

## ASSESSMENT STATUS REPORT

Name of the School: **School of Biotechnology, Devi Ahilya University, Indore**

Year of Report: **2009-2010**

### **Part: A**

#### **IQAC Plan of 2009-2010 towards quality enhancement**

School is running Three post graduate programs viz.. M. Sc Biotechnology, Genetic Engineering and Bioinformatics. Our M.Sc. Biotechnology program is duly recognized and funded by the Department of Biotechnology, Ministry of Science & Technology, Govt. of India, New Delhi (DBT). The aim of the school is to produce the world-class biotechnologists. School is devoted for providing the quality education and guidance for the students, which is evidenced by the fact that most of our students clear National and International level examinations viz. CSIR/UGC JRF, NET-LS, GATE, DBT JRF, GRE and TOFEL).Our students get research programs in premiere Institutes of the World. In contemporary to previous results the students of this school should also achieve encouraging goals in the year 2009-2010.

### **Part B :**

01	Activities reflecting the goals and objectives of the institution	Goals and objective of our school are to produce quality biotechnologists and to carry out world quality research. M. Sc. Biotechnology students' result remained 100%. Quality of the students is visible by the fact that mostly students cleared National level exams like NET, GATE. Students desirous to go abroad for higher studies also got success in clearing GRE/TOFEL. Many students joined research programs in developed countries also
02	New academic programmes initiated (UG and PG)	This school is having DBT's sponsored Bioinformatics Sub center since 1993. Under this centre, we provide bioinformatics education by way of training programs/ Workshops. We are also involved in R & D in the field of Bioinformatics since last almost more than 10 years. From 2009-10, we have started M. Sc. Bioinformatics under the self finance pattern of the University.
03	Innovations in curricular design and transaction	Keeping the prime objective of the school in mind, we design the course curriculum in such a manner that students should be maximum benefited out of it. Our M. Sc. Biotechnology program has one-year in-house research project along with their course work, which help them to understand the research procedures along with their course curriculum. Besides, this school

		provides good training in science communication with the help of regular seminars and paper presentations. Students have to design their own research projects with the help of faculties and they are also given the assignments time to time to enhance their creativity towards scientific thinking. On an average one student has to deliver three seminars and two assignments in each semester, which also have 1 and 2 credits respectively. We follow DBT guidelines for course curriculum. Our admissions in M.Sc. biotechnology are also through a combined entrance exam. of Biotechnology (CEEB) conducted by the JNU with the help of all the participating Universities and under supervision of DBT.
04	Inter-disciplinary programmes started	School of biotechnology has given the freedom to the students to earn credits and studying the subjects/ courses in other schools/ departments. Simultaneously school encourages students of other departments of this university as well as other universities to earn credits in our School and to pursue the research projects and utilize the facilities of our labs of the school including Bioinformatics sub center.
05	Examination reforms implemented	School is following Ordinance no. 31 for conducting the examination. Transparency in the evaluation system is our prime moto.. Students have full participation in planning and implementation of semester, examination schedule and all other extracurricular activities like seminars, symposia, and presentation. For this various departmental committees have been constituted which ensure the involvement of students in policy making. We show answer scripts of all the examinations including class tests and final semester exams. to the students. They also have the liberty to see the answer scripts of other fellow students also. Our best practice is evidenced by the fact that since its establishment in 1991, no case of re-evaluation came in our school.
06	Candidates qualified NET/SLET/GATE etc.	The success rate of students in National level Examinations is very good. 2009-GATE 11 students, NET-03 students, DBT JRF-03 students, LS-06 students, GRE-01 student One student ranked AIR 11 <sup>th</sup> in GATE-2009. 2010-GATE-08 students, NET-06 students, DBT JRF-01 student, GRE-01 student.
07	Initiative towards faculty development programme	Presently School is having Two regular faculty. The recruitment of one more regular faculty (ST) in biotechnology is in progress. Besides, we have also

		selected 05 contractual faculties by the University (under self finance scheme).
08	Total number of seminars/workshops conducted	<p>The school of Biotechnology in collaboration of the World Society of Cellular &amp; Molecular Biology, France, organized and hosted 5<sup>th</sup> World Congress of Cellular and Molecular Biology on Nov 2-6, 2009. Besides this school regularly organizes two workshops in Bioinformatics every year.</p> <p>Prof. RJ Wegmann, Founder President, World Society of Cellular and Molecular Biology, France delivered one seminar related to hypertension modern tools. Mr. Vishwas Varshney of Mars academy delivered one lecture on stress relieving and personality grooming.</p>
09	Research projects a)Newly implemented: b)Completed:	<p>We have DBT funded research project under TWAS-DBT scheme where a foreign student is doing Ph.D. in our School. Besides, many research project (internally funded) are in progress.</p> <p>Only recently, we have been approached by a US company for a research project. We are in the process of developing a technology related to low calorie potato chips. Very soon, we are likely to apply for an International as well as Indian Patent.</p> <p>We are also searching partners interested in buying our developed technologies related to production of glucose-1-phosphate, a cytostatic compound used in cardiotherapy, sugar free jams and jellies ( much useful for diabetic and calorie conscious persons)</p> <p>Internally funded new research projects:</p> <ul style="list-style-type: none"> <li>➤ Studies of Rhizoremediation of polycyclic aromatic hydrocarbon compounds in oil sludge</li> <li>➤ Xylanase and starch phosphorylase enzymes and their potential exploitation</li> <li>➤ Starch Phosphorylase in Plants</li> <li>➤ Development of long circulatory nanoconstruct(s) for metabolic disorders</li> <li>➤ Xylanase production using solid state Fermentation</li> <li>➤ Immobilization of Starch Phosphorylase: production of glucose -1-phosphate.</li> </ul>
10	Patents generated if any	Nil

11	New collaborative research programmes	<p>School of Biotechnology has many collaborative research programs with National Centre for Cell Science Pune, IGIB New Delhi, National Environment Engineering Research Institute Nagpur and Jain Hi-tech Industry, Jalgaon.</p> <p>We have also signed MoUs with Industry ( Jain-Hi-Tech, Jalgaon, NCCS, Pune.</p> <p>Very shortly, we are likely to sign MoU with National Research Developmental Corporation (NRDC), a Govt. of India Enterprize (for collaboration).</p>												
12	Research grants received from various agencies	<p>During 2009-10, school received following grants from DBT:</p> <ol style="list-style-type: none"> <li>1. Under M.Sc. Biotechnology program: Rs. 19.85624 lacs</li> <li>2. Under Bioinformatics Sub Centre- Rs. 12.36338 lacs</li> <li>3. Under TWAS-DBT grant. Rs. 2.366 lacs</li> </ol> <p><b>For World Congress of CMB – Rs.4.70 lacs</b></p> <table style="margin-left: 20px;"> <tr> <td>UGC</td> <td>1,00,000/-</td> </tr> <tr> <td>DST</td> <td>150000/-</td> </tr> <tr> <td>CSIR</td> <td>75000/-</td> </tr> <tr> <td>DRDO</td> <td>30000/-</td> </tr> <tr> <td>INSA</td> <td>15000/-</td> </tr> <tr> <td>ICMR</td> <td>100000/-</td> </tr> </table>	UGC	1,00,000/-	DST	150000/-	CSIR	75000/-	DRDO	30000/-	INSA	15000/-	ICMR	100000/-
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13	Details of research scholars	<p>Five (Monika Dhote, Ranjeeta Chouhan, Shiva Vyas, Krityanand Kumar Mahatman, Rachana Tiwari). 23 students have already been awarded Ph.D. in Biotechnology from this University.</p>												
14	Citation index of faculty members and impact factor	<p>Total No. of International publications: 70 +10 *. Impact factor from 0.167 to 6.954. (As per ISI list) Total No. of National publications: 29. (Impact:~170) Impact factor from 2.0 to 8.2. (As per NAAS List). For details, please visit our departmental profile on our website <a href="http://www.davvbiotech.res.in">http://www.davvbiotech.res.in</a></p> <p>*Impact factor 16.00 <a href="http://abhayjere.com/Documents/2007_Impact_Factor_1.pdf">http://abhayjere.com/Documents/2007_Impact_Factor_1.pdf</a> <a href="http://www.researchgate.net">www.researchgate.net</a></p> <p>Publications in proceedings: 63</p>												

		<p>Total books published: 08</p> <p>Chapters in edited books: 09*</p> <p>Total Ph.Ds: 23 and 05 students presently enrolled Master's dissertation work: More than 150 * Nobel Laureates are reviewers in some specific chapter(s).</p>
15	Honors/Awards to the faculty	<p>Honorary Fellowship of World Society of Cellular &amp; Molecular Biology, France ( this society has more than 20 Nobel laureates)</p> <p>Honorary fellowship of Association of Biotechnology &amp; Pharmacy</p> <p>Hon. Fellowship of Society for Science &amp; Environment – Dr. Anil Kumar</p> <p>Dr. Kumar is in the editorial board of many international &amp; national journals of repute</p> <p>Dr. G.S.SIROHI Award – Dr. Sanjeev Yadav</p> <p>Prof. Vimal Sharma Young Scientist Award- Mr. Sachin Pundhir.</p> <p>Best Science Research Award-2009 from MPCST, Bhopal- Dr. H.S. Parmar.</p> <p>Dr. Anil Kumar's contributions in research have been recognized even by the Nobel Laureates. He was invited to Chair a Symposium on Enzymes of carbohydrate metabolism and their exploitation in Biotechnology at the 4<sup>th</sup> World Congress of Cellular &amp; Molecular Biology held on Oct. 7-12, 2005 at Poitiers, France. He is often invited to deliver lectures in International Congresses/ Conferences. However, due to restricted University Policy of not sanctioning Travel expenses for International Conferences (journey abroad) , he has to refuse many times.</p>
16	Internal resources generated	<p>Running two Self Finance course, during 2008-09, by way of M.Sc. genetic engineering school earned nearly Rs. 24 lacs</p>
17	Details of departments getting SAP, COSIST(ASSIST)/DST.FIST, etc.	<p>Due to lack of core faculty members, department is unable to get such assistance from SAP, COSIST (ASSIST)/DST.FIST, etc. As per Govt. of India rules, there should be at least 06 regular/ permanent faculty in</p>

	assistance/recognition	the School for such schemes
18	Community services	School of Biotechnology organized Entrepreneurship development program time to time for undergraduate and post graduates students. During 2009-10, we plan to organize a Regional 2 days seminar on IPR.
19	Teachers and officers newly recruited	Under process
20	Teaching-Non-teaching staff ratio	School of Biotechnology has Two regular faculty (Professor) and one Lab assistant (Attached). Besides, five contractual lecturers and five daily wages non-teaching office staff are working. Bioinformatics Sub Centre has 4 temporary employees (till now paid by DBT).
21	Improvements in the library services	Department have more than 1800 books. Departmental library is connected online with central library software. Our library management involves student participation. We have given online down load facility to the students as well as teachers (24 hour service, via our DBT sponsored 512 kbps lease line from BSNL)
22	New books/journals subscribed and their value	During 2009-10 we purchased books costing nearly Rs 4 lacs. We also subscribe few journals viz. J. Biotech. Bioengineering (Japan), Nature, J. Cell Tissue Research, Indian J Science Res.. Besides, we have subscription of many online journals by way of membership of International Societies .
23	Courses in which student assessment of teachers is introduced and the action taken on student feedback	We take student feedback since long time back. Since 2008-09, we started formal analysis of the feedback as per NAAC guidelines. Earlier, we were analyzing in our own innovative way.
24	Unit cost of education	Approx. Rs. 50000/- per student.
25	Computerization of administration and the process of admissions and examination results, issue of certificates	Yes, Department is having its separate lease line of 512 kbps. School of Biotechnology has more than 40 PCs all having LAN. We have internet facility since 1993. In 1993 we got facility through Planning Commission. Afterwards, we got VSAT unit in 1997 from DBT installed in the Central library. The care was being taken by the School of Computer Science as per orders of the then Vice-Chancellor. We gave the concept of campus networking to the University authorities in 1997. The then VC mentioned in many meetings that Dr. Anil Kumar brought Dr. T. Madhan Mohan (officer of DBT) at his residence when he was taking lunch since they explained about campus networking.  We are the first in the university who keep all the

		<p>departmental information on their website. We never got our brochure printed. Ours all information is taken by the students and scientists globally thru our website maintained by ourselves with our own server.</p> <p>We have developed many software and databases related to Bioinformatics that are also freely available on our website. Our Admission forms, Notices , News updates etc all are available on our website. We also put our lectures (PPT presentations) on our website. These have been developed by us therefore, we have our copyright.</p>
26	Increase in the infrastructural facilities	Department has established one separate user room, Faculty have individual PCs
27	Technology up gradation	<p><b>A. Glucose-1-phosphate (G-1-P) production:</b> G-1-P is a cytostatic compound involved in cardiopathy therapy, as an antibiotic and in circulatory system therapy. Starch phosphorylase (EC 2.4.1.1) is an important enzyme which catalyzes the reversible conversion of starch and inorganic phosphate into G-1-P, and this has been exploited for the production of G-1-P. The enzyme has been immobilized on egg shell and the immobilized enzyme which is thermo-stable and reusable has been used in packed bed and fluidized bed reactors and these reactors can be used for G-1-P production. The waste water from potato chips industry has also been used for the recovery and immobilization of Starch phosphorylase for the production of G-1-P.</p> <p><b>B. Development of technology for fruit juice clarification using immobilized enzymes:</b> A number of industrially important enzymes, viz. Cellulase, xylanase, pectinase, pectin methyl esterase have been produced by Solid state fermentation of agricultural wastes using GRAS (generally regarded as safe) microorganisms. Presently, this work is in progress and in future, metabolites like gluconic acid, ethanol, lactic acid, citric acid, etc may also be produced using the action of microorganisms on agricultural wastes.</p> <p><b>C. Tissue Culture of secondary metabolites.</b></p> <p><b>D. Production of low calorie potato chips with good texture and flavors</b></p> <p><b>E. Development of anti-obesity molecules is on progress.</b></p>
28	Computer and internet access and training to teachers and students	Yes, Department is having its separate lease line of 512 kbps. Department is having well-equipped computer lab for students, teachers and research scholars.

29	Financial aid to students	School of Biotechnology provides studentship of Rs. 1200/- per month to all the M.Sc. Biotechnology students selected through CEEB conducted by the JNU, New Delhi. Besides this One traineeship of Rs. 5000/- per month and one studentship of Rs 5000/- per month in bioinformatics is available on open competitive basis.
30	Activities and support from the Alumni Association	Alumni Association helps the students for searching research position in their respective places. Our students maintain alumni association online by way of yahoo groups.
31	Activities and support from the Parent Teacher Association	School of Biotechnology regularly organizes meeting of Parent-Teacher Association. From now, we will put minutes of the meeting on our website as per recommendation of NAAC.
32	Health services	University health centre is available
33	Performance in sports activities	Above average
34	Incentives to outstanding sportspersons	We give all types of possible help to them. We sometimes even change our exam. dates as per their convenience. Our students have brought laurel in Chess at the National level. Our contractual faculty members also take active part in sports.
35	Student achievements and awards	Megha Abbey ranked AIR 11 <sup>th</sup> in GATE-2009. Pratik Nyati led the university team for National chess competition. One student of the School got research offer from 06 Globally renowned Institutes/ Universities with fellowship.
36	Activities of the Guidance and Counseling unit	Teachers are always available for guidance. In fact, it is the first department in the University where work is done on American pattern. Regardless of the status, everyone does every job. We all live like a big family. Students can contact HOD even at 2 AM. In fact, many times, students approached HOD in the odd hours and HOD also helped them by way of carrying the hostel students in the hospitals
37	Placement services provided to students	Yes, Department has its own placement cell. Though our students are not interested in jobs immediate after post graduation, they are more keen for higher studies. Dr. Sanjeev Yadav is Incharge-Placement cell.
38	Development programmes for non-teaching staff	School gives training to non-teaching staff for office and administrative work
39	Healthy practices of the	Transparency and involvement of students in policy



	institution	making.
40	Linkages developed with National/International, Academic/Research bodies	School of Biotechnology has many collaborative research programs with many organizations viz. National Centre for Cell Science Pune, IGIB New Delhi, National Environment Engineering Research Institute Nagpur and Jain Hi-tech Industry, Jalgaon. MOU with National Research Developmental Corporation, New Delhi is under process.
41	Any other relevant information the institution wishes to add	Department is globally known for its quality research and teaching. Even Nobel Laureates have recognized contributions of the faculty/ School

### **Part C: Detail the plans of the institution for 2009-10:**

#### **Plan on improvement in Infrastructure:**

School has started one more PG course from 2009-2010 session. School plans to enhance its present infrastructure. School also plans to establish one more well-equipped computer laboratory for Bioinformatics students. School has more than 1800 books in its departmental library costing more than Rs. 40 lacs. We plan to have one well maintained library cum study hall along with more extension of the building.

All these planning are now materializing, as building extension work is started.

#### **Plan for research activity & promotion:**

School collaborations with premiere research institutes viz. NCCS Pune; NEERI, Nagpur; Jain biotech Jalgaon; NRDC, New Delhi; Institute of Integrative Omics and Applied Biotechnology (IIOAB), Medinipur, West Bengal, NIPGR, New Delhi and many more. We plan to enhance the interaction with Industries and Research Institutes, Globally. School expects regular/ permanent faculty from UGC under XIth Plan. If successful, School will be in a position to get more funds by way of research projects from various funding agencies. The increase in number of regular faculty will also be helpful for the promotion of research activities.

#### **Plan on improvement in Relationship with stakeholders:**

School organizes Parent-teachers meet regularly. It improves relationship between them. School plans to increase the number of meetings of parents- teachers, teachers-students (besides the class) for better interaction/ dialogues. School also plans to start formal alumni association from this year so that regular meetings of alumni are organized.

As in practice, students feed back for each teacher will be taken and will be analyzed for knowing strength & weaknesses. Efforts will be done to rectify the weaknesses.

Besides, students feed back will also be taken regarding Syllabi (course contents as per Questionnaire No. 1). Feed back will also be taken as Overall evaluation of programs and Teaching ( from the pass out students after results are out as per Questionnaire No. 3). All

the feed backs will be thoroughly analyzed by a Committee appointed by the Head of the Department. Thereafter, all the possible efforts will be done for improvement, if any required.

**Student satisfaction and quality of academics as well as research as per International norms is our Prime focus. We firmly believe that in this age of globalization, no Institute can sustain without maintaining Internationally accepted quality.**

**Name & Signature of the Coordinator QAC**

**Name & Signatures of the HEAD, UTD**