50 in asthma pathogenesis".	Molecular Pathology Laboratory, CSIR-Instt.of Genomics and Integrative Biology,New Delhi.	Dr.Ulaganathan Mabalirajan. Scientist.
05.	PUNEETA SINGH	"Cloning, expression and characterization of polysome associated RNA binding protein RBP42 from *Trapansoma brucei.*"	Centre of Cellular and Molecular Biology,(CCMB), Hyderabad,AP. India.	Dr.Mandar V.Deshmukh.
06.	SHIKHA BHARGAVA	"A Retrospective analysis of rational use of blood and its component in a tertiary care unit."	Deptt.of Pathology,Bombay Hospital, Indore.	Dr.Neelam Bharihoke, Deptt.of Pathology,Bombay Hospital, Indore.

S. N.	Name of Student	Title :	Place of Work	Name of Supervisor
01.	PRASHANT K. SHARMA	"Deletion of kinase domain from a serine-threonine kinase in *Candida albicans* and its characterization.	National Institute of Plant Genome Research, New Delhi.	Prof.Asis Datta. Distinguished Emiritus Scientist.
02.	MONIKA LAL	Molecular characterization of Soybean infecting *mungbean yellow mosaic India virus* (MYMIV) encoded nuclear shuttle protein (NSP) and movement protein (MP).	Directorate of Soybean Research Khandwa Road, Indore.	Dr.Ramesh SV Scientist, Biotechnology
03.	ROHIT BHARDWAJ	Efficient plant regeneration and Agrobacterium-mediated genetic transformation of OKRA.	Department of Genetics, University of Delhi, South Campus,New Delhi.110021.	Prof. M.V.Rajam
04.	UMAKANT SHARMA	High-frequency *Agrobacterium* mediated genetic transformation of seedling explants and cell suspension cultures of cotton.(*Gossipium hirsutum* L.).	Centre for Genetic Manipulation of Crop Plants (CGMCP), University of Delhi South campus.	Prof.Deepak Pental Deptt.of Genetics University of Delhi.
05.	VINEETA SOLANKI	Multidrug resistant Pseudomonas-A leading cause of morbidity and mortality in hospitalized patient.	Bombay Hospital Indore.	Vaibhavi Subhedar Consultant Medical Microbiologist.

2.6.5 Write up of new technologies deployed by the department in enhancing student learning and evaluation and how does it seek to meet fresh/ future challenges

School has procured number of advance equipments including ELISA, PCR, Western Blotting working platform, incubator, Fermenter and HPLC to enhance the research quality to meet global requirement. Faculty also provide assignments to students related to research articles published in International journals of repute to enhance learning of current research areas and to prepare them for future challenges.

2.6.6 Any other information regarding Teaching, Learning and Evaluation which the department would like to include.

Semester Grade Point Scheme is followed since 1990.

CRITERION III: RESEARCH, CONSULTANCY AND EXTENSION

III.1 Year-wises Publications in the department:

Year	International	National	International Conference	National Conference
2012-13				
2011-12				
2010-11				
2009-10				

III.2 Number of papers published in peer reviewed journals (national / international):

Monographs:

Chapters in Books:

Edited Books:

Number listed in International Database (For *e.g.* Web of Science, Scopus, Humanities International Complete, Dare Database - International Social Sciences Directory, EBSCO host, etc.): **Almost all the documents listed in International databases.**

Citation Index – range / average:

SNIP

SJR

Impact Factor – range / average : **2.5**

h-index: **5**

III.3 List and Records and Details of patents and income generated: **Nil.**

III.4 List and Record of Areas of consultancy and income generated: **Yes**

Dr. K.N. Guruprasad is serving as a consultant for BASF, India

1) III.5. List and Record of Faculty selected nationally/internationally to visit other laboratories in India and abroad: **Dr. S. Chand, Dr. K. N. Guruprasad, K. Hajela and Dr. A. Jajoo under various schemes of UGC and / or Govt. of India.**

III.6 List and Record of Faculty serving in

National committees b) International committees c) Editorial Boards d) any other (please specify):

III.7 Research thrust area recognized by funding agencies for the department: **Physiology**

and Molecular Biology, UGC-SAP, New Delhi, Plant Biotechnology, Plant Physiology, Photobiology, Immunology and Biochemistry and Phytomedicine for type 2 diabetes mellitus.

III.8 Number of faculty with ongoing projects from a) national b) international funding agencies and c) Total grants received. Give the names of the funding agencies and grants received project-wise.

III.09 List and details of Departmental projects funded by DST-FIST; UGC-SAP/CAS, DPE; DBT, ICSSR, etc.; total grants received. **Yes, UGC-SAP Phase-II, DST-FIST**

III.10 List and Details of Research facility / centre with

1 State recognition
2 National recognition
3 International recognition (**list enclosed.)**

III.11 List and details of Special research laboratories sponsored by / created by industry or corporate bodies: **Nil.**

3.1 Promotion of Research**: School has nine specialized Laboratories headed by a faculty each.**

3.1.1A. Composition of Departmental Research Committee, List of members and minutes of its meeting: **Yes (A separate file is maintain for the purpose)**

B. Records of DRC regarding monitoring and addressing issues related to research

C. Record of DRC recommendations which have been implemented and their impact.

3.1.2 Information of research centers in its affiliated / constituent colleges which are monitored by the DRC of the department:

3.1.3 Details of the:

1 advanced funds for the sanctioned projects
2 providing seed money
3 Simplification of procedures related to sanctions / purchases to be made by the investigators
4 Autonomy to the principal investigator/coordinator for utilizing overhead charges
5 Timely release of grants
6 Timely auditing
7 Submitted utilization certificates to the funding authorities

A separate file is maintained for this purpose.

3.1.4 Record of interdisciplinary research promoted

1 with other departments /schools of the university and:

2 collaboration with national/international institutes/industries: **List of**

national/international collaborations enclosed.

3.1.5 Details of workshops/ training programmes/ sensitization programmes conducted by the department to promote a research culture on campus:

Record of each of Seminar/ Conference/Workshop organized and the source of funding (national / international) with details of outstanding participants, if any (**Documents enclosed**).

Year	National	International
2008-09	Shanti Swaroop Bhatnagar Awardees' conference, July 17-19, 2009	-
2011-12	Recent Trends in Life Science, 25-26th Feb 2012	-
2012-13	(1) Refresher Course in Life Science, Jan 2-22, 2013 (2) Distinguished Scientists Lecture series, March 19-20, 2013	-

3.1.6 A. Details of visits of researchers of eminence to visit the campus as adjunct professors: **Dr. Govindjee, Emeritus Professor, Albana University, USA, delivered lecture on Photosynthesis.**

B. Impact of such efforts on the research activities of the university: **It motivated our students towards research especially in the area of Photosynthesis.**

3.1.7 A. Percentage of the total budget of the department which is earmarked for research: **Approximately 30 %.**

B. Details of heads of expenditure, financial allocation and actual utilization: **Document enclosed.**

3.1.8 A. Details of University funded research and awarded Post Doctoral Fellowships/Research Associate ships: **Nil.**

B. List of students registered with record of source of funding by the university and other sources: Students are receiving funds from UGC,DST, MPCST etc.

3.1.10 A. List and percentage of faculty which have utilized the sabbatical leave for pursuit of higher research in premier institutions within the country and abroad: **Nil**

B. Record of the output of these scholars: **Nil.**

3.1.11 A. Details with photographs of national and international conferences organized

Year	National	International
2009-10	Shanti Swaroop Bhatnagar Awardees' conference, July 17-19, 2009	-
2011-12	Recent Trends in Life Science, 25-26th Feb 2012	-
2012-13	(1) Refresher Course in Life Science, Jan 2-22, 2013 (2) Distinguished Scientists Lecture series, March 19-20, 2013	-

B. List highlighting the names of eminent scientists/scholars who participated in these events**.**

Eminent speakers of the Distinguished Scientist Lecture Series (March 19-20, 2013)

The eminent speakers in the lecture included Dr. Paramjit Khurana, Professor, Department of Plant Molecular Biology, University of Delhi (South Campus) New Delhi, Dr. T. R. Sharma, Principal Scientist (Biotechnology), National Research Centre of Plant Biotechnology, IARI, New Delhi, Professor R. K. Kohli, Professor and Chairman, Department of Botany, Panjab University, Chandigarh and Professor L. C. Rai, Molecular Biology Section for advanced study in Botany, BHU Varanasi and Professor Akhilesh Tyagi, Director, National Institute of Plant Genome Research, New Delhi.

Recent trends in Life Sciences (Feb 25-26, 2012)

The list of speakers in the conference includes Prof. N. K. Singh, National Professor, ICAR, Dr. B. P. Pal Chair, New Delhi, Prof. Akhilesh Tyagi, Director, National Institute of Plant Genome Research, New Delhi, Prof. R. N. Singh, NIPGR and Prof. B. C. Das, Director, Ambedkar Research Institute, New Delhi.

Shanti Swaroop Bhatnagar Awardees' conference (July 17-19, 2009)

The distinguished scientists from Biological Sciences who participated in the conference were Dr. Javed Agrewala, Dr. Rama Govind Rajan, Dr. B. S. Murthy, Dr. Shashikant Shastri, Dr. Amlendu Chandra, Dr. Anil Bhardwaj and Dr. Subhasis Choudhary.

3.2 Resource Mobilization for Research

3.2.1 Record of Financial provisions made in the university budget for supporting students' research projects **NA.**

3.2.2 **A. Record** of special efforts to encourage its faculty to file for patents: **Nil.**

B. List of registered and accepted patents. **Nil.**

3.2.3 Details of ongoing research projects of faculty:

1. Dr. Suresh Chand :

In Vitro propogation techniques for the propogation of pongarnia pinnata: A potential source for biofuel. (Sanctioned by UGC)

2. Dr. K.N. Guruprasad:

1. Title of project," Physiological and biochemical effect of Strobilurin Fungicide F-500 on Soybean" Sponsored by BASF India Pvt. Ltd.

2. Regulation of carbon metabolism by ambient UV-B and UV-A radiations in C_3 and C_4 plants."

3. DST Women Scientists Scheme of Dr. Sunita Kataria (PI)- entitled "Regulation of carbon metabolism by ambient UV-B and UV-A radiations in C_3 and C_4 plants".

3. Dr. K.Hajela:

UGC- Evaluation of predictive proguostic value of mannose binding serum levels and exon and promoter polymorphism in association with known biological markers of ischemic stroke.

4. Dr. Anjana Jajoo:

Investigation molecular mechanisms underlying damaging effects of environment pollutants-polyeyclic aromatic hydrocarbons (PAH) on photosynthesis sponsored by Joint-Indo-Russian Joint project sponsored by DST, India and RFBR (Russia) Aug-2011.

5. Dr. Rameshwar Jatwa:

1. Isolation and purification as well as efficacy evaluation of some novel dipeptidyl peptidase inhibitors_IV (DPP-IV) as therapaeutic molecules for type 2 diabetes mellitus from plants sponsored by Madhya Pradesh Biotechnology Council, Bhopal (No.MPBTC/37 dated 18/01/2011 for 3 yrs. Amount Sanctioned Rs. 13,08,800/-)

2. Development of glucagon-like peptide-1 (GLP-1) as a therapeutic molecule for metabolic syndrome sponsored by Science and Engineering Research Board (SERB), DST, Govt. of India, New Delhi. Amount Sanctioned Rs.16,16000/- for 3 Yrs.No.F-30-11/2011(SA-A) dated 16 Jan-2012.

3. Exploration of GLP-1 as therapeutic molecule for steroid-induced type-2 diabetes mellitus. (University Grants Commission, UGC,New Delhi.No.F-30-11/2011 (SA-II) Dated 16 Jan-2012. Rs.6,22,404. first yr's grant. Duration for 2 yrs.

3.2.4 A. Record of projects sponsored by the industry/corporate houses**: 1 (BASF India PVT. Ltd)**

B. Details such as the name of the project, funding agency and grants received. Dr. K. N. Guruprasad receied a project from BASF, India Pvt. Ltd.

3.2.5 A. Details of Department recognition for their research activities by national / international agencies (UGC-SAP, CAS; Department with Potential for Excellence; DST-FIST; DBT, ICSSR, ICHR, ICPR, etc.) and the quantum of assistance received: **Yes, School of Life Sciences is recognized by DST-FIST, UGC-SAP Phase-II**

B. Record of any two significant outcomes or breakthroughs achieved by this recognition: **Purchase of many equipments and quality research work supported by number of research publications in International journals.**

3.2.6 List details of

a. research projects completed and grants received (funded by National/International agencies): **List enclosed**

b. Inter-institutional collaborative projects and grants received: **Yes (List enclosed)**
i) All India collaboration.
ii) International.

3.3 Research Facilities

3.3.1 A. Infrastructure in the department to facilitate research: **List of equipments and laboratories enclosed. Major equipments for research are as follows:**
1. HPLC 2. GC 3. EPR 4. Chemi-imager 5. Homogenizer 6. Spectrophotometer/spectrofluorimeter 7. (-)70 deep freezer 8. BOD incubator 9. Growth chamber 10. Lica Microscope 11. Laminar air flow benches.

B. Strategies have been evolved to meet the needs of researchers in emerging disciplines: **Faculty is supervising Ph D and M. Phil students in the advanced areas of the field.**

3.3.2 A. Information and Resources catering to the needs of researchers of the department: **School of Life Sciences has well furnished laboratories and computer labs.**

B. Details of the facility. **List enclosed.**

3.3.3 Record of University Science Instrumentation Centre (USIC) facilities been made available to research scholars: **Yes, USIC provides help to repair instrument and glasswares.**

3.3.4 Record of provision of residential facilities (with computer and internet facilities) for research scholars, post-doctoral fellows, research associates, summer fellows of various academies and visiting scientists (national/international): **University campus is Wi-Fi enabled.**

3.3.5 Details of Uses of the Facilities of IUC, CAT, NRCS, IIT Indore and other specialized Research Centers for research: **Students of Life Sciences work in collaboration with the Scientist of NRCS and CAT for their Ph D work andl also for M. Sc. Dissertation work.**

3.4 Research Publications and Awards

3.4.1 Research journal published, if any, from the department(s)? If yes, indicate the composition of the editorial board, editorial policies and state whether it/they is/are listed in any international database. **Yes all of the journals are listed in International databases (List of publications from faculty enclosed).**

3.4.2 Details of publications by the faculty: **List enclosed for each faculty individually.**

List of Publications: Dr. S. Chand

1. Mravec, J. Kubes, M., Gaykova,V., Bielach, A., Petrasek, J., **Chand, Suresh,** Benkova, E., Zazimalova, E. & Friml,J. (2008). Genetic interaction of PIN and PGP transport mechanisms in auxin distribution-dependent development**. Development (UK),** 135, 3345-3354.CN-95, [IF: 7.69]
2. Tiwari, S., Singh, B., Vinod, Tomar, S.M.S., Singh, N.K., **Chand, S.** (2009). Molecular validation and screening of *Triticumdicoccoides* Korn. accessions for stripe rust resistance gene Yr 15 with SSR marker. **Indian J. Genet.,** 69 (1), 66-68. [IF: 0.184]
3. Sivasamy, M., Vinod, Tiwari, S., Tomar, R.S., Singh, B., Sharma, J.B., Tomar, S.M.S., & **Chand, S.** (2009). Introgression of useful linked genes for resistance to stem rust, leaf rust and powdery mildew and their molecular validation in wheat (*Triticumaestivum* L.). **Indian J. Genet.**, 69 (1), 17-27, [IF: 0.184]
4. Sonah, H., Deshmukh, R.K., Parida, S.K., **Chand, S**., & Kotasthane, A. (2009). Morphological and genetic variation among different isolates of Magnaporthegrisea collected from Chhattisgarh. **Indian Phytopath**. 62 (4), 469-477.
5. Verma, SK, **Chand, S. (**2009**).** Somatic embryogenesis and histological study in cotyledonary callus of Hyoscyamus muticus L. **Journal of Medicinal and Aromatic Plant Sciences**, 31 (3), 234-237.
6. Singh, AK**, Chand, S**. (2010). Plant regeneration from alginate-encapsulated somatic embryos of a leguminous tree, *Dalbergiasissoo* Roxb. **Indian J. Biotechnology**, (9), , 319-324. [IF: 0.477]
7. Channamalkarjuna, V, Sonah, H.,.,Prasad, M., Rao, G.J.N., **Chand, S.,** Upriti,H.C., Singh, N.K. & Sharma, T.R. (2010). Identification and fine mapping of major quantitative trait loci, q SBR11-1, for sheath blight resistance in rice. **Molecular Breeding**, 25, 155-166.CN-31 [IF: 2.193]
8. Asad Ali, Vinod, S.M.S., Tomar & **Chand, S.** (2011).Genetics of fertility restoration and test for allelism of restorer genes in wheat (Triticumaestivum L.). **Indian J. Genet**., 71 (3), 223-230. [IF: 0.184]

9. Sonah, H., Deshmukh, R.K., **Chand, S**., Srinivasprasad, M., Rao, G.J.N., Upreti, H.C.,Singh, A.K., Singh, N.K., Sharma, T. (2012).Molecular mapping of quantitative trait locus qLL12.1 for flag leaf length in rice (*Oryza sativa*). **JOURNAL OF CEREAL SCIENCE** (Elsevier)**,** 40:362-372. [IF: 2.971]

10. Tomar R.S., Vinod, Tomar S.M.S., Prasad S.V. Sai, Naik K. Bhojraraja, Jha, Girish K., Singh N.K., **Chand, S**. (2012). Development of mapping populations and their characterizations for drought tolerance in wheat. **Indian J. Genet**., 72 (2), 195-207. [IF: 0.184]

11. Sangeeta Singh, N.K. Singh, **S. Chand**, T.R. Sharma. (2013). Genome wide Distribution, Organisation and Functional Characterization of Disease Resistance and Defence Response Genes in Rice. **PLoS one**, Accepted. [IF: 4.411]

12. Jyotika Bhati, H. Chandrashekaran, **S. Chand**. (2013). Comparative Analysis of EST Mining Reveal High Degree of Conservation among Eight *Leguminosea* Species. **Journal of Agricultural Science and Technology, (USA**). Accepted. [IF: 0.685]

13. Jyotika Bhati, H. Chandrashekaran, **S. Chand.** (2013). In Silico EST Mining of five *Fabaceae* species. **Indian Journal of Biotechnology.** [IF: 0.477]

List of Publications: Dr. K. N. Guruprasad

1. Lakshmi N and Guruprasad K.N. (2009a) Cryptic red light signal regulates ascorbic acid in soybean. J.Plant.Physiol 166, 329 -332.[IF:2.699]
2. Lakshmi N and Guruprasad K.N. (2009b) Amplification of phytochrome induced morphogenesis in plants by the cryptic red signal (CRS). Plant Signalling and Behaviour, 4,-5,1-2 .[IF:2.0]
3. A. Sharma and K. N. Guruprasad (2009) Similarities in the biochemical changes between solar UV exclusion and GA application in *Amaranthus caudatus*. Physiol. Mol. Biol. Plants 15, 367–370.[NA]
4. V.S. Bhatia, Sanjeev Yadav, Kanchan Jumrani and K.N. Guruprasad (2010) Field deterioration of soybean seed: role of oxidative stresses and antioxidant defense mechanism. Journal of Plant Biology 37, 179-190. .[IF:091]
5. K.N.Guruprasad and Kanchan Chauhan Juyal (2010) Cryptic Red Signal: A hidden cellular signal that responds to red light. Journal of Plant Biology 37, 201-207. .[IF:099]

6. Karishma Jain, Sunita Kataria and K.N. Guruprasad (2011) Interaction of lycorine with UV-B and kinetin in cucumber (*Cucumis sativus* L.) cotyledons. International Journal of Plant Physiology and Biochemistry Vol. 3(1) 1-5. .[IF:2.775]
7. Dehariya Priti, Kataria Sunita, Pandey G.P., Guruprasad K.N. (2011) Assessment of impact of solar UV components on growth and antioxidant enzyme activity in cotton plant. Physiol. Mol. Biol. Plants. 17(3), 223–229. [N.A.]
8. Sanjay S. Baroniya, Kataria S., Pandey G.P., Guruprasad K.N. (2011) Intraspecific variation in sensitivity to ambient ultraviolet-B radiation in growth and yield characteristics of eight soybean cultivars grown under field conditions. Braz. J. Plant Physiol. 23(3), 197-202. .[IF:0.0825]
9. Shine M.B., Guruprasad K.N., Anjali A. (2011) Superoxide radical production and performance index of Photosystem II in leaves from magnetoprimed soybean seeds. Plant Signaling & Behavior 6-11, 1636-1638. .[IF:2.0]
10. Shine M.B., Guruprasad K.N., Anjali A. (2011) Enhancement of germination, growth, and photosynthesis in soybean by pre-treatment of seeds with magnetic field. Bioelectromagnetics 32(6), 474-84. .[IF:2.759]

11. Dehariya P., Kataria S., Pandey G.P., Guruprasad K.N. (2012) Photosynthesis and yield in cotton (*Gossypium hirsutum* l.) var. vikram after exclusion of ambient solar UV-B/A. Acta Physiol. Plant. 34, 1133-1144. .[IF:1.64]
12. Kataria S., Guruprasad K.N. (2012) Solar UV-B and UV-A/B exclusion effects on intraspecific variations in crop growth and yield of wheat varieties. Field Crops Res. 125, 8-13. .[IF:2.474]
13. Shine M.B., Guruprasad K.N. (2012) Impact of pre-sowing magnetic field exposure of seeds to stationary magnetic field on growth, reactive oxygen species and photosynthesis of maize under field conditions Acta Physiol Plant. 34, 255–265. .[IF:1.305]
14. Shine M.B., Guruprasad K.N., Anjali A. (2012) Effect of Stationary Magnetic Field Strengths of 150 and 200 mT on Reactive Oxygen Species Production in Soybean. Bioelectromagnetics 33, 428-437. .[IF:2.759]

15. Kataria S., Guruprasad K.N. (2012) Intraspecific variations in growth, yield and photosynthesis of sorghum varieties to ambient UV (280–400 nm) radiation. Plant Science 196, 85-92. .[IF:2.922]
16. Sonika Sharma, Guruprasad K.N (2012) Enhancement of root growth and nitrogen fixation in *Trigonella* by UV-exclusion from solar radiation. Plant Physiology and Biochem. 61, 97-102. .[IF:2.775]
17. Shine M.B., Guruprasad K.N. (2012) Oxyradicals and PSII activity in maize leaves in the absence of UV components of solar spectrum. Journal of Biosciences 37,703-712. .[IF:1.759]
18. Kataria Sunita, Dehariya P, Guruprasad K.N., Pandey G. P. (2012) Impact of exclusion of ambient solar UV-A/UV-B components on growth and antioxidant response of cotton (*Gossypium hirsutum*). Acta Biologica Cracoviensia Series Botanica 54 (2): 1-7. .[IF:0.612]
19. S.S.Baroniya, S.Kataria**,** Pandey G.P., Guruprasad K.N. (2013) Intraspecific variations in antioxidant defense responses and sensitivity of soybean varieties to ambient UV radiation. Acta Physiol. Plant. 35:1521–1530. .[IF:1.6359]

List of Publications: Dr. S. Patil :

1. Panda, S. Kar, A. and **Patil, S.** (2009) Soy sterols in the regulation of thyroid functions, glucose homeostasis and hepatic lipid peroxidation in mice. *Food Res. Inter.* **42**: 1087-1092. .[IF:3.59]
2. Suhail, M. **Patil, S.** and Khan, S. And Siddiqui, S. (2010) Antioxidant vitamins and lipoperoxidation in non-pregnant, pregnant, and gestational diabetic women: erythrocytes osmotic fragility profiles. *J. clin. med. Res.* **2 :** 266-273. doi:10.4021/jocmr454w.[N.A.]
3. Gulla, V., Banerjee, T. and **Patil, S**. (2010) Bioconversion of soysterols to androstenedione by *Mycobacterium fortuitum* subsp. *fortuitum* NCIM 5239, a mutant derived from total sterol degrader strain. *J. Chem Tech. Biotechnol.* **85** : 1135-1141. .[IF:1.818]

4. Vyas, P. and **Patil, S.** (2011) Isolation and identification of antibiotic resistance pattern in enterobacterial pathogens from juices and water in Indore city. *National J. Life Sc.* **8** : 21-24. [N.A.]
5. Vyas, P & Patil, S. (2012) Sources, Distribution and Control of MDR Enterobacterial Pathogens (LAP Lambert Academic Publishing GmbH), Deutschland., Germany. ISBN 10: 3848481111.(A Book)
6. Vyas, P. and **Patil, S.** (2012) Effect of essential oils on MDR pathogens: a comparative study *J. Environtl. Res. Devp.* 6: 1-6. Vyas, P. and **Patil, S.** (2011) Antimicrobial activity of essential oils against multidrug resistant enterobacterial pathogens. *Trends Biosci.* **4** (1): 23-24. .[IF:3.59]

List of Publications: Dr. A. Kar : No. of H.Index – 14

No. of Citation of articles-394 .

1. Panda S, Jafri M, **Kar A**, and Meheta BK (2009) Thyroid inhibitory, anti-peroxidative and hypoglycemic effects of Stigmasterol, isolated from *Butea monosperma , Fitoterapia 80(2)123-126. CN-16.* .[IF:2.00]
2. Sunanda Panda, **Anand Kar**, Sridhar Patil (2009) Soy sterols in the regulation of thyroid functions, glucose homeostasis and hepatic lipid peroxidation in mice" *Food Research International,* 42,1087-1092. CN-11. .[IF:3.59]
3. Jatwa R and **Kar A** (2009) Amelioration of Metformin-induced hypothyroidism by W*ithania somnifera* and *Bauhinia purpurea* extracts in Type 2 Diabetic Mice" *Phytotherapy Research,* 23(8):1140-1145.CN-20 [IF :2.08]
4. **Kar A,** Panda S and Parmar HS (2009) Some plant extracts may prove to be thyrotoxic and peroxidative in nature, In " Molecular and Physiological aspects of Toxicology". Ed. K.Shah, Published by Mahila Mahavidyalaya, B.H.U., Varanasi,ISBN# 81-85403-09-2.
5. Panda S and Kar A(2009) Periplogenin-3-O- -D-glucopyranosyl (1→6)- -D-glucopyaranosyl - - (1→4) -D- Cymaropyranoside, Isolated from *Aegle marmelos* Protects Doxorubicin Induced Cardiovascular Problems and hepatotoxicity in Rats. *Cardiovascular therapeutics*, 27,108-116. CN-05. [IF :2.852]
6. Mishra Prachi, **Kar Anand** and Kale Raosaheb (2009) Prevention of chemically induced mammary tumorigenesis by diaidzein in prepubertal rats: the role of peroxidative

damage and antioxidants. *Mol Cell Biochem*. 325,149-157.CN-17[IF :2.329]

7. Parmar HS & **Kar A** (2009b).Comparative analysis of free radical scavenging potential of several fruit peel extracts by invitro methods. *Drug Discovery therapeutics*,3 (2)49-55.CN-04.
8. Parmar HS, **Kar A** (2009a). Protective role of *Mangifera indica, Cucumis melo and Citrullus vulgaris* peel extracts in chemically induced hypothyroidism. *Chemico-Biological Interactions* ,177 (3):254-258.CN-14. [IF :2]
9. Dixit Y and **Kar A** (2009). Antioxidative activity of some vegetable peels determined in vitro by inducing liver lipid peroxidation. *Food Research International* 42:1351-54.CN.09[IF :2.967]
10. Mishra P, **Kar A** & Kale P (2009) Modulatory influence of pre-pubertal Biochanin A exposure on mammary gland differentiation and expression ofEstrogen receptor – α and apoptotic proteins. *Phytotherapy Research*, 23(7):972-9.CN-03. [IF :2.08]
11. Jatwa R and Kar A(2009**)** Anti-inflammatory and anti-peroxidative roles of diacerein re possibly mediated through an alteration in thyroid functions in animal model of inflammation" the Journal "*Fundamental & Clinical Pharmacology*"23,465-471.CN02. [IF :2.16]
12. Panda S, **Kar A** (**2010)** A Novel Phytochemical, Digoxigenin-3-O-Rutin in the Amelioration of Isoproterenol-Induced Myocardial Infarction in Rat: A Comparison with Digoxin. Cardiovasc Ther, 20. doi: 10.1111/j.1755-5922.2010.00242. .[IF:2.852]
13. Jayasekera S, Thomas A, **Kar A** and Ramamurthy VV. 2010. Host correlated morphometric variations in the populations of *Bemisia tabaci* (Gennadius). *Oriental Insects* 44: 193-204. [N.A.]
14. Parmar HS, Dixit Y, **Kar A.** (2010). Fruit and vegetable peels : Paving the way towards the development of new generation therapeutics. Drug Discoveries &Therapeutics 4: 314-325 (Review).CN-04
15. Dixit Y, **Kar** A. **(2010)** Protective role of three vegetable peels in alloxan induced diabetes mellitus in male mice. Plant Foods Hum Nutr. 65 (3):284-9. CN.03.[IF:2.505]
16. Jatwa R, **Kar** A(**2010)**. Effect of metformin on renal microsomal proteins, lipid peroxidation and antioxidant status in dexamethasone-induced type-2 diabetic mice. *Indian J Biochem Biophys.* 47(1):44-8. CN-16.[IF:1.14]

17. Panda S, **Kar** A **(2011).** Periplogenin, isolated from *Lagenaria siceraria*, ameliorates L-T_4-induced hyperthyroidism and associated cardiovascular problems. *Horm Metab Res* 43(3):188-93. [IF :2.41]
18. Mishra P, **Kar A** & Kale P **(2011)** Prepubertal daidzein exposure enhances mammary gland differentiation and regulates the expression of estrogen receptor-alpha and apoptotic proteins. ISRN Oncol. 896826. Epub 2011 Sep 4. .[IF:3.17]
19. Thomas A, Chaubey R, Naveen NC, **Kar A** and Ramamurthy VV. (2011). *Bemisia tabaci* (Gennadius) on *Leucaena leucocephala*: New host record from India and a comparative study with cotton populations. *International Journal of Tropical Insect Science*, 31, 4, 235–241.[H index=13]
20. Panda S, Kar A, Sharma P & Sharma A(2012)Cardioprotective potential of N, <alpha>-L-rhamnopyranosyl vincosamide, an indole alkaloid, isolated from the leaves of Moringa olefera in isoproterenol induced cardiotoxic rats: In vivo and in vitro studies . *Bioorganic & Medicinal Chemistry Letters* (accepted)*ISSN 0960-894X.* .[IF:2.338]
21. Sunanda Panda. **Anand Kar**. Tushar Banerjee.Neha Sharma **(2012)** Combined Effects of Quercetin and Atenolol in Reducing Isoproterenol Induced Cardiotoxicity in Rats: Possible Mediation Through Scavenging Free Radicals, Cardiovascular Toxicology, 12(3):235-42.CN-03. .[IF:2.351]
22. Sharma N, Panda S and **Kar A (2012**) Additional advantage with Fenugreek seed extract in the glibenclamide induced inhibition in hepatic lipid peroxidation: An *in vitro* study.*Chinese Journal of Integrative Medicine*(accepted) CN3 .[IF:7.059]
23. Thomas A, R Chaubey R, Naveen NC, **Kar A**, Ramamurthy VV **(2012)** *Bemisia tabaci* (Hemiptera: Aleyrodidae) on *Leucaena leucocephala* (Fabaceae): a new host record from India and a comparative study with a population from cotton
International Journal of Tropical Insect Science .31 (4), 235. H.index 13.

List of Publications: Dr. G. P. Pandey

1. Monica Jain, Sharad Tiwari, K. N. Guruprasad and **G. P. Pandey (2010)** Influence of media types on efficient somatic embryogenesis from different accessions of *Bacopa monnieri,* Journal of Tropical Medicinal Plants, Vol. 11(2) 163-168. [IF:0.0]
2. Monica Jain, Sharad Tiwari, K. N. Guruprasad and **G. P. Pandey (2011)** Micropropagation and Encapsulation of Two Accessions of *Bacopa Monnieri*: An Endangered Medicinal Plant, Vol. 1(1) 11-19. [IF:0.0]
3. Priti Dehariya, Sunita Kataria, **G.P. Pandey** and K.N. Guruprasad,**(2011)** Assement of impact of solar UV components on growth and antioxidant enzyme activity in cotton plant, Physiol Mol Biol Plants (July-September 2011) 17(3):223-229. [IF:0.0]
4. Sanjay S. Baroniya, Sunita Kataria, **G.P. Pandey** and K.N. Guruprasad, **(2011)** Intraspecific variation in sensitivity to ambient ultraviolet-B radiation in growth and yield characteristics of eight soybean cultivars grown under field conditions. Braz. J. Plant Physiol., 23(3): 197-202. [IF:0.0825]
5. Sunita Kataria, Priti Dehariya, K.N. Guruprasad, and **G.P. Pandey** (2012) Effect of exclusion of ambient solar UV-A/B components on growth and antioxidant response of cotton (*Gossypium hirsutum*). Acta Biologica Cracoviensia Series Botanica 54/2: 1–7. [IF:0.56]
6. Priti Dehariya, Sunita Kataria, K. N. Guruprasad and **G.P. Pandey, (2012)** Photosynthesis and Yield in Cotton (*Gossypium hirsutum Ls.)* Var. Vikram after Exclusion of Ambient Solar UV-B/A. Acta Physiol. Plantarum. 34:1133–1144. [IF:1.612]
7. Sanjay S. Baroniya, Sunita Kataria, **G.P. Pandey** and K.N. Guruprasad, **(2013)** Intraspecific variations in antioxidant defense responses and sensitivity of soybean varieties to ambient UV radiation. Acta Physiol. Plantarum 35:1521–1530. [IF:1.6339]

List of Publications: Dr. K. Hajela: No.of Citation since 2008 = 396
H index=11 i10 index=13

1. Diwedi M, Gupta K, Gulla K.C., Laddha N.C., **Hajela K** and Begum R (2009) Lack of genetic association of promoter and structural variants of mannan binding lectin (MBL) gene with susceptibility to generalized vitiligo ,B.J.Dermatol. 161(1):63-9**.** [IF :3.66]
2. Krishana Chaitanya Gulla, Kshitij Gupta , and **Krishnan Hajela** (2009)Functional estimation of MBL MASPs mediated complement activation in human serum) Ind. J.Med Res.130,428-432. [IF :1.837]
3. Activation of mannan-binding lectin-associated serine proteases leads to generation of a fibrin clot.Gulla KC, Gupta K, Krarup A, Gal P, Schwaeble WJ, Sim RB, O'Connor CD, **Hajela K**. Immunology. 2010 Apr;129(4):482-95. [IF :3.32]
4. The ORF3 protein of hepatitis E virus delays degradation of activated growth factor receptors by interacting with CIN85 and blocking formation of the Cbl-CIN85 complex.Chandra V, Kalia M, **Hajela K**, Jameel S.J Virol. 2010 Apr;84(8):3857-6. [IF : 5.40]
5. Cleavage of Kininogen and Subsequent Bradykinin Release by the complement Component: Mannose-Binding Lectin-Associated Serine Protease (MASP)-1".József Dobó; Balázs Major; Katalin Kékesi; István Szabó; Márton Megyeri; **Krishnan Hajela**; Gábor Juhász; Péter Závodszky; Péter Gál PLoS one (2011) 6(5)e 20036. [IF :4.35]
6. Mutational and expressional analysis of PTEN gene in colorectal cancer from northen India. Ali A, Saluja SS, **Hajela K**, Mishra PK and Rizvi M A. Mole. Carcinog.2013, in press.
7. Immune Responses to Defined Plasmodium falciparum Antigens and Disease Susceptibility in Two Subpopulations of Northern India. Mritunjay Saxena, Ratanesh K. Seth, **Krishnan Hajela**, Sukla Biswas, Journal of Advanced Laboratory Research in Biology, 2013,vol IV, 36-44.
8. Monoclonal antibodies in malarial diagnosis to monitor antimalarial resistance: an overview. Mritunjay Saxena, Ratnesh K Seth, **Krishnan Hajela** and Sukla Biswas.

Chapter in Book "Antimicrobial Resistance, a cause for global concern. Eds. Rubina Lawrence, Ebenzer Jaykumar, George Thomas, 2014, Narosa Publishing House Pvt Ltd.

List of Publications: Dr. A. Jajoo : Total citation in last 5 yrs. : 240; H index 9 I index 8

1. P. Mehta, **A. Jajoo**, S. Mathur, S.I. Allakhverdiev and S. Bharti (2009) High salt stress in coupled and uncoupled thylakoid membranes: A comparative study. **Biochemistry (Moscow)**, 74(6): 620-624.A. Jajoo, K.N. Guruprasad, S. Bharti and P. Mohanty (2009) A report on International Conference "Photosynthesis in the Global Perspective" held in honor of Govindjee, November 27-29, 2008, Indore, India. **Photosynthesis Research** 100: 49-55. [IF :3.1]
2. M. Khatoon, K. Inagawa, P. Pospíšil, A. Yamashita, M. Yoshioka, B. Lundin, J. Horie, N. Morita, **A. Jajoo**, Y. Yamamoto and Y. Yamamoto (2009) Quality control of photosystem II: thylakoid unstacking is necessary to avoid further damage to the D1 protein and to facilitate D1 degradation under light stress in spinach thylakoids. **Journal of Biological Chemistry**, 284: 25343-25352. [IF :5.6]
3. P. Mehta, **A. Jajoo**, S. Mathur and S. Bharti (2010) Chlorophyll *a* fluorescence studies revealing effects of high salt stress on Photosystem II. **Plant Physiology and Biochemistry**, 48: 16-20. [IF :2.8]
4. **A. Jajoo**, S. Mathur, P. Mehta, M. Yoshioka, S.I. Allakhverdiev and Y. Yamamoto (2010) Study on the effects of chloride depletion on photosystem II using different chloride-depletion methods.**Journal of Bioenergetics and Biomembranes**, 42: 47–53[IF:2.8]
5. P. Singh - Rawal, **A. Jajoo** and S. Bharti (2010) Fluoride distributes the absorbed excitation energy more in favor of Photosystem I. **BiologiaPlantarum,** 54(3): 556-560. IF :1.7]
6. P. Singh, **A. Jajoo**, S. Mathur, P. Mehta and S. Bharti (2010) Evidence that pH can drive state transitions in isolated thylakoid membranes from spinach. **Photochemical Photobiological Sciences,9**: 830-837. [IF :2.4]

7. P. Mehta, S.I. Allakhverdiev and **A. Jajoo** (2010) Characterization of Photosystem II heterogeneities in response to high salt stress in wheat leaves during early developmental stage. ***Photosynthesis Research,*****105: 249-255. IF 2.41. 3.1**

8. P. Mehta, S.I. Allakhverdiev and **A. Jajoo** (2010) Characterization of Photosystem II heterogeneities in response to high salt stress in wheat leaves during early developmental stage. ***Photosynthesis Research,*****105: 249-255. IF 2.41.**

9. S. Mathur, S.I. Allakhverdiev and **A. Jajoo** (2011) Analysis of high temperature stress on the dynamics of antenna size and reducing side heterogeneity of Photosystem II in Wheat leaves (*Triticumaestivum*). ***BiochimicaetBiophysicaActa,*** **1807: 22-29**. [IF :5.1]

10. S. Mathur, **A. Jajoo**, P. Mehta and S. Bharti (2011) Analysis of elevated temperature induced inhibition of Photosystem II using Chlorophyll a fluorescence induction kinetics in Wheat leaves. **Plant Biology,13:1-6.** [IF:2.8]

11. S. Mathur, P. Singh, P. Mehta and A. Jajoo (2011) A comparative study to evaluate the effects of high temperature and low pH on PSII photochemistry in spinach thylakoid membranes. **BiologiaPlantarum,** 55 (4): 747-751. [IF: 2.4]

12. T. Tongra, P. Mehta, S. Mathur, D. Agrawal, S. Bharti, D. Los, S.I. Allakhverdiev and **A. Jajoo**(2011) Computational analysis of pH induced changes in Chlorophyll *a* fluorescence transients. ***Biosystems*****, 103(2): 285-290**. [IF:2.4]

13. P. Singh., O. Ziros., S. Bharti., G. Garab and **A. Jajoo.** (2011) Mechanism of action of Anions on the electron transport chain in thylakoid membranes of higher plants. **Journal of Bioenergetics Biomembranes**. DOI 10.1007/s10863-011-9346-7. [IF :2.8]

14. P. Mehta, V. Krasnovsky, S. Bharti, S.I. Allakhverdiev and **A. Jajoo**(2011) Analysis of salt-stress induced changes in Photosystem II heterogeneity by prompt fluorescence and delayed fluorescence in wheat (*Triticumvulgare*) leaves. ***Journal of Photochemistry Photobiology B:Biology***, 104: 308-313. [IF :3.1]

15. R. Khanna-Chopra, **A. Jajooand** V. Semwal (2011) Chloroplasts and mitochondria have multiple heat tolerant isozymes of SOD and APX in leaf and inflorescence in *Chenopodium album*, **Biochemical Biophysical Research Communications**, doi:10.1016/j.bbrc.2011. [IF :2.8]

16. **A. Jajoo** and S. Bharti (2012). A comprehensive study of the effects of nitrite anion on photosynthetic electron transport chain. In: Photosynthesis: Overviews on recent progress and future prospective, Eds. Itoh S, Mohanty P, Guruprasad KN, I. K. Publishers, India. Book.

17. V. Kumar, D.R. Thakare, D.N. Saha, **A. Jajoo**, P.K. Jain, S.R. Bhat and R. Srinivasan (2012) Characterization of Atprx18 a peroxidase gene and its upstream sequence from Arabidopsis thaliana. **Journal Plant Biochemistry and Biotechnology,**doi: 10.2007/s13562-011-0068-z. [IF:2.8]

18. **A. Jajoo**, M. Szabom, Z. Otto and G. Garab (2012) Low pH induced structural reorganizations in thylakoid membranes of higher plants. ***Biochimica et Biophysica Acta,*** doi:10.1016/j.bbabio.2012.01.002. [IF :5.1]

19. **A. Jajoo** (2012) Changes in Photosystem II in response to salt stress. Book Chapter published in "Ecophysiology and Responses of Plants under Salt Stress", Ed. P. Ahmad, 149. DOI 10.1007/978-1-4614-4747-4_5, Springer publishers (USA).Book.

20. R. Singh-Tomar, S. Mathur, SI. Allakhverdiev, **A. Jajoo** (2012) Changes in PS II heterogeneity in response to osmotic and ionic stress in wheat leaves *(Triticumaestivum)*. **Journal of Biomembranes and Bioenergetics.** DOI: 10.1007/s10863-012-9444-1. [IF :2.8]

21. S. Mathur, P. Mehta, **A. Jajoo** (2012) Effects of dual stress (high salt and high temperature) in wheat leaves (Triticumaestivum) **Physiology and Molecular *Biology of Plants***, *DOI 10.1007/s12298-012-0151-5* . [IF :0.6]

22. AnjanaJajoo (2013) Changes in photosystem II heterogeneity in response to high salt stress. Book Chapter submitted to "Modern (Current) Problems Of Photosynthesis" (In press, Moscow). Book.

23. S. Mathur and **A. Jajoo**(2013) Effect of high temperature stress on growth and crop yield of Wheat (Triticumaestivum). Book chapter (In press) Springer publishers.Book.

24. R. Singh - Tomar and **A. Jajoo** (2013) Alterations in PS II heterogeneity under the influence of Polycyclic Aromatic Hydrocarbon (Fluoranthene)in wheat leaves (*T. aestivum*).**Plant Science,** doi 10.1016/j.plantsci.2013.04.007 . [IF :2.7]

List of publications: Dr. T. Banerjee ; Total citation in last 5 yrs 56 H index=4

1. Vrushali Gulla, **Tushar Banerjee** and Shridhar Patil (2010) : Bioconversion of soysterols to androstenedione by Mycobacterium fortuitum subsp. fortuitum NCIM 5239, a mutant derived from total sterol degrader strain. *J. Chem. Technol. Biotechnol.* **Published Online:** 6 May 2010. IF :2.504]

2. Sunanda Panda, Anand Kar, **Tushar Banerjee** and Neha Sharma (2012) : Combined effects of Quercetin and Atenolol in reducing Isoproterenol-induced cardiotoxicity in rats: Possible mediation through scavenging free radicals. *Cardiovasc. Toxicol.* 12 235-242. [IF :2.351]

List of publications: Dr. R. Jatwa

1. Jatwa R (2009). Influence of chronic medication with some anti-diabetic drugs on endogenous antioxidants and thyroid metabolism. In: Manoharan S (Ed); Diabetes and Cancer-09, New India Publishing House, New Delhi, India.
2. Jatwa R and Kar A (2009a). Amelioration of metformin-induced hypothyroidism by *Withania somnifera* and *Bauhinia purpurea* extracts in type 2 diabetic mice. Phytotherapy Research 23(8):1140-5. .[IF: 2.068]
3. Jatwa R and Kar A (2009b). Anti-inflammatory and anti-peroxidative roles of diacerein are possibly mediated through an alteration in thyroid functions in animal model of inflammation. Fundamental and Clinical Pharmacology 23(4):465-71. [IF:1.988]
4. Jatwa R and Kar A (2010). Effect of metformin on renal microsomal proteins, lipid peroxidation and antioxidant status in dexamethasone-induced type-2 diabetic mice. Indian Journal of Biochemistry and Biophysics 47:44-8.[IF: 1.026]
5. Singh AK and Jatwa R (2012). Comparative assessment of diapeptidyl peptidase IV (DPP-IV) inhibitory and anti-peroxidative profile of *Allium sativum* and *Bauhinia pupurea* extract. In: Bhadange DG and Koche DK (Eds); Innovative Research Trends in Biological Sciences, Pravin Creation, Akola, India, pp. 563-566 (ISBN:978-81-923621-0-6).

Number of papers published in peer reviewed journals (national / international)

1 Monographs
2 Chapters in Books
3 Books edited
4 Books with ISBN with details of publishers
5 Number listed in International Database (For *e.g.* Web of Science, Scopus, Humanities International Complete, EBSCO host, etc.)
6 Citation Index – range / average
7 SNIP
8 SJR
9 Impact Factor – range / average
10 h-index

3.4.3 Details of

1 faculty serving on the editorial boards of national and international journals

2 faculty serving as members of steering committees of international conferences recognized by reputed organizations / societies

3.4.4 Details of

1 research awards received by the faculty and students :

Dr. Suresh Chand

1. Member, NAAC peer team for accreditations to Universities and Colleges.
2. Selected as Post-doctoral Fellow, The Australian National University, Canberra, (1982).
3. Awarded Commonwealth Academic Staff Fellowship by the Commonwealth Scholarship Commission, London, (University of Nottingham, England).
4. Awarded Visiting Fellowship under Indian National Science Academy & Hungarian Academy of Sciences Scientific Exchange Programme (BRC,Szeged,Hungary).
5. Awarded Govt. of India Biotechnology Overseas Associateship Award, Ministry of Science & Technology, DBT (IPK, Germany).

6. Awarded Visiting Fellowship under International Collaboration Scientific Exchange Programme, INSA -DFG (Tuebingen, Germany)

7. Awarded Dr. R. B. Ekbote Prize by the Maharashtra Association for the Cultivation of Science , DST, Govt. of India.

Dr. K. N. Guruprasad

1. Member, NAAC peer team for accreditations to Universities and Colleges
2. Visiting Scientist, Biophysics Department, Moscow University, Russia
3. Consultant, BASF India Ltd, Mumbai

Dr. Anand Kar

3. Awarded best science research award for teachers in Biological sciences, DAVV by M.P Council of Science and Technology (MPCST) (2010)
4. Invited Plenary lecture In “International symposium on Constitutional Medicine” at Daizon, South Korea. (2009).

Dr. K. Hajela

1. Awarded Marie Curie International Incoming Fellowship 2007-2009.
2. Awarded Hungarian Scholarship Board Visiting Fellowship 2010.
3. Member Project Approval Committee MP Biotech Council, Bhopal 2010-2013.

Dr. Anjana Jajoo

3. Awarded Hungarian State Scholarship from Hungarian State Board (HSB)to carry out research work in Hungary, 2009
4. Awarded DST-DAAD fellowship to visit Germany under Exchange of Senior Scientist (2010) to visit Germany to discuss possibility of future collaborative projects.
5. Awarded best science research award for teachers in Biological sciences, DAVV by

M.P Council of Science and Technology (MPCST) (2012).
6. Awarded DBT-CREST(Cutting-edge Research Enhancement and Scientific Training) award(2012) to carry our research work abroad.
7. Member, Board of Studies, North Saurashtra University, Jalgaon, Maharashtra
8. Member, UGC committee for credit transfer policy, UGC, New Delhi
9. Delivered invited lectures in international conferences in Australia, Korea, Azerbaizan, Eurasia

Dr. Rameshwar Jatwa

1. UGC-Career Research Award (2012)

Award Student:

Dr. Vivek Chandra, INSA Young Scientist Medal (2012)

2 national and international recognition received by the faculty from reputed professional bodies and agencies

2.4.5 A. Number of successful M. Phil. and Ph.D. scholars guided per faculty during the last four years: **List of Ph.D. awarded from this department enclosed.**

3

Name of the faculty	Qualification	Designation	Specialization	No. of Years of Experience	No. of Ph.D. students guided for the last 4 years
Dr. S. Chand	Ph.D	Professor And Head	Plant Biotechnology/Tissue & Cell Culture / somatic cell Genetics	32 (Teaching) 37 (Research)	05
Dr.K.N.Guruprasad	Ph.D	Professor	Plant Physiology, Photobiology	32	06
Dr. S. Patil	Ph.D	Professor	Microbial Technology	32	03
Dr. A. Kar	Ph.D	Professor	Animal Physiology, Endocrinology	28	04
Dr. G.P. Pandey	Ph.D.	Professor	EnvironmentalScience,Ecophysiology	30	03
Dr. K. Hajela	Ph.D	Reader	Immunology, Biochemistry	24	03
Dr. A. Jajoo	Ph.D	Reader	Plant Physiology, Biochemistry	14	05

B. University participate in *Shodhganga* by depositing the Ph.D. theses with INFLIBNET for electronic dissemination through open access: **Yes.**

3.4.6 A. Record of Promotion e interdisciplinary research: **N.A.**

B. Number of interdepartmental / interdisciplinary research projects undertaken:

C. Mention the number of departments involved in such endeavours:

3.4.8 List of University instituted research awards to the faculty of the Department

Best Science Research Award Sponsored from MPCST, Bhopal

3.4.9 Details of incentives given to the faculty for receiving state, national and international recognition for research contributions: **Nil.**

3.5 Consultancy: **Yes, Dr. K.N. Guruprasad is a consultant for BASF, India Pvt. Ltd.**

3.5.1 Important consultancies undertaken by the department during the last four years.

3.5.2 A. Department participation in university-industry cell:

B. If yes, what is its scope and range of activities:

3.5.3 Record of publicizing the expertise of the department for consultancy services:

3.6 Extension Activities and Institutional Social Responsibility (ISR)

3.6.1 A. Department records of sensitization of faculty and students on its Institutional Social Responsibilities: **Induction program of fresher's student's organized (25.08.2012). In this program Institutional social responsibilities were also discussed.**

B. List the social outreach programmes which have created an impact on students' campus experience during the last four years. **Nil.**

3.6.2 Promotion of neighborhood network and student engagement and holistic development of students and sustained community development?

Faculty usually discussed about the good life style, how to bear work and other pressures without affecting health? How to be happy? What are our social responsibilities? How to become a good human being besides a successful person? These discussion were made on several occasions such as fresher's party, farewell etc. No documentary record available till to date.

3.6.3 Record of participation of the students and faculty in extension activities including participation in NSS, NCC, YRC and other National/ International programmes: **Nil**

3.6.4 Records of tracking the students' involvement in various social movements / activities which promote citizenship roles.

3.6.5 Write up of the values inculcated and skills learnt during extension activities.

Our events inspired them to work for every small aspects without any hesitation such as cleaning and beautification of our institute, what are the challenges of

climate change, what is our social and cultural flavor and how to retain it etc.

3.6.6 Department community in its outreach activities: **We have constituted number of departmental committees having faculty and students in their composition.**

3.6.7 Details of awards received by the institution for extension activities and/contributions to social/community development during the last four years:

3.7 Collaboration

3.7.1 A. MOU Copies and Record of collaboration with other agencies impacted the visibility, identity and diversity of activities on campus: **Document enclosed.**

List : Name of Collaborating Institutions:

1. Dr.S.Chand : Institute of Molecular Genetics,Gaterslaben,Germany.
2. Dr. K.N.Guruprasad : BASF India,Ltd, DST-RFBR Indo-Russian Project.
3. Dr. K.Hajela : National Institute of Malaria Research, ICMR, New Delhi.
4. Dr. Anjana Jajoo : DST
5. Dr. Rameshwar Jatwa : MP Biotech Council.
6. Dr. Anand Kar : Institute of Life Sciences, Hyderabad, Indian Agricultural Research Institute, New Delhi.

B. Record of benefits academically and financially because of collaborations.

3.7.2 Records of linkages resulted in

- Curriculum development:
- Internship: **Our students carried out dissertation work at various national lab of repute.**
- On-the-job training: **Nil.**
- Faculty exchange and development:
- Research:
- Publication: **Yes, ample number of publications in good journals is the outcome of our collaborations (please refer publication list).**
- Consultancy: Yes
- Extension: **Nil.**

Student placement: Students got various positions for higher studies in esteemed instt.

- Any other (please specify): **Nil.**

3.7.3 A. Copy of MOUs with institutions of national/international importance/other universities/ industries/corporate houses etc. **Copies enclosed.**

B. Record of enhanced the research and development activities: **Publications in**

collaborations are themselves best record of this practice.

3.7.4 Have the university-industry interactions resulted in the establishment / creation of highly specialized laboratories / facilities? **A taskforce is working towards this.**

3.7.5 **Any other information regarding Research, Consultancy and Extension, which the university would like to include.**

Criterion IV: Infrastructure and Learning Resources

4.1 Physical Facilities

4.1.1 A. Details of Department physical infrastructure: **file maintained in the department**

B. Maintenance of Laboratories for its optimal utilization: **Committees of faculties constituted to look after different labs (Please refer minutes of departmental committee).**

C. Maintenance of Computers for its optimal utilization: **School outsources maintenance, if required.**

D. Maintenance of UPSes, Power Supplies: **Yes, school outsources if required.**

E. Maintenance of support services, sanitation, first aid boxes**: Yes, school outsources, if required.**

F. Maintenance of building, garden, indoor games structure: **contract services of cleaning.**

4.1.2 Record of new initiatives for Infrastructure for promote a good teaching-learning environment- Internet, Wi-fi, Power Point Projectors, Video Equipment: **School has projectors and computers in each classroom and also having computer lab to students and faculties.**

4.1.3 Physical ambience for the faculty in terms of adequate research laboratories, computing facilities and allied services: G**ood ambience to conduct research work as school has sufficient no. of labs and facilities required to perform quality work (Please refer infrastructure and equipments file).**

4.1.4 List of Facilities like office room, common room and separate rest rooms for women students and staff:

List :

1. Office Room,
2. Common room,
3. Separate laboratory for each teacher.

4.1.5 List of the infrastructure facilities are disabled-friendly: **Nil**

4.1.6 Departmental special facilities are available on campus to promote students' interest in sports and cultural events/activities: **We have Gymnasium and play grounds and Auditorium at University level for faculties, staff and students.**

4.2 Library as a Learning Resource

4.2.1 Details of departmental library facilities: School has **1355 titles and volumes on various topics. 400 Journals , 87 Ph.D.Thesis and 57 M.Sc. Dissertations theses.**

4.2.2 Provide details of the departmental library:

1 Total area of the library (in Sq. Mts.): ~ 500 Sq. mts.
2 Total seating capacity: **30**
3 Working hours (on working days, on holidays, before examination, during examination, during vacation): **During working days 10.30 AM to-5.30 PM.**
4 Layout of the library (individual reading carrels, lounge area for browsing and relaxed reading, IT zone for accessing e-resources):
5 Clear and prominent display of floor plan:
6 Adequate sign boards; **Yes**
7 Fire alarm; **No**
8 Access to differently-abled users and : **NA**
9 Mode of access to collection: **Physical**

4.2.3 Departmental library holdings:

a) Print (books, back volumes and theses): **1355 titles and volumes books, more than 400 journals, 87 Ph.D. theses and 57 M.Sc. dissertation theses**
b) Average number of books added during the last three years: **1000**
c) Non Print (Audio Video, CDs, Downloaded Articles):
d) Electronic (e-books, e-journals): **Nil.**
e) Special collections (e.g. text books, reference books, standards, patents): **Nil**

4.2.4 Records of tools the library deploys to provide access to the collection:

1 OPAC Central library
2 Electronic Resource Management package for e-journals : Central library
3 Federated searching tools to search articles in multiple databases : Central library
4 Library Website : Yes
5 In-house/remote access to e-publications : Remote.

Note: Based on the markings of racks and numbering of books.

4.2.5 Use of ICT deployed in the library: **Nil.**

1 Library automation
2 Total number of computers for public access
3 Total numbers of printers for public access
4 Internet band width speed □ 2mbps □ 10 mbps □ 1 GB
5 Institutional Repository
6 Content management system for e-learning
7 Participation in resource sharing networks/consortia (like INFLIBNET)

4.2.6 Details (per year) with regard to

* Ratio of library books to students enrolled: **25**
* Average number of books added during the last four years: **87 Books** were purchased during XI plan amounting to 2.0 Lacs approx.

1 Assistance in searching Databases: Central Library has the facility.
2 INFLIBNET/IUC facilities: Central Library has the facility.

4.2.8 Annual departmental library budget and the amount spent for purchasing new books and journals:

Budget during 2013-14
UGC XI Plan:
Total:
Total spent amount:

4.3 IT Infrastructure

4.3.1 Details of Department IT and ICT Infrastructure :

Computer Labs: 02
Ph.D Scholar Computer Lab :01
Faculty Rooms having IT facility: All faculties have Internet connection on their computer
Wi-Fi Campus: Yes

4.3.2 Details of the computing facilities i.e., hardware and software.

1 Number of systems with individual configurations :

Desktops:36
Laptops and Notebooks: 10
Printers: 22
Scanners: 05

2 Computer-student ratio: Students go to IT centre for this purpose.
3 Dedicated computing facilities: **A computer lab for M.Sc students is present.**
4 LAN facility: **IT centre is providing LAN facility with 1GBPS speed.**
5 Proprietary software : required software's are provided by IT centre.

MS Office 2003, Quick Heal Pro Antivirus 2013, Operating Sytem,
Operating System software:

1 WINDOWS Server 2003

2 Windows Vista

3 WINDOWS XP, NT, 98.

Front-end developing software:

1 Microsoft Visual Studio .NET 2003

Office automation software:

MS Office 2003

MS Office 97

Lotus SmartSuite

Antiviral software:

Quick Heal Pro Antivirus 2013

Trend MICRO Office Scan (from IT centre)

6 Number of nodes/ computers with internet facility: 36

7 Any other (please specify)

4.3.3 Plans and strategies for deploying and upgrading the IT infrastructure and associated facilities: **Another new computer lab and up gradation of some softwares need to be done.**

4.3.4 Details on access to on-line teaching and learning resources and other knowledge and information database/packages provided to the staff and students for quality teaching, learning and research. : C**lassroom projectors are connected to internet.**

4.3.5 IT facilities available to individual teachers for effective teaching and quality research: **Every faculty has been allotted a PC with Internet facility.**

4.3.6 A. Details of ICT-enabled classrooms/learning spaces available: **All class rooms /Seminar Hall (05) are ICT enabled.**

B. Record of utilization for enhancing the quality of teaching and learning: **Power point presentations are available as record. Also student feed back copies and analysis available.**

4.3.7 Records of Faculty and computer- aided teaching-learning materials: **available with the faculty**

4.3.8 Department availing of the National Knowledge Network connectivity: **Faculty uses various interactive sites and also accessing journals such as NATURE, JBB, Journal of Cell and tissue research, JBC etc.**

4.3.9 Record of Availing of web resources such as Wikipedia, dictionary and other education enhancing resources: Nil

4.3.10 Department budget for the update, deployment and maintenance of computers:
The maintenance is done through university computer centre.

4.3.11. Details of plans envisioned for the gradual transfer of teaching and learning from closed

university information network to open environment: Teaching is **gradually progressing towards information to open environment.**

4.4 Any other information regarding Infrastructure and Learning Resources which the university would like to include.

CRITERION V: STUDENT SUPPORT AND PROGRESSION

5.1 Student Mentoring: Class coordinator, curriculum committee, mentor has been appointed for counseling students for academic, finance and career support.

5.1.1 Department system, structural and functional characteristics for student support and mentoring: **Accessibility of all the faculties during working hours. Also in case of any emergency or immediate guidance 24 x 7 students are free to get any guidance.**

5.1.2 Record of 'apart from classroom interaction', the provisions available for academic mentoring: **Any time any where students can ask any query any guidance.**

5.1.3 Record of department students utilization of personal enhancement and development schemes such as career counseling, soft skill development, career-path-identification, and orientation to well-being for its students:

Yes, school addresses these issues whenever they have spare time. Besides, we also conduct induction programme and seminars to provide them guidance from experts (refer list of conferences/ seminars etc).

5.1.4 Department publish its updated prospectus and handbook info annually on website and online access of course plans, syllabi and result

Yes, available on site.

5.1.5 A. Records of the Timely dissipation of financial aid: **Yes documents available in office.**

C. Tables for type and number of scholarships/free-ships given to the students during the last four years the following categories: UG/PG/M.Phil/Ph.D./Diploma/others:

SC/ST/ OBC students are getting fellowships from State government and UGC.

5.1.6 Table of percentages of students receive financial assistance from state government, central government and other national agencies (Kishore Vaigyanik Protsahan Yojana **(KVPY), SN Bose Fellow, etc.):Nil**

5.1.7 Department use of International Student Cell, number and list of foreign students: **Nil.**

5.1.8 Department support services available for:

1 Students participating in various competitions/conferences in India and abroad: **Take extra classes for those students, when required.**

2 Physically challenged / differently-abled students: **NA**

3 SC/ST, OBC and economically weaker sections: **Taking extra classes and providing extra guidance as and when asked.**

4 Health centre, health insurance etc. : **Nil.**

5 Skill development (spoken English, computer literacy, etc.): **Our syllabus make them skilled on the mentioned aspects.**

6 performance enhancement for slow learners: **It is evident from the results that each and every student improved chronologically (in most of the cases).**

7 exposure of students to other institutions of higher learning/ corporates/business houses, etc. **Students selected in National programs of summer and dissertation trainings.**

8 publication of student magazines: **Nil.**

9 Record of student participation in sports and extracurricular activities: **Our student mainly participate in inter/intra departmental games only.**

5.1.9 Placement Records: **Enclosed.**

5.1.10 Number of students selected during campus interviews by different employers (list the employers and the number of companies who visited the campus during the last four years). **Nil.**

5.1.11 A. Record of registered Alumni Association: **Yes**

B. Record of activities and contributions to the development of the department:

Alumni provide intellectual support to junior for their placements.

C. Record of alumni meets: **in the office.**

5.1.12 A. Committee members and record of student grievance redressal:

B. Details of the nature of grievances reported and the redressal:

Various committees have been created in the department including anti-ragging, gender sensitivity,grievance redressal etc. Accordingly; following committees are constituted as per the decision of the faculty School of Life sciences.

1. Anti-ragging committee : HoD, Prof. K.N.Guruprasad, Dr. G.P.Pandey and Dr. Tushar Banerjee.
2. Gender sensitivity committee : HoD, Prof. S.Patil, Dr. A.Jajoo, Dr. R.Jatwa, (Suggested by HoD Mrs. Vandana Chodhary, - Non-teaching staff.)
3. Grievence Redressal : HoD, Prof. A.Kar, Dr.K.Hajela and Mr. Vinod Thakur (Suggested by HoD- Mrs. Rekha Agrawal-Non-Teaching Staff.)

5.1.13 A. Record of anti-ragging committee: **We have anti-ragging committee (document enclosed in various committee file).**

B. List of instances reported during the last four years and what action has been taken in these cases: **No case reported.**

5.1.14 Details of the cooperation rendered by parents, industry and its stakeholders to ensure

the overall development of its students: **It is based only on feedback from these sources.**

5.1.15. A. List of participation of women students in intra- and inter-institutional sports competitions and cultural activities :Nil

B. List of participation of women students in intra- and inter-institutional sports competitions and cultural activities :Nil

5.2 Student Progression

5.2.1 Analysis of progression and trends for the last four years.

M.Sc. and Ph.D. Life Science (2011-2012)

Student Progression	**%**
UG to PG*	
PG to M.Phil.*	**2**
PG to M.Tech./ Ph.D.	**4**
Ph.D. to Post-Doctoral	2
Employment after Ph.D.	
Employment after M.Sc.	

M.Sc. Industrial Microbiology

Student Progression	**%**
UG to PG*	
PG to M.Phil.*	
PG to M.Tech./ Ph.D.	**2**
Ph.D. to Post-Doctoral	2
Employment after Ph.D.	
Employment after M.Sc.	

5.2.2 Programme-wise pass percentage during the time span stipulated: **~100 % in all the programs except one student got failed in 2012 (M.Sc. Industrial Microbiology).**

5.2.3 Records of Number and percentage of students who appeared/qualified in examinations like UGC-CSIR-NET, UGC-NET, SLET, ATE / CAT / GRE / TOFEL / GMAT / Central / State services, Defense, Civil Services, etc.

Students who qualified UGC-NET/SLET (2008 onwards):

1. Mr. Manjul Singh (2008)

2. Ms. Aditee Gupta (2008)
3. Mr. Atul Agarwal (2009)
4. Ms. Megha Goyal (NET-2009)
5. Mr. Narendra Kumar (2010)
6. Mr. Kanchan Jumerani (2010)
7. Mr. Ram Kumar Singh (2010)
8. Mr. Shadab Khan (2010)
9. Mr. Komal Chodhary (2011)
10. Mr. Pankaj Patel (2012)
11. Ms. Rachna Tripathi (GATE-2012)
12. Mr. Maliram Hindala (GATE-2012)
13. Ms. Kainat Zehra Rizwi (GATE-2012)

5.2.4 List category-wise with details regarding the number of Ph.D./D.Litt./D.Sc. theses submitted/ accepted/ resubmitted/ rejected in the last four years

Number of Ph.D:

Awarded: General: 17, SC: 03, ST: Nil

Submitted: General: 03, SC: 01, ST: Nil

Rejected: Nil.

5.3 Student Participation and Activities

5.3.1 A. List the range of sports, cultural and extracurricular activities available to students

B. Sports and extracurricular calendar and details of students' participation.

Sports facilities are available in the university, not in the department.

5.3.2 Details of the achievements of department students in co-curricular, extracurricular and cultural activities at different levels: University / State / Zonal / National / International, etc. during the last four years. **Nil**

5.3.3 A. Gathered data and feedback from pass-out graduates: **file maintained in the office**

B. Gathered data and feedback from employers. Being taken in July'2013.

C. Use of the data for the growth and development of the department

5.3.4 Department special drives / campaigns for its faculty and students to promote heritage consciousness **Nil**

5.3.5 A. Records of Department involvement and encourage its students to publish materials like catalogues, wall magazines, departmental magazine, and other material: **Nil**

B. List the major publications/ materials brought out by the students during the last four academic sessions: **Nil**

5.3.6 A. Departmental Student and Alumni association or any other similar body

B. Details on its constitution, activities and funding.

Alumini meet organized in 2010 and 2011.

5.3.7 Details of student representatives in Board of Studies, various academic and administrative bodies

5.3.8 Any other information regarding Student Support and Progression which the university would like to include.

CRITERION VI: GOVERNANCE, LEADERSHIP AND MANAGEMENT

6.1 Institutional Vision and Leadership

6.1.1 State the vision and the mission of the department in line with the University

Vision: The School of Life Sciences will be known as a premier destination, offering comprehensive, collaborative, interdisciplinary and sustainable training to the students and researchers of biological sciences.

Mission: To provide an environment conducive to learning, working, and conducting research through Professionalism, Excellence, and Teamwork in the basic and applied life sciences arena.

6.1.2 Mission statement definition for the department's distinctive characteristics in terms of addressing the needs of the society, the students it seeks to serve, the institution's tradition and value orientations, its vision for the future,

School of Life Sciences is one of the oldest teaching departments, which established itself as a premier school for quality research and education on the national as well as international level. The state-of-art facilities and equally trained faculties constitute the robust framework on which the school thrives. Wide majority of the faculties have trained in the most modern laboratories in the country and abroad. They share this expertise and exposure to the students. The courses offered and the research activities are in line with the current requirement of the country. The research on herbal remedies, plant physiology, photosynthesis, molecular medicine, plant biotechnology, environment biology and applied microbiology are all aligned to the present day need of the country and the society. School of Life Sciences seeks and trains students who have a strong aptitude for research. Majority of the students graduating from the school take up careers in research institutions. School of Life sciences has always focused on research based teaching. The faculties are actively engaged in research activities and hence latest areas are constantly inculcated in the teaching endeavor. The Schools of life Sciences shall maintain its aforesaid focus on the lines it has traditionally followed.

6.1.3 Write-up of

1 ensuring the organization's management system development, implementation and continuous improvement

School of Life Sciences is being managed strictly under the purview of rules and regulations laid down under Universities' Act, Statute, Regulations and Ordinances. The budget as allocated each year by the university is utilized and the requirements for next financial year are forwarded to the University for Revision.

The finances are exclusively dependent on the grant received from the University. The Improvement in management is a continuous affair for the school of life Sciences and various changes are implements from time to time.

2 interacting with its stakeholders

Routine meetings with faculties, students, alumni and employees are held on a routine basis.

3 Reinforcing a culture of excellence

Faculty, students and employees are constantly encouraged to give their best efforts. Students are motivated to undertake challenging tasks and faculties are encouraged to strive for excellence in research and teaching.

4 identifying organizational needs and striving to fulfill them

Through various meetings of faculty, departmental committee, employees and students the shortcomings are listed and an effective road map is created to alleviate them.

6.1.4 Records of Departmental and other committees meetings

Minutes of meeting for faculty meeting / departmental committees / other meetings are duly recorded, filed and a copy is sent to university administration for information as a matter of routine.

6.1.5 Write-up of a culture of participative decisions in the department

All the decisions taken in the department are a collective effort. Most of the decisions are taken in either the faculty meeting or in the departmental committee meetings. All the stakeholders are also consulted before decision making.

6.1.6 Record of Grooming leadership at various levels

Faculty members are responsible for various tasks like: Examinations Result making, Seminars, Record Keeping, Documentation, Laboratory maintenance, IT, Alumni meetings etc. This provides an opportunity for all to get exposed to various functioning's of the department. Students are also given various responsibilities to inculcate the leadership qualities.

6.1.10 Record of knowledge management strategy

A copy of all the dissertations (M.Sc., M.Phil. and Ph.D.) is kept in the department for ready reference. Publications of the departmental faculties and students are also maintained with individual teacher. The course handouts and reference materials are also provided as soft/hard copies to the students for future reference.

6.1.11 Write up on

* Contributing to national development

The focus on cutting edge research has created an environment at school of Life

Sciences leads to the production of finest researchers and skilled students. Students after graduating work at National institutes, MNC's and various other institutions fueling the countries growth and competence. Faculties of School of Life Sciences are routinely awarded projects of national and international importance.

* Fostering global competencies among students

Students and faculties from school of life sciences routinely get placement for doctoral / post-doctoral studies in world-class laboratories across the globe.

* Inculcating a sound value system among students

Collaborative working environment with group activities inculcates the values of team and camaraderie among the students. Students are trained to work in a righteous and honest way to achieve success.

* Promoting use of technology

Research and studies in life sciences are a direct function of available technology. State of art laboratories coupled with excellent IT infrastructure propels our diligent effort for excellence. The students are taught with the aid of ICT. All the Faculty members have been provided with a laptop along with many desktops and students can access the IT facility even on their own laptops, tablets or mobile phones.

* Quest for excellence

Students are motivated to approach world level laboratories for further research and best MNC's for employment. Past placement records are testament to this constant stride for excellence. Majority of the faculties use the sabbatical and study leaves to visit international laboratories and bring back the enriched knowledge base and advancements in the field.

6.2 Strategy Development and Deployment

6.2.1 Perspective plan for development and write-up of policies and strategies to

1 work for Vision and for achieving the mission

Periodic review of our status and goals set is done to derive an effective plan to achieve the set mission.

2 Enhancing Teaching and learning

Adoption of new technologies like ICT and optimal use of IT tools to create and effective content is attempted to produce future ready students. Students are exposed to various institutions and industries by organising educational tours.

3 Enhancing Research and development

Experts from various areas of life sciences are routinely invited and their inputs

are utilized for improving the research and development in the school.

4 Enhancing Community engagement

Constant focus is put on working on problems that affect the community in particular and humanity on the whole.

5 Enhancing Human resource planning and development

Faculties are given individual charges for their exposure to the departmental work. They are also encouraged to undergo training and development programs. Students are not only trained for a leadership role, but are also exposed to cutting edge technology making them ready for future challenges.

6 Enhancing Industry interaction

Inputs from various industries (national and International) are seriously taken into account while revising the syllabus. Practical courses are designed in such a way that the skill set acquired by the students is in line with the industry demand.

7 Enhancing Internationalisation

Scientists returning from abroad routinely visit the department to share their experiences and the guidance offered helps in preparing students for the global scenario. Many of the faculties are on the editorial boards of reputed international journals.

6.2.2 Departmental organizational structure and decision making processes and their effectiveness.

i. The department is headed by Head of the department. Headship is by rotation, wherein the headship is rotated on a three year basis amongst the professors. Head is supported by a departmental committee, which deliberates on all the important decisions. Apart from this there various committees like purchase committee etc. Some of the very important decisions are also taken in the faculty meeting. Inputs for these are obtained by students meeting and employee meetings.

ii. Minutes of the meetings are duly recorded and forwarded to the University Endorsement / action / approval.

6.2.3 Write up of functioning independently and autonomously and ensure accountability

The School of Life Sciences has a university allocated budget, which is revised as per the departments' demand. The expenditure is totally decided by the School itself. Academic and administrative matters are also decided in the departmental and faculty meetings. All the decisions are forwarded to the university for information and to ensure transparency.

6.2.5 Record of last four years, have there been any instances of court cases filed by and against the department, what were the critical issues and verdicts of the courts on these issues.

No court cases have been filed in the last four years against the department.

6.2.6 Performance audit of the department by external experts

External exerts for M.Sc. Comprehensive viva are always required to audit the academic level. The Experts have always rated the department as one of the best departments. All financial transactions are pre-audited and the department has always passed the central audits.

6.3 Faculty Empowerment Strategies

6.3.1 Outcome of the reviews of self appraisal and PBAS and important decisions taken on that.

Self-appraisal and PBAS reviews / comments are made by the Vice-chancellor and are always forwarded to the respective teachers for necessary action. The outcome can be seen from the improved student feedback.

6.3.3 List of teachers availing welfare schemes available for teaching and non-teaching staff.

Teachers routinely avail loan from the cooperative established in the university. Teacher's welfare funds is also available for the teachers.

6.3.4 List and number of attracted and retained eminent faculty in last 4 years

NIL

6.3.5 Gender audit during the last four years of the department achievements and pass percentages and its salient findings.

The male to female ratio in teachers is 9:1, which needs to be improved. The gender ratio among the employees is 14:3, while in the students male to female ration is almost 1:1. With new appointments on the anvil, we hope to improve the ratio.

6.4 Financial Management and Resource Mobilization

6.4.1 Statements of audited income and expenditure of academic and administrative activities of the last four years.

Audited cashbook for last four years is available in the department.

6.4.5 Efforts taken by the department for resource mobilization.

NIL

6.4.6 Record of endowment funds created

NIL

6.5 Internal Quality Assurance System

6.5.1 Details of department internal quality assurance and sustenance system, give details.

Students feedback is a major exercise for quality assurance in the academic development of School of life Sciences. Similar feedback for the employees has also been proposed. The feedbacks are analyzed and presented to the individual for review and improvements.

6.5.2 Internal workshops to improve teaching, learning and evaluation

NIL

6.5.3 Record of continuously review the teaching learning process

NIL

6.5.4 **Any other information regarding Governance, Leadership and Management which the university would like to include.**

NIL

CRITERIA VII: INNOVATIONS AND BEST PRACTICES

7.1 Environment Consciousness

7.1.1 Department Area Green Audit details

School of Energy and environment conducts the energy imbalance audits of the department and till now only slight imbalances have been found. Three lush-green gardens have been developed in the near vicinity of the School. Many evergreen trees have been planted and adopted by the department for upkeep. During the summer season, the departments' tractor and tanker is utilized to its capacity for watering of the plant in the campus. 50% of TFL lamps have been replaced with high efficiency TFLs' to conserve energy. The newly constructed portion has large windows to allow maximum natural lighting reducing the overall energy expenditure.

7.1.2 Departmental initiative to make the campus eco-friendly?

1 Energy conservation

Installation of energy saving TFL and dark film installation on window panes to reduce the external heating has been done.

2 Use of renewable energy

NIL

3 Water harvesting

Water recharging soak pits have been installed to allow percolation of water.

4 Check dam construction

NIL

5 Efforts for Carbon neutrality

NIL

6 Plantation

Three lush green gardens have been developed and numerous trees have been planted. Apart from these many plantations have been adopted near the building for upkeep and maintenance.

7 Hazardous waste management

NIL

8 e-waste management

NIL

9 any other (please specify)

7.2 Innovations

7.2.1 Give details of innovations introduced during the last four years which have created a positive impact on the functioning of the department

The lecture delivery method has been extensively modernized to ICT based systems, which has led to a better content delivery. The reference material is also being provided via the e-medium. Assignments are now accepted via e-mails as well. The building is totally WiFi allowing for better connectivity and smoother information flow.

7.3 Best Practices

7.3.1 Give details of any two best practices which have contributed to better academic and administrative functioning of the department.

ICT based lecture delivery and record keeping of the meetings have contributed to better academic and administrative functioning. Seminar

Format for Record of Best Practices of the department

1. **Title of the Practice**
   This title should capture the keywords that describe the practice.
2. **Objectives of the Practice**
   What are the objectives / intended outcomes of this "best practice" and what are the underlying principles or concepts of this practice (in about 100 words)?

3. **The Context**
   What were the contextual features or challenging issues that needed to be addressed in designing and implementing this practice (in about 150 words)?
4. **The Practice**
   Describe the practice and its uniqueness in the context of India higher education. What were the constraints / limitations, if any, faced (in about 400 words)?
5. **Evidence of Success**
   Provide evidence of success such as performance against targets and benchmarks, review results. What do these results indicate? Describe in about 200 words.

6. **Problems Encountered and Resources Required**
   Please identify the problems encountered and resources required to implement the practice (in about 150 words).
7. **Notes**
   Optional. Please add any other information that may be relevant for adopting/ implementing the Best Practice in other institutions (in about 150 words).