PIR MEHR ALI SHAH ARID AGRICULTURE UNIVERSITY
RAWALPINDI

UNIVERSITY INSTITUTE OF BIOCHEMISTRY & BIOTECHNOLOGY
(UIBB)

B.S Microbiology Degree Program

Self-Assessment Report

(2014-2016)

Program Self Assessment Team

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Introduction

The University Institute of Biochemistry and Biotechnology (UIBB), an Higher Education Commission (HEC) funded project "Establishment of University Institute of Biochemistry and Biotechnology (EUIBB)", became functional in 2013. The University Institute of Biochemistry and Biotechnology (UIBB) aims to excel in advanced research in Biochemistry, Molecular Biology and Biotechnology to provide means in controlling various diseases related to plant, animal and human as well as to enhance agriculture and livestock productivity with particular emphasis to high priority areas related to Pakistan's economic growth.

Vision: To introduce a culture of diversity, opportunity, honesty, and collaboration with National and international repute

Missions:

- To excel in innovative scientific education and research
- To produce intellectual, highly committed, and diverse scientific manpower
- To engage in translational scientific research focused towards the benefit of humanity

Current degree programs run by UIBB are;

BS Biochemistry
BS Microbiology
M.Sc Biochemistry
M.Phil Biochemistry
M.Phil Biotechnology
Ph.D Biochemistry
Ph.D Biotechnology

Based on the importance of Microbiology in health, medicine, food, agriculture, biological sciences, biotechnology etc., the BS Microbiology program was initiated in UIBB in 2014. The curriculum of Microbiology is designed as per HEC guidelines and international standards. The curriculum is based on highly competitive and advanced microbiology core courses with optional and compulsory courses as per HEC guidelines. The courses offered provide students with an extensive exposure of theoretical and practical aspects of Microbiology. With a selection of courses, the curriculum also ensures students could integrate microbiology with allied disciplines especially biochemistry, molecular biology, and biotechnology and focus on research and development.

SECTION 1:

Components of Self-Assessment Process:

This Self-Assessment Report has been prepared on the basis of following eight criteria as described in Self-Assessment Manual.

Criterion-1: Program Mission, Objectives and Outcomes

Introduction

The discipline of Microbiology deals with basic knowledge of microbes at cellular and molecular levels as well as their applications in basic science research, biomedical food, agriculture, and environmental sciences. The extensive applications of microorganisms are being extensively explored in the field of biotechnology.

Mission Statement of BS Microbiology Program:

The Institute of Biochemistry & Biotechnology (UIBB) program aims to provide quality education and training to BS students in the field of Microbiology through discipline-specific courses and laboratory research techniques. It also focuses on the development of skills like oral presentations, written assignments, critical thinking, problem solving, and teamwork. The students are also trained to apply gained knowledge in practical fields and expansion of this scientific field through research.

Standard 1-1: Documented Measurable Objectives

1. To offer in-depth knowledge of the theoretical and practical aspects of Microbiology
2. To build the intellectual foundation of students and prepare them for a complex, dynamic, and technological practical life
3. To train students for careers in medical/clinical laboratories, teaching, industry, scientific research, and higher education

Expected Outcomes

1. Gain of knowledge and understanding of basic and applied aspects of microbiology
2. Understanding of selected aspects of Microbiology that aid in the research expertise and professional careers
3. Manpower trained to lead in a particular research or professional field

Main Elements of Strategic Plan to Achieve Mission and Objectives

1. Induction of well trained and competitive faculty for Microbiology program
2. Setting up of well-equipped specialized general laboratories for hands-on training of students

3. Quality teaching through development of a sound teaching system for the award of degrees based on the experience and vision gathered from internationally recommended books, world reviews, literature, innovations, proceedings, and symposia etc
4. Regular updating of curricula involving core subjects, elective subjects and specialized areas and study tours
5. To provide opportunities for research and scholarly activities for both faculty and students

TABLE-1: PROGRAM OBJECTIVES ASSSESSMENT

S. #	Objective	How Measured	When Measured	Improvement Identified	Improvement made
1	To offer in-depth knowledge of the theoretical and practical aspects of Microbiology	On the basis of evaluation by students	It is a continuous process as per requirement	Course Contents	Course contents updated time to time and use of audio visuals aids are being improved
2	To build the intellectual foundation of students and prepare them for a complex, dynamic, and technological practical life	Pre requisite information and status of the knowledge of students through class activities and student feed back	Throughout the study program via routine student-teacher discussions	Students to make presentations/reports, regular interactions with faculty, seminars presentations.	Presentations, seminars, communication skill development, regular interactions with faculty
3	To train students for careers in medical/clinical laboratories, teaching, industry, scientific research, and higher education	On the basis of evaluation by students	Continuous process measured as per requirement	Research oriented curious attitude of students during routine courses discussions	Regular discussions during class or on individual basis.

TABLE-2 STANDARD 1-2: OBJECTIVES *VS* OUTCOMES

	Objectives			
	Sr. No.	**1**	**2**	**3**
Outcomes	**1**	+ +	++	+++
	2	+++	++	++
	3	++	+++	++

Key: ++ = Relevant

+++ = Highly Relevant

The program outcomes are fully supportive to program objectives mentioned above. Outcomes are based on actual details obtained from department documents.

PROGRAM ASSESSMENT RESULTS

It is important for student progress to be consistently evaluated and reported in relation to curricular outcomes. Information derived from the fair assessment and evaluation of students provides valuable information on the student success in relation to curriculum expectations and identifies areas of strength and challenges at the student, department and university level. At the same time, it is also important to get the feedback from the students in the form of course/instructor assessment. These assessments via Performa no 1 and 10 (as per PMAS-AAUR rules) serves as an overarching framework that provides a way to structure, evaluate, and improve the learning experience of our students across all programs being offered by UIBB.

The 1st SAR for B.S Microbiology programme assessment is divided into four sections;

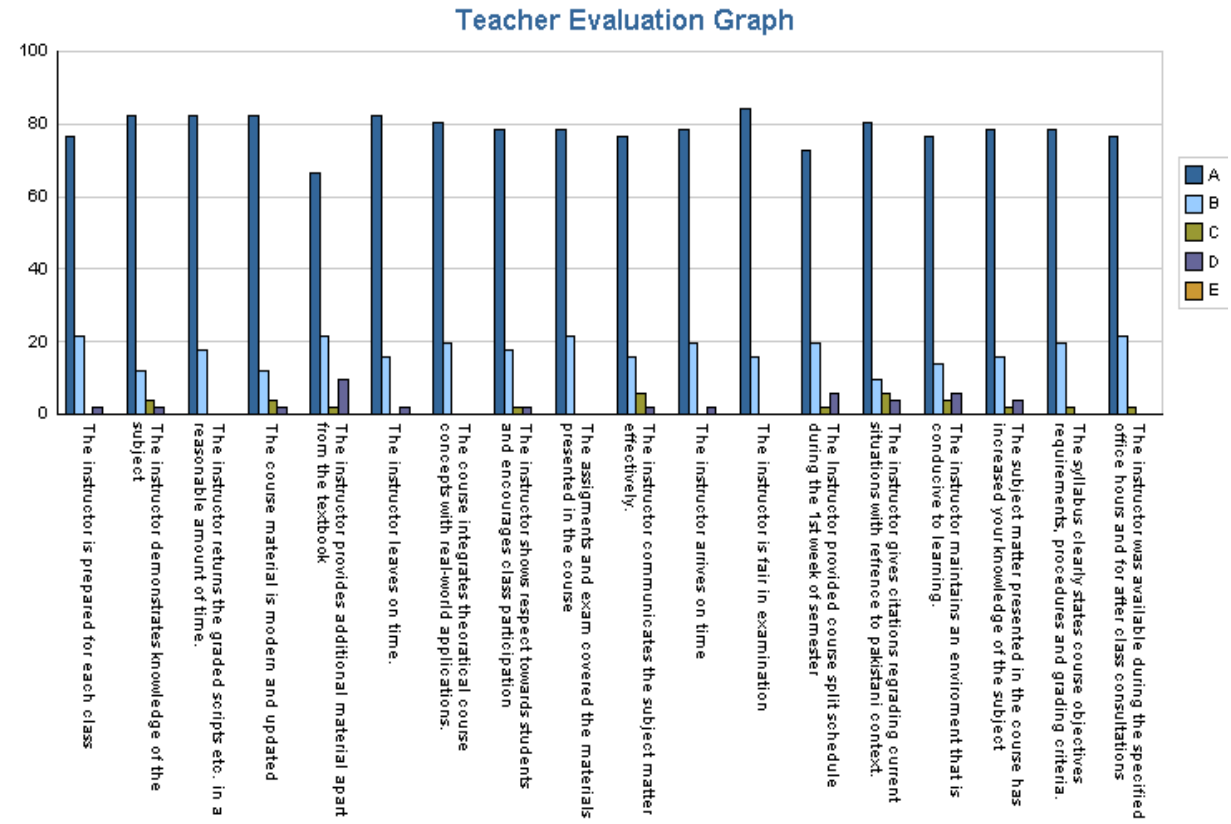
1. Assessment results Fall-2014
2. Assessment results Spring-2015
3. Assessment results Fall-2015
4. Assessment results Spring-2016

Each assessment covers a semester and is further divided into two sections, which deals with Performa no 1 and 10, respectively.

Student Teacher Evaluation Fall Semester 2014:

Over all Results of Proforma No. 10

The teachers were evaluated by the students at the end of the semester in accordance with Proforma-10. In the graph teachers are represented as 1,2,3 etc. instead of mentioning their names. Results and performance of individual teachers will follow.



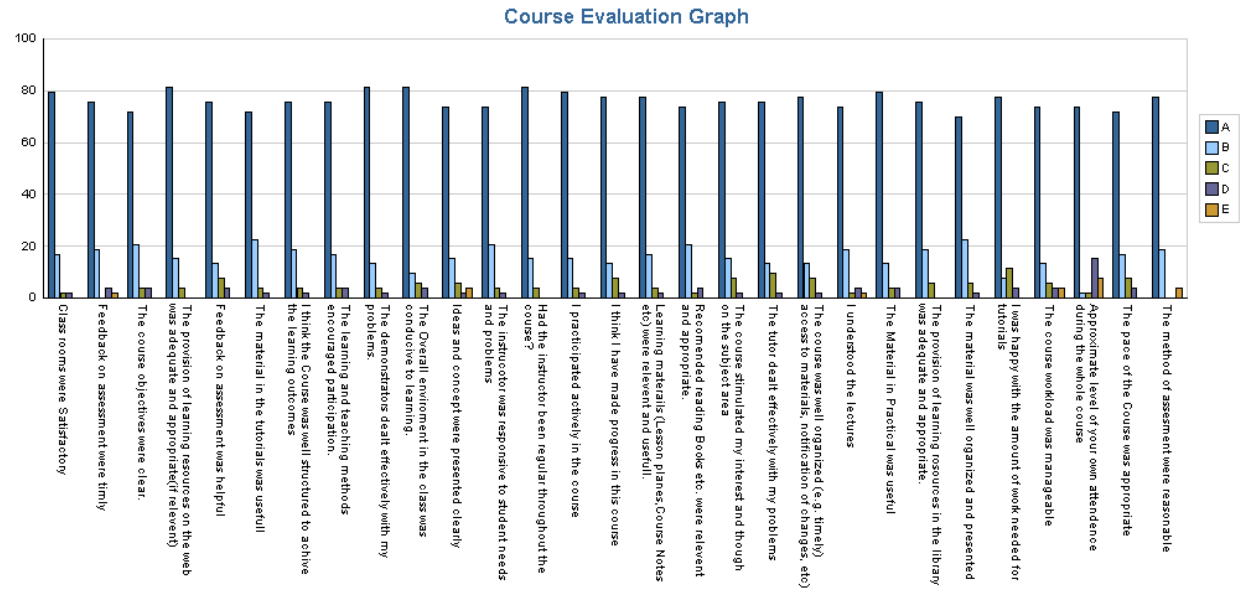
MIC-302. Teacher 1. According to the students, the instructor demonstrates updated knowledge of the subject, fair in examination and leaves the class in time.

Student Course Evaluation Fall Semester 2014:

Over all Results of Proforma No. 1

Performa No. 1, deals with study of course observation regarding design of course contents (both theoretical and practical), its relevance with subject and teaching material. It also emphasizes on instructor's role in, not only completing course within given time frame, but how instructor developed student's interest in this course, used updated literature and was fair in evaluation at the end of a study course. The courses offered for fall 2014 were evaluated by the students at the end of the semester in accordance with Proforma-1. In the graph teachers are represented as 1,2,3 etc. instead of mentioning their names. Results of individual course evaluation proforma will follow.

Results of Performa 1 (Fall 2014)

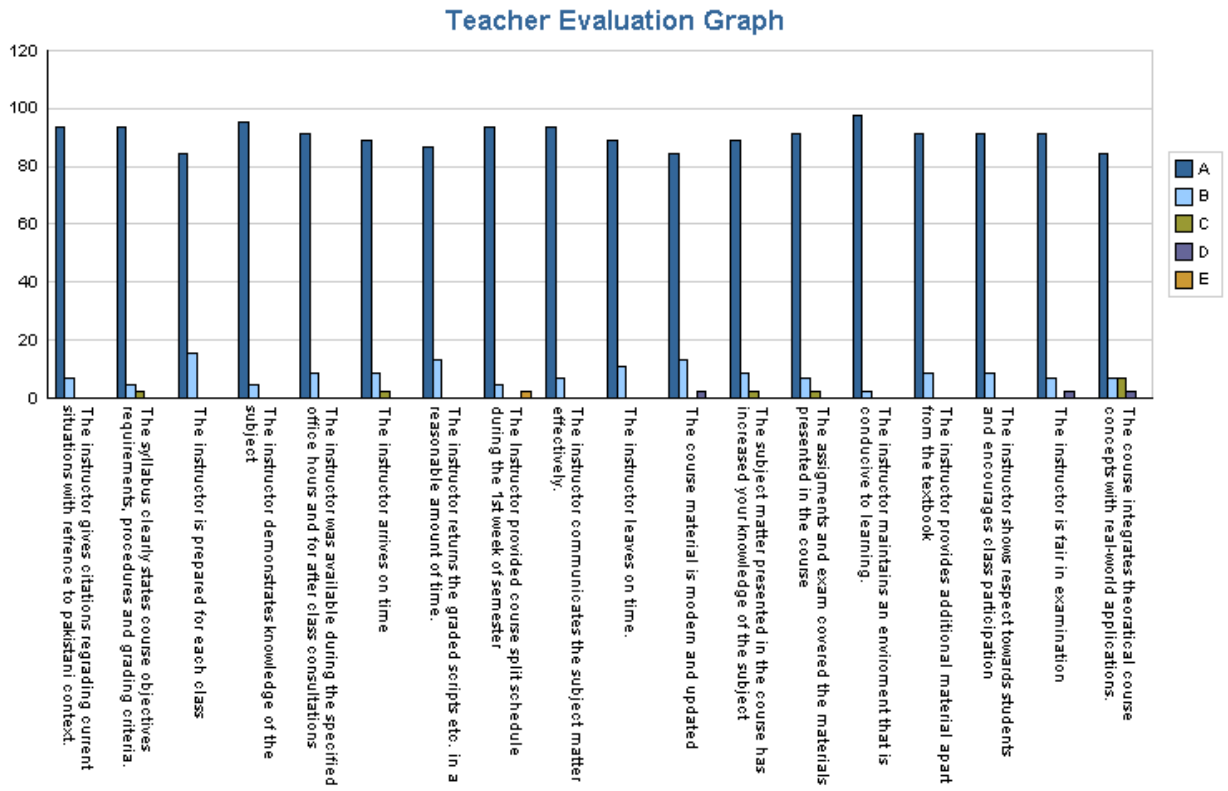


MIC-302 Performa 1: Depending upon the results of Performa 1 course MIC-302, the overall environment in the class is conductive and students participated in course and pace of course was appropriate.

Student Teacher Evaluation Spring Semester 2015:

Over all Results of Proforma No. 10

The teachers were evaluated by the students at the end of the semester in accordance with Proforma-10. In the graph teachers are represented as 1,2,3 etc. instead of mentioning their names. Results and performance of individual teachers will follow.



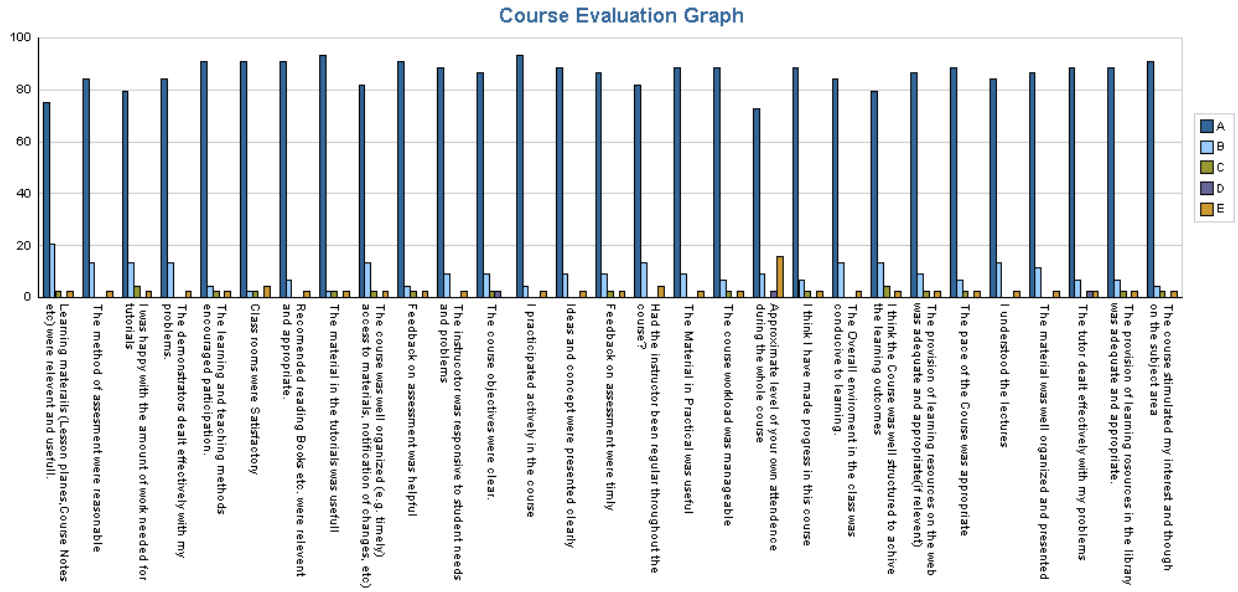
MIC-303. Teacher 1. According to the students, the instructor gives citations regarding current situation reference to Pakistan, demonstrates updated knowledge of the subject, fair in examination and leaves the class in time.

Student Course Evaluation Spring Semester 2015:

Over all Results of Proforma No. 1

Performa No. 1, deals with study of course observation regarding design of course contents (both theoretical and practical), its relevance with subject and teaching material. It also emphasizes on instructor's role in, not only completing course within given time frame, but how instructor developed student's interest in this course, used updated literature and was fair in evaluation at the end of a study course. The courses offered for spring 2015 were evaluated by the students at the end of the semester in accordance with Proforma-1. In the graph teachers are represented as 1,2,3 etc. instead of mentioning their names. Results of individual course evaluation proforma-1 will follow.

Results of Performa 1 (Spring 2015)

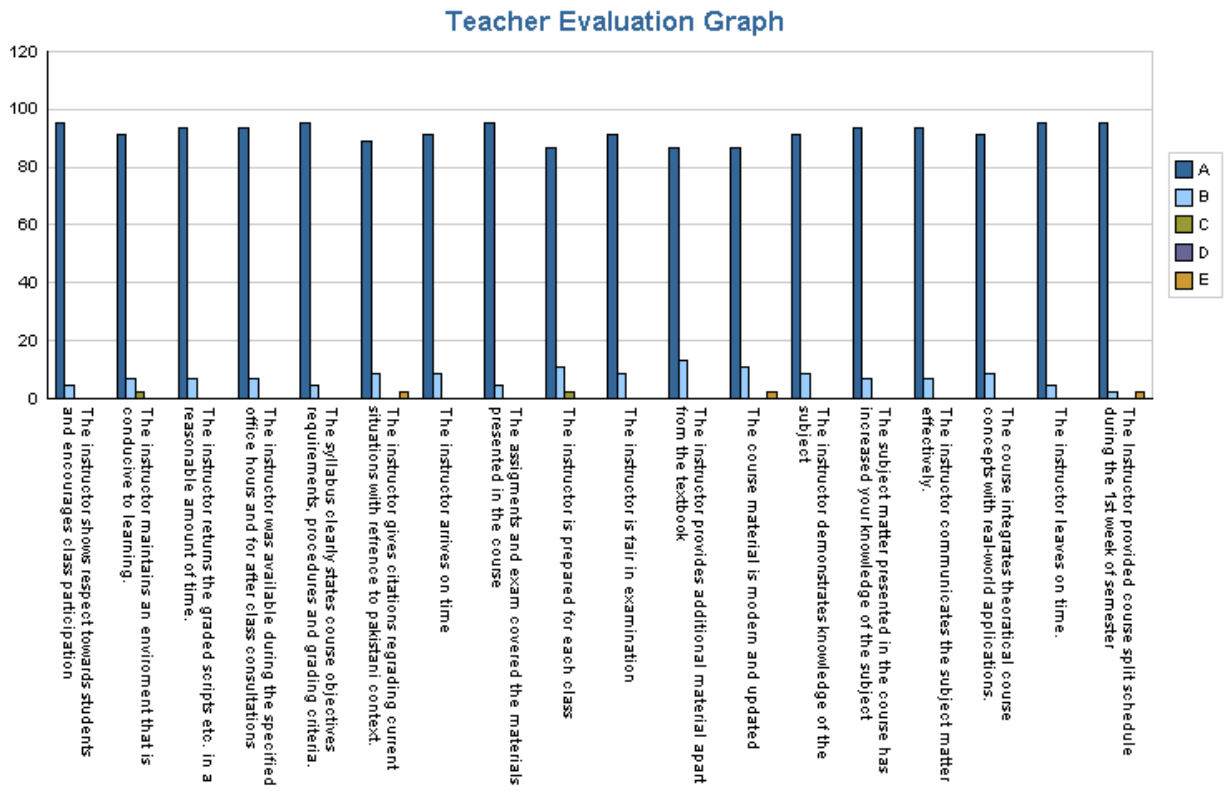


MIC-303 Performa 1: Depending upon the results of Performa 1 course MIC-303, the material in the tutorial was sufficient, overall environment in the class is conductive and students participated in course and pace of course was appropriate.

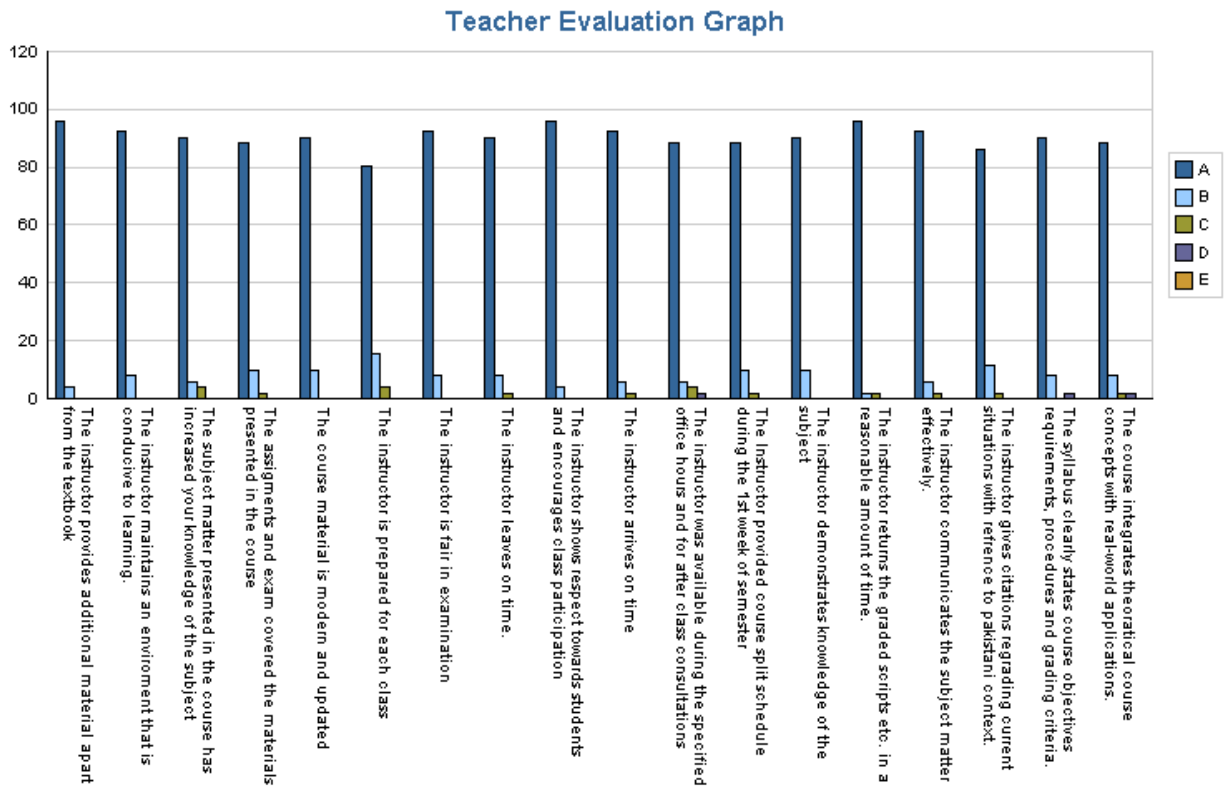
Student Teacher Evaluation Fall Semester 2015:

Over all Results of Proforma No. 10

The teachers were evaluated by the students at the end of the semester in accordance with Proforma-10. In the graph teachers are represented as 1,2,3 etc. instead of mentioning their names. Results and performance of individual teachers will follow.



MIC-302. Teacher 1. According to the students, the syllabus clearly covered the course contents, the teacher was fair in examination and leaves the class in time.



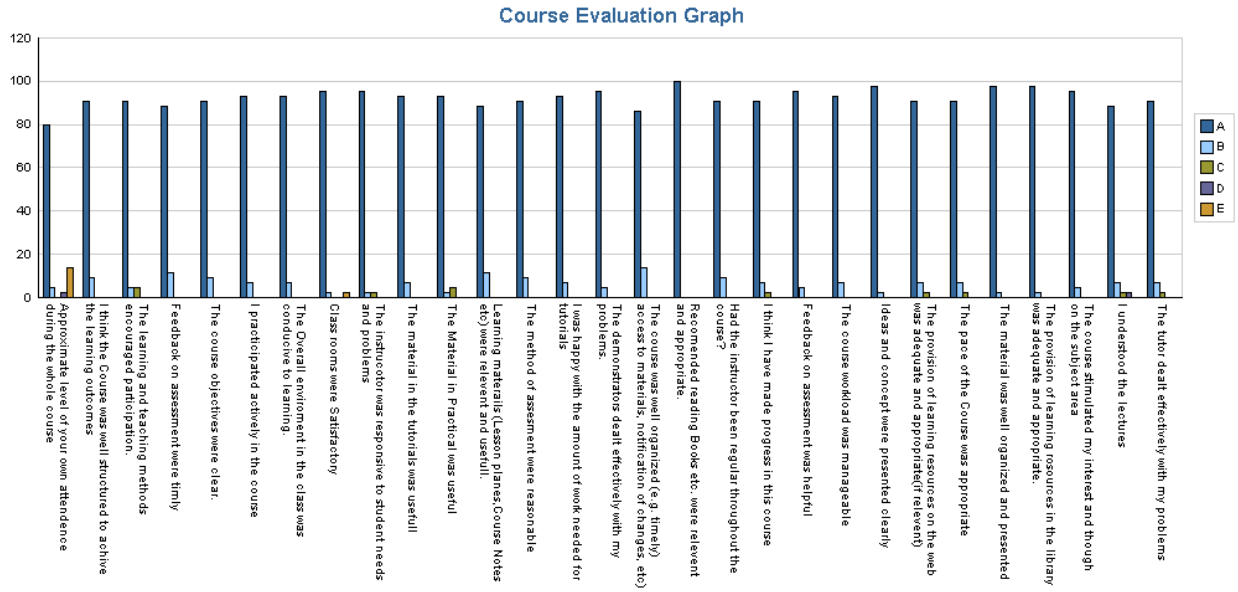
MIC-402. Teacher 2. According to the students, the instructor shows respect towards students, the syllabus clearly covered the course contents, the teacher was fair in examination and leaves the class in time.

Student Course Evaluation Fall Semester 2015:

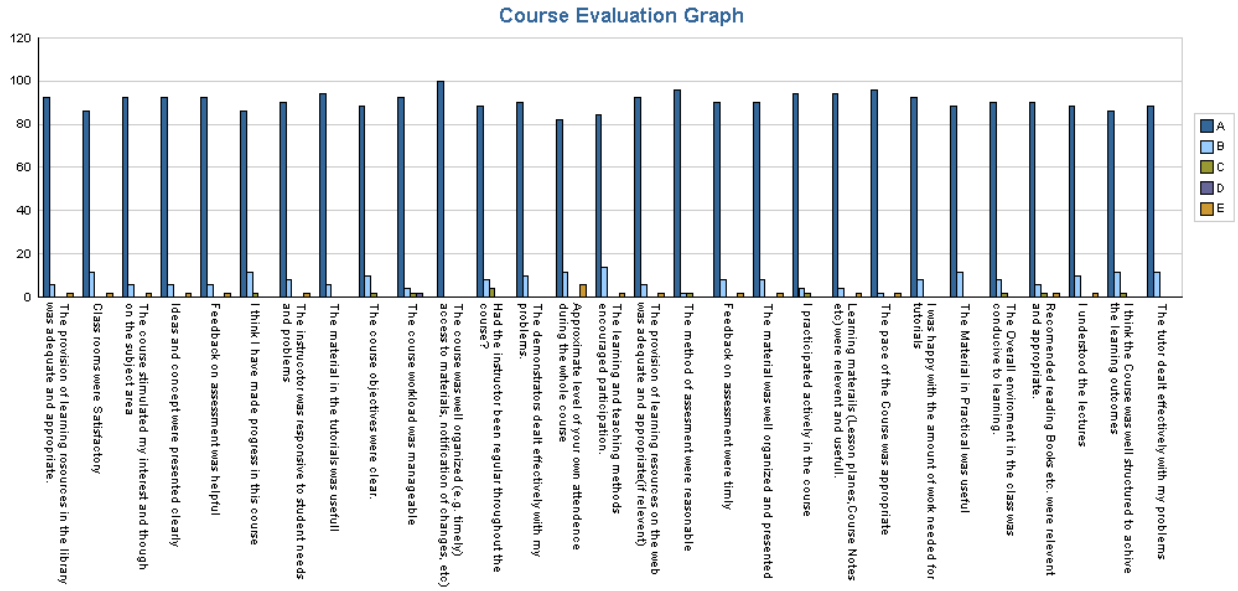
Over all Results of Proforma No. 1

Performa No. 1, deals with study of course observation regarding design of course contents (both theoretical and practical), its relevance with subject and teaching material. It also emphasizes on instructor's role in, not only completing course within given time frame, but how instructor developed student's interest in this course, used updated literature and was fair in evaluation at the end of a study course. The courses offered for fall 2015 were evaluated by the students at the end of the semester in accordance with Proforma-1. In the graph teachers are represented as 1,2,3 etc. instead of mentioning their names. Results of individual course evaluation proforma-1 will follow.

Results of Performa 1 (Fall 2015)



MIC-302 Performa 1: Depending upon the results of Performa 1 course MIC-302, the teacher recommended relevant books, overall environment in the class is conductive and students participated in course and pace of course was appropriate.

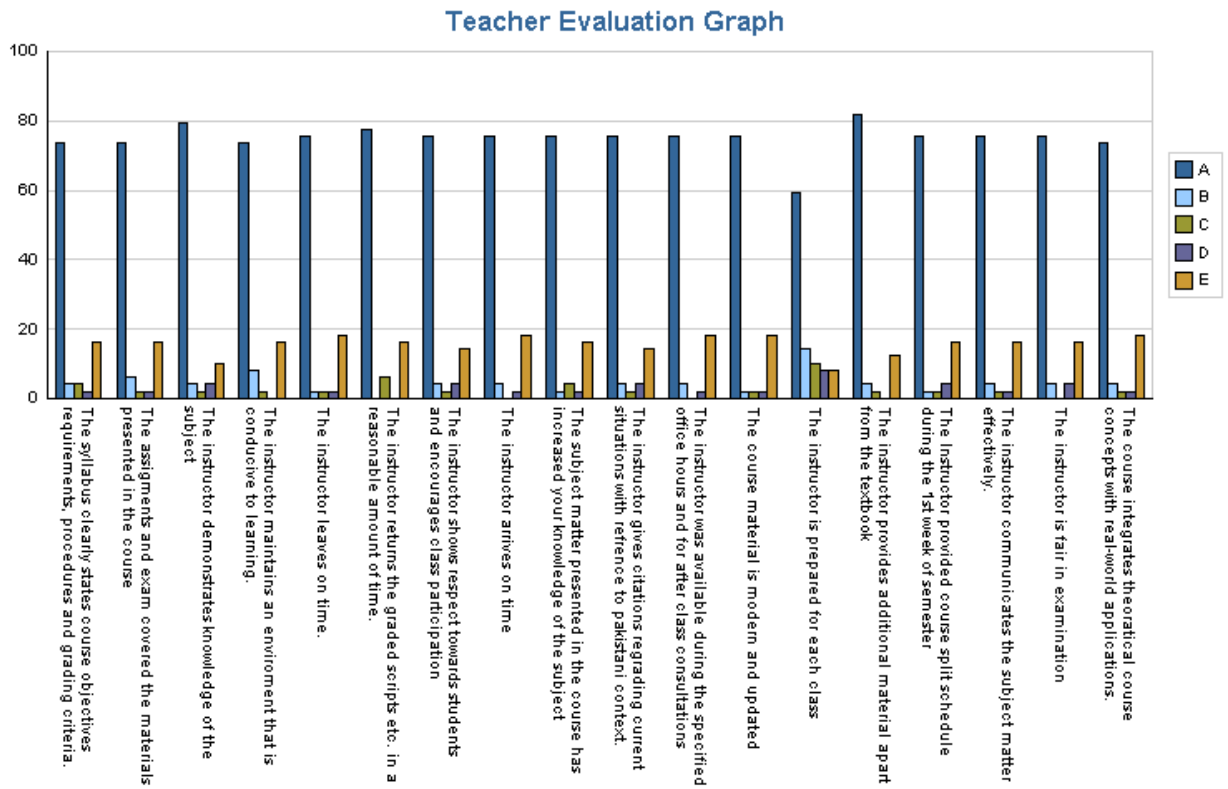


MIC-402 Performa 1: Depending upon the results of Performa 1 course MIC-402, the course was well organized and the methods of assessment were reasonable.

Student Teacher Evaluation Spring Semester 2016:

Over all Results of Proforma No. 10

The teachers were evaluated by the students at the end of the semester in accordance with Proforma-10. In the graph teachers are represented as 1,2,3 etc. instead of mentioning their names. Results and performance of individual teachers will follow.



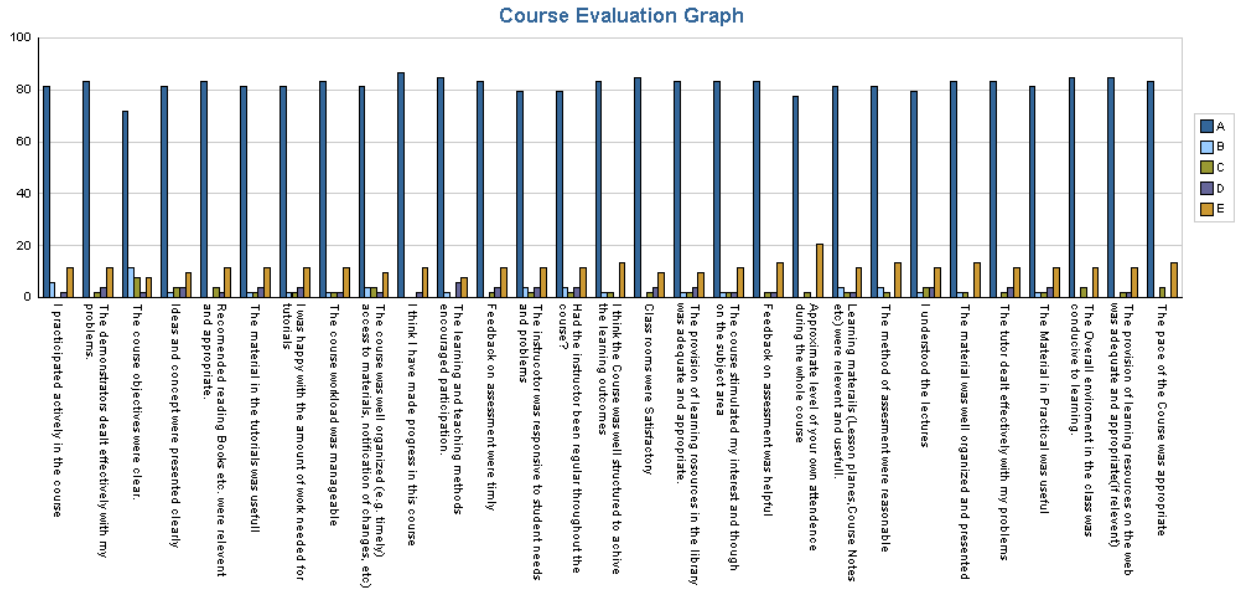
MIC-405. Teacher 1. According to the students, the instructor provides additional material relevant to course, the syllabus clearly covered the course contents, and the teacher was fair in examination and leaves the class in time.

Student Course Evaluation Spring Semester 2016:

Over all Results of Proforma No. 1

Performa No. 1, deals with study of course observation regarding design of course contents (both theoretical and practical), its relevance with subject and teaching material. It also emphasizes on instructor's role in, not only completing course within given time frame, but how instructor developed student's interest in this course, used updated literature and was fair in evaluation at the end of a study course. The courses offered for spring 2016 were evaluated by the students at the end of the semester in accordance with Proforma-1. In the graph teachers are represented as 1,2,3 etc instead of mentioning their names. Results of individual course evaluation proforma-1 will follow.

Results of Performa 1 (Spring 2016)



MIC-405 Performa 1: Depending upon the results of Performa 1 course MIC-405, the teacher recommended relevant books, overall environment in the class is conductive and students participated in course and pace of course was appropriate.

Skills and Capabilities Reflected in Performance as Microbiology:

Students developed ability to apply both theoretical and practical knowledge of Microbiology. This ability will help them to work as professional microbiologists in various fields of life, to build confidence and communicate effectively in writing, oral and demonstration by using modern tools, techniques and skills for their profession, to formulate and design the experiments/project and to work effectively in a team, to manage different problems and imbibe ability to recognize future needs in the field of Microbiology which will also contribute in the development of nation.

Standard 1-3

Strength of Institute:
The University Institute of Biochemistry and Biotechnology (UIBB) has state of the art, fully equipped laboratories with latest instruments/chemicals including Microbial culture, Growwth cahmabers, Multiplex, PCR thermocyclers, DNA nanodrops, RT-PCR, Biolastics, HPLC, Fermenters, Plant tissue culture chambers etc. However, the main strength of the UIBB is its highly qualified and skilled faculty, with full acquaintance of their respective subjects including Microbial biotechnology. They have successfully completed many National/International research projects and are remarkably active in the academic and research fields.

Weakness Identified in the Program:
Although the faculty and laboratories are outstanding for the production of quality graduates but they are not sufficient. The Department of Biochemistry has been upgraded to University Institute of Biochemistry and Biotechnology (UIBB) but there still is shortage of regular faculty members and seats for regular faculty of Microbiology are to be created. The existing faculty is over-burdened due to their heavy workload in teaching and related departmental duties. Another important issue is strengthening of Microbiology general laboratory as well as full time qualified technicians/supporting staff. Above all, the institute is under extensive financial constraints due to limited annual budget compared to the seven degree programs being offered with increasing student enrollments.

Major Future Improvement Plans:

- Induction of faculty qualified in Microbiology
- Initiation of M.Phil and PhD Microbiology programs.
- Strengthening of Microbiology undergraduate program.

TABLE-3: QUANTITATIVE ASSESSMENT OF INSTITUTE
(Last three years)

Sr. #	Particular	No.	Remarks
	BS	-	First batch of BS Microbiology yet not graduated
i	M.Sc.	157	M.Sc. Graduates are working in public as well as private sector in research, teaching, diagnostics, pharmaceuticals, chemical and equipment supplies. Many ex-students have joined M.Phil./Ph.D. programs in local and foreign universities.
Ii	M.Phil.	102	Working in public as well as private sector in research, teaching, diagnostics, pharmaceuticals, chemical and equipment supplies or pursuing PhD in local and foreign universities
Iii	Ph.D.	11	In employment
Iv	Post-Doc fellowship by faculty Short Term Training	5 3	USA, UK, Sweden and Canada
V	Students: Faculty ratio	25:1	
Vi	Technical : No Technical ratio	2:8	

Faculty

Table-3.1: Faculty Distribution in UIBB

Name	Position	Qualification	Specialization
Dr. S.M.Saqlan Naqvi	Professor	Ph.D., Post-Doc	Molecular Biology/ Biotechnology
Dr. M. Gulfraz	Professor	Ph. D. Post-Doc	Biochemistry/Natural Product Chemistry
Dr. Ghazala Kakub Raja	Associate Professor	Ph. D. Post-Doc	Biochemistry/ Molecular Biology
Dr.M.Javaid Asad	Assistant Professor	Ph. D, Post-Doc	Industrial/Fermentation Biotechnology
Dr. M.Sheeraz Ahmad	Assistant Professor	Ph. D, Post-Doc	Biochemistry/Plant Biotechnology
Dr.Feroza H. Watoo	Assistant Professor	Ph. D., Post-Doc	Biochemistry
Dr. Pakeeza A. Shaiq	Assistant Professor	Ph.D.	Human Molecular genetics
Dr. Sadia Saeed	Assistant Professor	Ph. D., Post-Doc	Biotechnology/Disease Diagnostics
Dr. Tayyaba Zainab	Assistant Professor	Ph.D.	Biotechnology
Ms. Hina Ali	Lecturer	M.Phil	Chemistry

Standard 1-4

TABLE- 4.1: PRESENT PERFORMANCE MEASURES FOR RESEARCH ACTIVITIES

Faculty	Journal Publications (National & International) (Year 2014-2016)	Conference Publications (Proceedings/ Abstract) (Year 2014-2016)	On-going Projects (Year 2014-2016)
Prof. Dr. S.M. Saqlan Naqvi	35	06	02
Prof. Dr. M.Gulfraz	30	05	02
Dr. Ghazala Kaukab Raja	11	07	02
Dr.M.Javaid Asad	08	02	-
Dr. M.Sheeraz Ahmad	07	04	1
Dr. Feroza H. Wattoo	08	02	-
Dr. Pakeeza A. Shaiq	06	02	1
Ms. Hina Ali	-	-	-
Total	**98**	**28**	**08**

The institute is well established and its distinguishing feature is the availability of all expertise relevant to microbiology.

The Institute is providing following community Services:
To enhance the quality and quantity of scientific trainings, the institute has organized relevant scientific workshops and seminars. The basic aim is also to provide a forum for knowledge/information exchange between academic disciplines. Under guidance of the Worthy Vice Chancellor, the department has established state of the art microbiology laboratory for food and water testing.

Faculty Satisfaction Regarding the Administrative Services:

- The department maintains a ratio of 25:1 and 2:8 for the student: teacher and technical: non-technical staff respectively.
- Administrative meetings (institutional, faculty, university, academic council, and syndicate) are attended and when required. Generally two meetings of academic council are held per year. Board of studies of the institute meets quarterly or more frequently as per requirement.
- Quick office disposal; no complaint pertaining to delay has ever been received from authorities.
- Proper records of individuals, students and their theses are maintained.

CRITERION 2: CURRICULUM DESIGN AND ORGANIZATION
Degree Title: B.S (Microbiology)

Intent:
Curriculum design and update is regularly initiated by the faculty members of UIBB. After approval from Board of Studies comprised of senior faculty members and subject specialist from other faculties or from other Universities or research Institutions, the curriculum is then sent to Faculty Board, UIBB. This Board consist senior faculty members from UIBB with three subject specialists from other faculties of the University. Finally the curriculum is presented before the Academic Council which is comprised of the Professor, Associate Professor, Faculty Representatives and very senior subject specialists.

Definition of Credit Hour:
A student must complete a definite number of credit hours. One credit hour is one hour theory lecture or two hours laboratory (practical) per week. One credit hour carries 20 marks. A semester is of 18 weeks.

Presently following degrees are offered by the Department:

Credit Hours					
Degrees	**Min. Course Hrs**	**Thesis**	**Duration (in Semesters)**		**Passing CGPA**
			Min	**Max**	
B.S (without thesis)	130	-	8	10	2.50

Pre-requisites

Minimum Academic Requirements:
A person holding F.Sc premedical or equivalent degree from any recognized institute with at least second division or overall 45 % marks is eligible to get admission.

The admission to the University is on merit which is determined by the percentage of last degree.

Degree Requirements:

Degrees are awarded after completing the required number of credit hours (courses). Minimum Grade Point Average for obtaining the degree in 2.50. To remain on the roll of the university, a student shall be required to maintain the following minimum GPA/CGPA in each semester

Semester	CGPA
1st	0.75
2nd	1.00
3rd	1.25
4th	1.50
5th	1.75
6th	2.00
7th	2.25
8th	2.50

Examination & Weight-age:

a) Theory

In course work, student's evaluation is done by mid-term examination, assignments/quizzes and final examination. A student, who misses the mid-term examination, is not allowed a make-up examination and is awarded zero marks in that examination. In case a student does not appear in the final examination of a course, he shall be deemed to have failed in that course. In theory, weightage to each component of examination is as prescribed here under:

Mid Examination	30%
Assignments	10%
Final Examination	60%

b) Practical

For practical examination (if applicable) 100% weightage is given to practical as scored final examination

Eligibility for Examination:

A student is eligible to sit for the examination provided that he/she has attended not less than 75% of the classes in theory and practical, separately.

The minimum pass marks for each course are 40 % for BS.

Standard 2.1: Assessment of the Microbiology Curriculum

Based on the assessment, the curriculum fulfills and satisfies the core requirements for the program, as specified by the HEC.

Standard 2-2: Theoretical backgrounds, problem analysis, solution design given as under

Meeting Standard 2-2: Percentage of Elements in Courses

Elements	Courses
Theory only	MIC-501, MIC-504, MIC-508, MIC-510, MIC-520, MIC-602, MIC-603, MIC-604, MIC-605, MIC-619, MIC-620
Theory + Practical	MIC-301, MIC-302, MIC-303, MIC-304, MIC-305, MIC-401, MIC-402, MIC-403, MIC-404, MIC-405, MIC-406, MIC-502, MIC-503, MIC-505, MIC-506, MIC-507, MIC-509, MIC-511, MIC-601, 606 MIC-607

Standard 2-3: The curriculum satisfied the core requirements for the programs as specified by HEC

Standard 2-4: The curriculum satisfied the core requirements for the programs as specified by HEC

Standard 2-5: The curriculum satisfied the core requirements for the programs as specified by HEC

Standard 2-6: Information technology components of the curriculum has been applied by offering a different course like Experimental Design and Computer Applications

Standard 2-7: Enhancing Oral and Written Communication Skills of Students

- Seminars carrying one credit hour is compulsory.
- Students are assigned to present generally the recent status/ status on various global and local issues/problems.
- Assignments are given to the students on specific titles (part of the course) which are submitted as written report, to increase their writing skills.

C**riterion 3: Laboratories and Computer Facilities**

There are four general and one computer laboratories in the department for B.S. program;

1. Biochemistry and Molecular Biology Lab I
2. Biochemistry and Molecular Biology Lab II
3. Microbiology Lab III
4. Biotechnology Lab IV
5. Bioinformatics Labs

The facilities and shortcomings of these laboratories are listed as under;

- Location: UIBB Building, Ground Floor, First Floor and Second Floor
- Objectives: Laboratories are used for conducting practical experiments related to their introductory and major courses.
- Safety Regulations: Fire extinguishers and first aid kits are available as well as a Medical Dispensary for such incidents is maintained in the University.

Standard 3-1: Laboratory Manuals:

Laboratory manuals for each subject are available. The institutional library has all the relevant books. However, teachers also have their own books to prepare the relevant practicals.

Standard 3-2: Support/Laboratory Personal for Maintenance of Laboratory

Two Lab Assistants are available to maintain laboratory, equipment, glassware, chemicals, and materials etc. Laboratory attendants, one per lab, assist the students in practicals, cleaning and washing.

Standard 3-3:

Computing Infrastructure and Facilities

- **Computing facilities support*:*** Most of the faculty members and the post graduate students have computer facility available.
- **Shortcoming in computing infrastructure:** Wireless internet facilities should be available to all faculty members and postgraduate students in class rooms and laboratories.
- **Safety Arrangements: There are proper safety arrangements and security plan is available in case of emergency**. In newly constructed UIBB building; there is no emergency exits for the labs and fire safety system.

Criterion 4: Student Support and Advising

The University organizes support programs for students and provides information regarding admission, scholarship schemes etc. The UIBB in its own capacity arranges orientation and guided tours of the department. Director Students Affairs also arranges various cultural activities and solves the students' problems.

Standard 4-1: Frequency of Courses

- Courses are taught as per policy at the University/Academic Council.
- Elective courses are offered as per policy of HEC and the University.
- For post graduate programs, a variety of courses are offered according to demand of the profession.

Standard 4-2: Structure of the Courses

To ensure effective interaction between students, faculty and teaching assistants, at the time of course formulation both theoretical and practical aspects are focused. Theoretical problems are explained and assignments are also given to the students whereas practical are carried out in the

labs. Study tours to various research organizations are also organized to keep them update on the latest developments in the area and to stimulate them for discussion through teacher/ student interaction.

Standard 4.3: Guidance to the students

Several steps have been taken to provide students guidance such as:

- Students are informed about the program requirement through office of Director and personal communication of the teachers with the students.
- In case of some problem, Director Student Affairs appointed by the university, helps the students. Students can interact with the teachers/scientist in universities or research organization whenever they needed and there is an open option for the students to get the membership in the professional societies.
- Realizing the need for exploring job opportunities for the university graduates, Directorate of Student Resource Center has been established.

Criterion 5: Process Control

It includes students admission, students registration and faculty recruitment activities which are dealt by various statutory bodies and the university administration.

Standard 5.1: Program Admission Criteria

- The process of admission is well established and followed as per rules and criteria set by HEC and the University. For this purpose an advertisement is published in the National News Papers and university website by the Registrar Office.
- Admission criteria for B.S in Microbiology is F.Sc premedical or equivalent.
- Admission criteria are revised whenever needed.

Standard 5.2: Process of Registration

- The student file, after completion of the admission process, is forwarded to the Registrar Office for proper registration in the specific program and the registration number is issued to the student.
- Students are evaluated through Mid, Final and Practical exams and through Assignments.
- Registration is done for one time for each degree but evaluation is done through the result of each semester. Only those students who fulfill the criteria of the University, they are promoted to the next semester.
- In general, the students are registered on competition bases keeping in view the academic and research standards.

Standard 5.3: Recruiting Process for Faculty

Recruitment policy followed by the University is recommended by HEC. Induction of all posts is done as per rule:

- Vacant and newly created positions are advertised in the national newspapers, applications are received by the Registrar office and call letters are issued to the short-

listed candidates on the basis of experience, qualification, publications and other qualities/activities as determined by the University.

- The candidates are interviewed by the University Selection Board and Vice Chancellor and alternate candidates are selected.
- Selection of candidates is approved by the Syndicate for issuing orders to join within a specified period.
- Induction of new candidates depends upon the number of approved vacancies.
- Standards set by HEC are followed.
- Tenure Track System (TTS) recommended by HEC has been adopted by the University.
- HEC also supports appointment of highly qualified members as foreign faculty Professors, National Professors and deputes them in concerned departments of the University.

Standard 5.4: Teaching and Delivery of Course Material

- To provide high quality teaching, department periodically revises the curriculum depending upon requirements, innovations and new technology.
- With the emergence of new fields, new courses are introduced, and included in the curriculum.
- Students usually buy cheap Asian editions of books published in advanced countries. These books are also available in the University library, where modest documentation, copying and internet facilities are available.
- Almost all the lectures are supplemented by multimedia, overheads, slides and animations.
- All efforts are made that the courses and knowledge imparted meet the objectives and outcome. The progress is regularly reviewed in the staff meetings.

Standard 5.5: Completion of Program Requirements

- The controller of examinations announces the dates of commencement of examination. After each semester, the controller office notifies the results of the students. The evaluation procedure consists of quizzes, mid and final examinations, practicals, assignments/reports, oral and technical presentations. The minimum pass marks for each course is 40% for undergraduate and Master degree.
- In theory, weightage to each component of examination is as prescribed here under:

Mid Examination	30%
Assignments	10%
Final Examination	60%

- Grade points are as follows

Marks obtained	Grade	Grade point	Remarks
80-100 %	A	4	Excellent
65-79 %	B	3	Good
50-64 %	C	2	Satisfactory

40-49 %	D	1	Pass
Below 40 %	F	0	Fail

- Gold medals are awarded to the BS students who secure highest marks. Degrees are awarded to the students on the annual convocation that is held every year.

CRITERION 6: FACULTY

Standard 6-1: There must be enough full time faculty who are committed to the program to provide adequate coverage of the program areas/courses with continuity and stability. At present there are two Professors, two Associate Professors, five Assistant Professors, and one lecturer in UIBB who are teaching in different degree programs. There is a need of highly qualified Faculty members to share the burden of teaching and research.

Table 7: FACULTY DISTRIBUTION BY PROGRAM AREAS IN UIBB

Program area of specialization	Number of faculty members in each area
Plant Biochemistry/Biotechnology	3
Animal Biochemistry/Biotechnology	3
Enzyme Biochemistry/Biotechnology	1
General Biochemistry/Biotechnology	2

Standard 6-2: The interests and qualifications of all faculty members must be sufficient to teach all courses, plan, modify and update courses and curricula.

The interest and qualifications of all Faculty members is not sufficient to meet the requirement of all the courses taught to the BS Microbiology program.

Standard 6-3: All faculty members must have a level of competence that would normally be obtained through graduate work in the discipline. The majority of the faculty must hold a Ph.D in the discipline.

- At present all faculty members in UIBB are Ph.D degree holders in relevant discipline except for one lecturer.
- The lecturer is M.Phil.

Standard 6-4: The majority of the faculty must hold a Ph.D in the Discipline

- At present all faculty members are PhDs except for one lecturer.

Standard 6-5: Faculty members dedicate sufficient to research to remain current in their discipline

- All members are dedicated to research and supervising M.Phil and PhD research students and conducting their research projects.

Standard 6-6: Their mechanisms in place for Faculty development

- Yes, there is a mechanism in place for Faculty development.

Standard 6-7: All faculty members should be motivated and have job satisfaction to excel in their profession.

- The young faculty is mobilized by timely back up and appreciation by the senior faculty members. Avenues for research funding are provided through university research fund. Results of faculty survey employing Proforma-5 are summarized in graphical representations. The results showed satisfaction of the teachers over most of the parameters.

Criterion 7: Institutional Facilities

The institution must have the infrastructure to support new trends in learning such as e-learning including digital publications, library, video conference room and journals etc.

- The library must possess an up-to-date technical collection relevant to the program and must be adequately staffed with professional personnel.
- These aspects need to be strengthened in number and space.
- Class rooms must be air conditioned and adequately equipped and offices must be adequate to enable faculty to carry out their responsibilities**.**

Standard 7-1: Infrastructure:

The faculty has access to E-library which is very helpful for the high quality learning/education and access to scientific publications. The internet facility is also available to faculty members on campus which further strengthens scientific activities. However the institute has the following shortcomings/problems:

- The Internet services are provided by the university; however the speed of internet is slow. Most of the faculty members have access to telephones which are also connected with the internet.
- Breach of power intermittently, due to which research and academic work both are suffered, however university has provided quite a reasonable back-up by local generator
- Drinking water facility is adequate for staff and students.
- Untrained supporting staff.
- Insufficient budget to meet with routine administrative and academic activities.
- Washrooms are adequate for students and staff though regular maintanence and cleanliness are not taken care of adequately.

Standard 7-2: Library Facilities:

The University Central Library has wide range of books; however journals and periodicals are limited. The institute itself owns a small library with up-to-date editions of relevant books.

Standard 7.3: Class Room and Faculty Offices

Currently the class rooms are enough and multimedia are available for the lecture halls. Lecture rooms are not air conditioned, due to which teachers and students face difficulty during summer. Practical lab space is adequate however not enough for increasing number of students, this affects the quality of teaching. Faculty offices are available and provided to regular faculty members as well as to contract and IPFPs faculty members.

Criterion 8: Institutional Support

The institutional support is provided by the university however budget provision is insufficient.

- There must be sufficient support & financial resources to attract and retain high quality faculty and provide them means for to maintain competence as teachers and scholars.
- The institute at present avails all the human resources.

The university administration has been struggling hard to strengthen all the departments, up-gradation of departments and establishing new faculties and Institutes.

Support and Financial Resources

- At present institute is having a very meager financial resource to maintain its present needs. The main support for institutional research activities has been earned through individual research grants won by faculty and indigenous scholarships won by a few students. There is a dire need for increasing the financial resources allocated to the UIBB in order to strengthen the academic and research activities.

Standard 8-2: High Quality Graduate Students and Research Scholars

Students are admitted in B.S once in a year. A strict merit policy is applied for admissions. A detail of the students enrolled during the past years is given in the following Table.

TABLE-8: ENROLLMENT IN B.S. PROGRAMS FROM 2014-16

Degree Program	Year-Wise Enrollments		
	2014	2015	2016
B.S	50	50	50

Standard 8-3: Financial Resources

Total budget of UIBB for the financial year **2014-16** is only Rs. 50,000/- year which only fulfills basic institutional needs. With the introduction of new degree programs along with increase in the number of students, UIBB is under huge pressure to provide chemicals for basic laboratories as well as for research students, regular repair/ maintenance of infrastructure & equipments and books/journals/periodicals for the institutional library.

Summary

This Self-Assessment Report (SAR) is for BS Microbiology program and contains eight sections. The first section outlines the program mission and objectives. Section-2 provides information about the curriculum development. Section-3 enlists the laboratories and other relevant information. The last four sections provide information about student support, process control, faculty characteristics, institutional facilities and support provided by the university.

The program mission, objectives and outcomes are assessed and strategic plans are presented to achieve the targeted goals, which are again measurable through definite standards. Programme outcomes appeared to be highly relevant. The results of proforma no. 10 during the year 2014-16 show the scores of evaluation by students for all teaching faculty of the Department of Biochmiestry. While the results of proforma no.1 presents the scores evaluation by the students for all courses offered by UIBB during 2014-16 session. The overall analysis, based on proformas no. 1 & 10, clearly highlights that students were satisfied with the contents of all taught courses, teaching material of courses offered by the department as well as by the teaching abilities of course instructors.

The process of admission for BS degree program is well established and followed as per rules and criteria set by HEC and the University. For this purpose an advertisement is published in the National News Papers by the Registrar Office. There are set rules by the university as well as HEC regarding admission, registration, recruiting policy, courses and delivery of material, academic requirements, performance and grading which are properly followed.

The curriculum of B.S Microbiology fully satisfies the core requirements for the programme as specified by the HEC. The inforamtion technology component of the curriculum has been applied by offering non-conventional courses like Introduction to Computing as well as a compulsory applied nature course Bioinformatics. Curriculum design and update is regularly initiated by the faculty members of institute. After approval from Board of Studies comprised of senior faculty members and subject specialist from other Universities or research Institutions. The curriculum is then approved by the Faculty Board UIBB, comprising all faculty members of UIBB and three ubject specialists from other faculties of the University. Finally the curriculum is presented before the Academic Council which is comprised of the Vice Chancellor, Registrar, Deans/Directors, Professors, Associate Professors, Faculty Representatives and very senior subject specialists.

The institutional facilities were measured through Criterion 3; infrastructure and facilities, class rooms, faculty offices, computing faculty support, short comings in computing infrastructure and safety arrangements are highlighted. The infrastructure of UIBB is adequate for running B.S. degree program. The class rooms and laboratories in UIBB building are reasonably equipped with adequate facilities.

CONCLUSIONS

Following points are being considered based on the assessment of B.S Microbiology program;

1 The strength of existing faculty is far less as compared to the number of degree programs being offered and especially for microbiology program.

2 The infrastructure still needs some up gradations like; air-conditioners in under-graduate level class rooms, general labs and some of the research labs

3 The annual budget for UIBB needs to be increased for the smooth conduct of academic and research activities.

4 Professional and behavioral training of the administrative and supporting staff for efficient handling of official activities.

ANNEXTURE I

Results of Performa No. 2: Results of Faculty Course Review Report

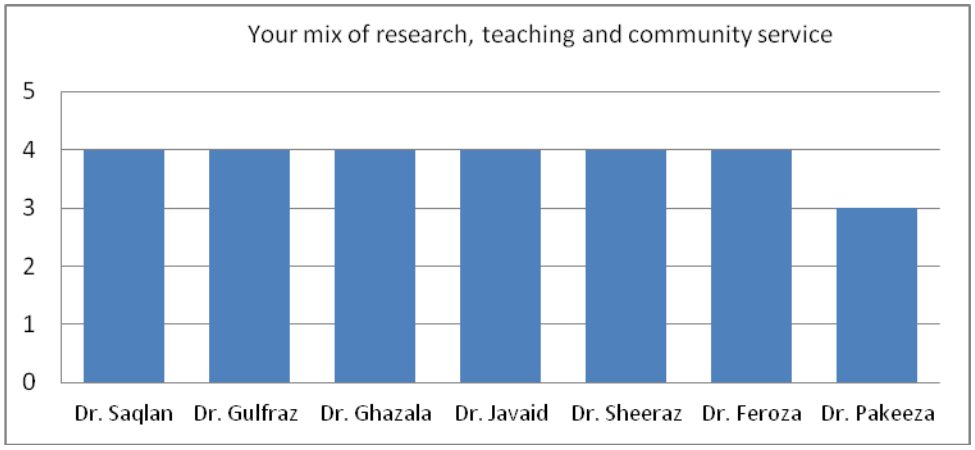
According to the result of the proforma No. 2, most of the faculty members pointed out that the assessment methodology set for theoretical courses is sufficient to evaluate the learning of students for a specified course. The criterion consists of multiple methods including regular discussions during lectures, hands-on practicals during lab sessions, thought provoking questions for assignments & quizzes, objective type paper pattern for mid-term, final and practical exams. Most of the teachers have consensus that the courses are up to date and set per HEC criteria, however course contents are regularly revised/updated when needed and new editions of books included.

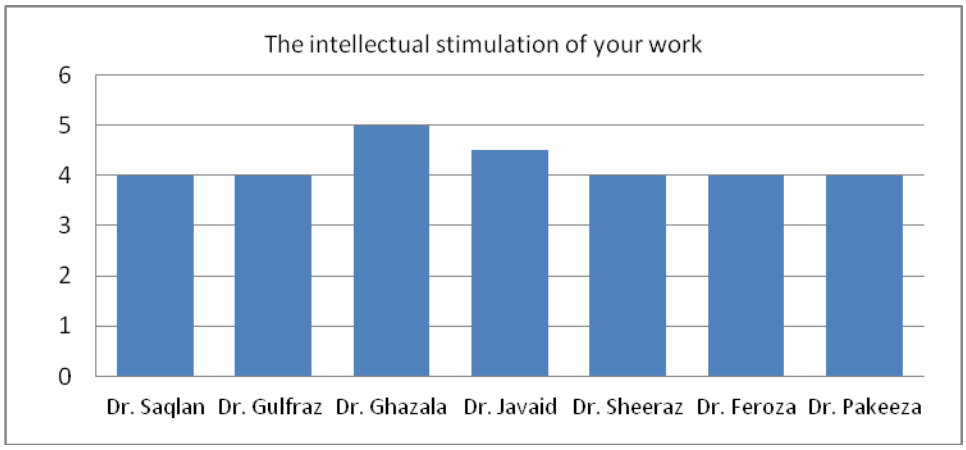
Department	University Institute of Biochemistry and Biotechnology (UIBB)
Faculty	Sciences
Courses	Described earlier in SAR Assessment method As per University rules and regulations
Distribution of Grades/Marks	As per University rules and regulations
Overview/Evaluation (course Co-coordinator's comments)	Satisfied
Students (course evaluation survey)	Satisfied
External Examiner	NA
Student/Staff Consultative committee	N/A
Curriculum	In accordance with HEC guidelines
Assessment	Course objectives well defined and well achieved
Enhancement	Proposed changes in earlier course review report incorporated
Future changes	New and modern practical approaches may be incorporated if possible

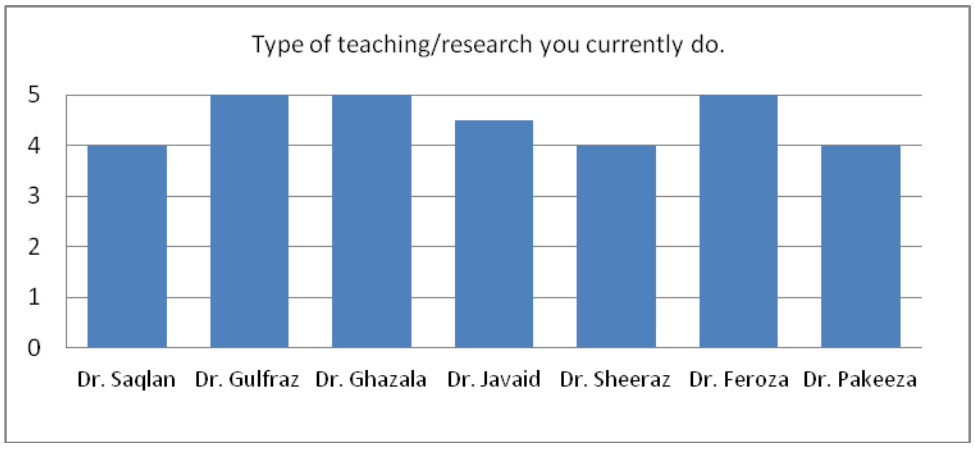
Annex-II

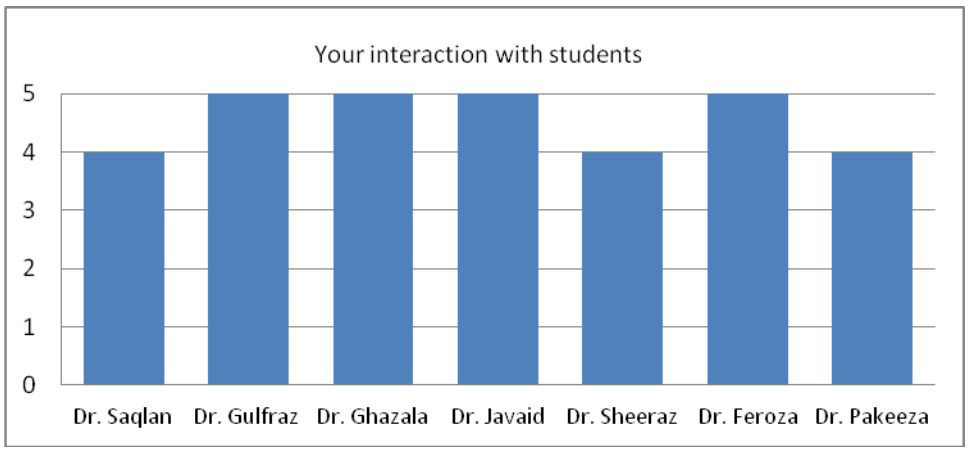
Proforma No. 5: Results of Faculty Survey

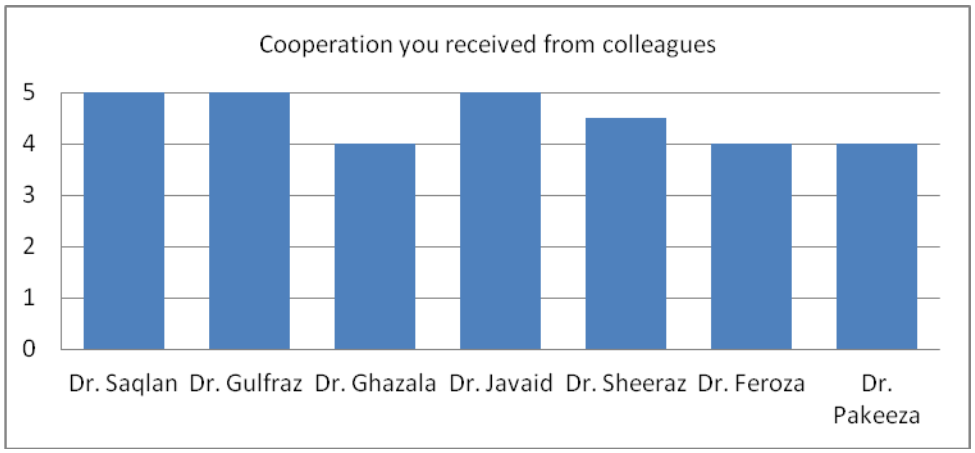
According to proforma 5 of Faculty Survey regarding the satisfaction of the Faculty, the weakest aspect is the amount of time teachers find to interact with their families.

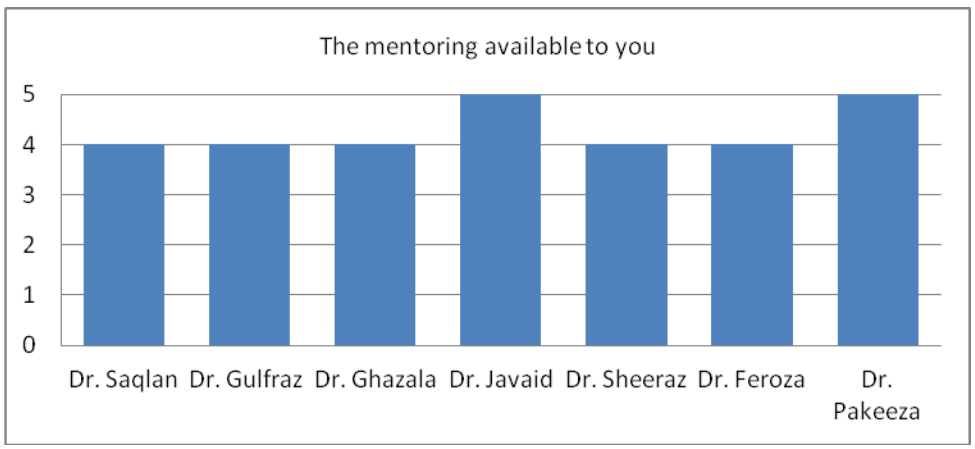







Your interaction with students
5
4
3
2
1
0
Dr. Saqlan
Dr. Gulfraz
Dr. Ghazala
Dr. Javaid
Dr. Sheeraz
Dr. Feroza
Dr. Pakeeza


Cooperation you received from colleagues
5
4
3
2
1
0
Dr. Saqlan
Dr. Gulfraz
Dr. Ghazala
Dr. Javaid
Dr. Sheeraz
Dr. Feroza
Dr. Pakeeza


The mentoring available to you
5
4
3
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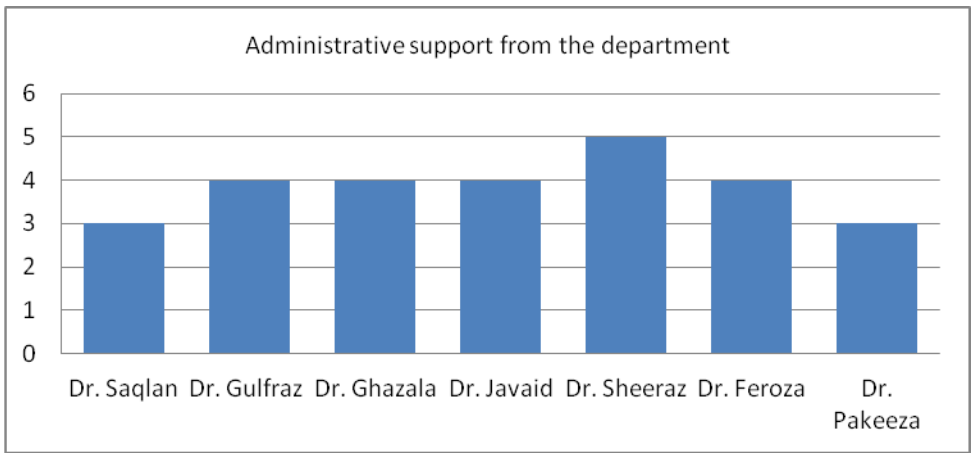
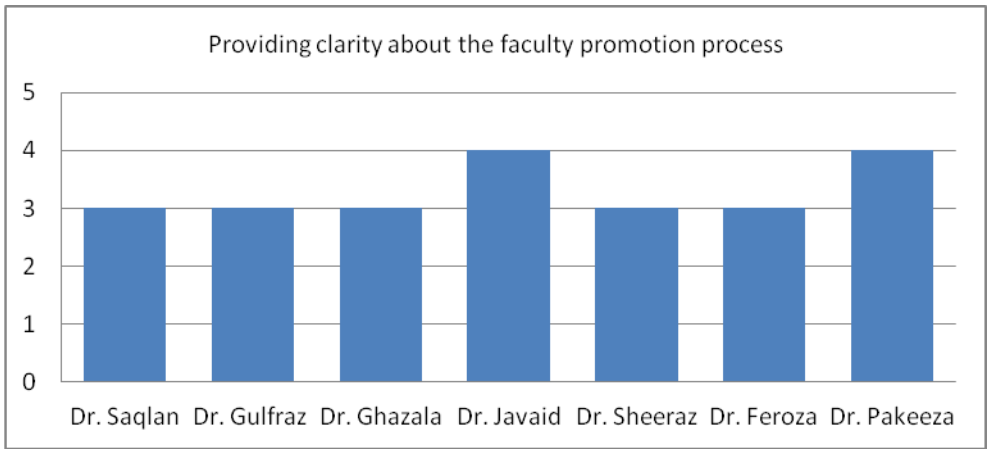
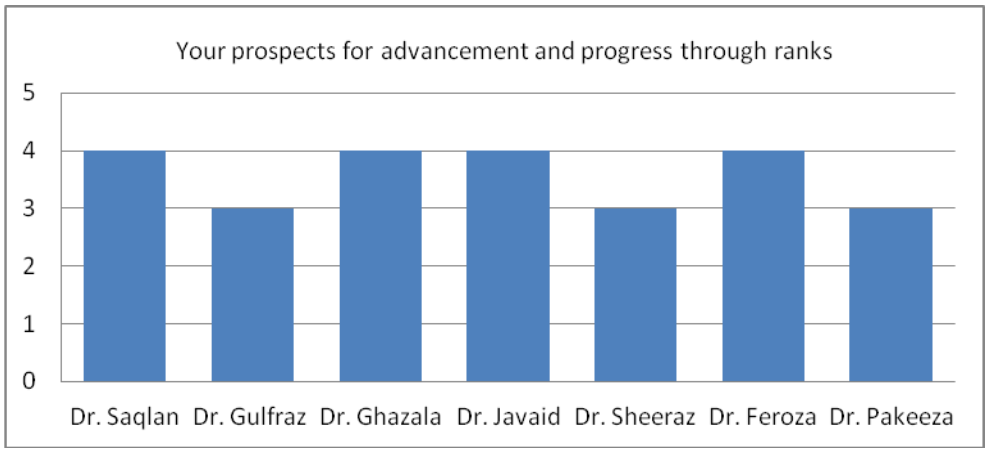
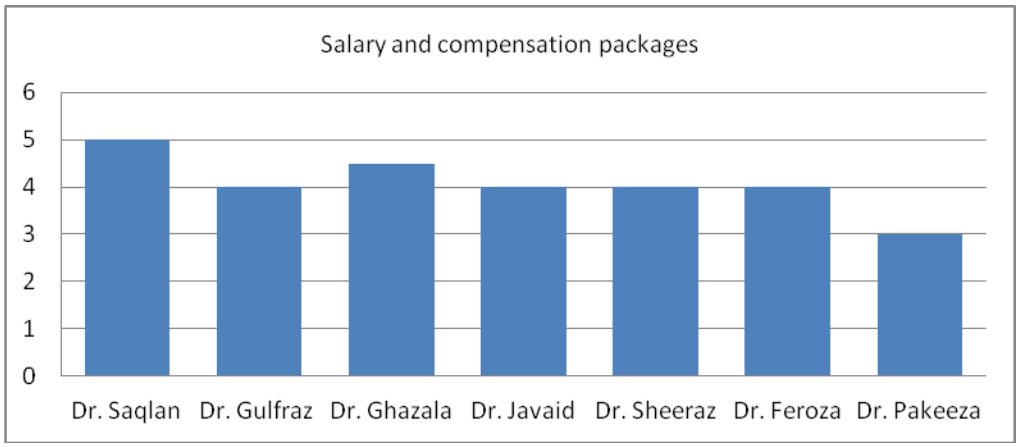
Dr. Saqlan
Dr. Gulfraz
Dr. Ghazala
Dr. Javaid
Dr. Sheeraz
Dr. Feroza
Dr. Pakeeza


Administrative support from the department
6
5
4
3
2
1
0
Dr. Saqlan
Dr. Gulfraz
Dr. Ghazala
Dr. Javaid
Dr. Sheeraz
Dr. Feroza
Dr. Pakeeza


Providing clarity about the faculty promotion process
5
4
3
2
1
0
Dr. Saqlan
Dr. Gulfraz
Dr. Ghazala
Dr. Javaid
Dr. Sheeraz
Dr. Feroza
Dr. Pakeeza


Your prospects for advancement and progress through ranks
5
4
3
2
1
0
Dr. Saqlan
Dr. Gulfraz
Dr. Ghazala
Dr. Javaid
Dr. Sheeraz
Dr. Feroza
Dr. Pakeeza


Salary and compensation packages
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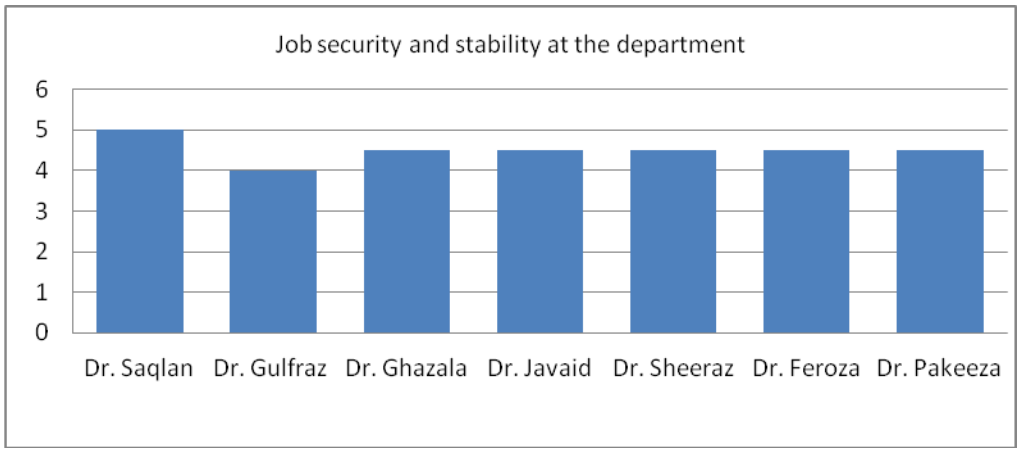
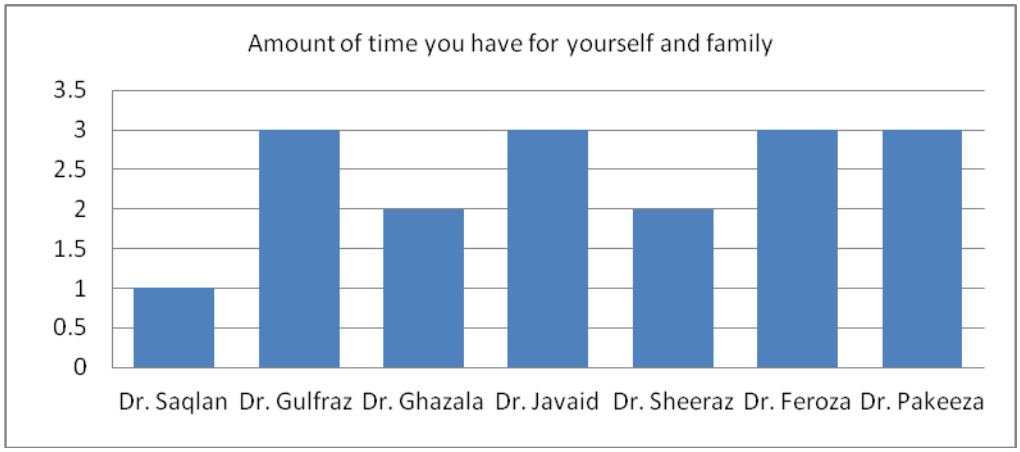
5
4
3
2
1
0
Dr. Saqlan
Dr. Gulfraz
Dr. Ghazala
Dr. Javaid
Dr. Sheeraz
Dr. Feroza
Dr. Pakeeza


Job security and stability at the department
6
5
4
3
2
1
0
Dr. Saqlan
Dr. Gulfraz
Dr. Ghazala
Dr. Javaid
Dr. Sheeraz
Dr. Feroza
Dr. Pakeeza


Amount of time you have for yourself and family
3.5
3
2.5
2
1.5
1
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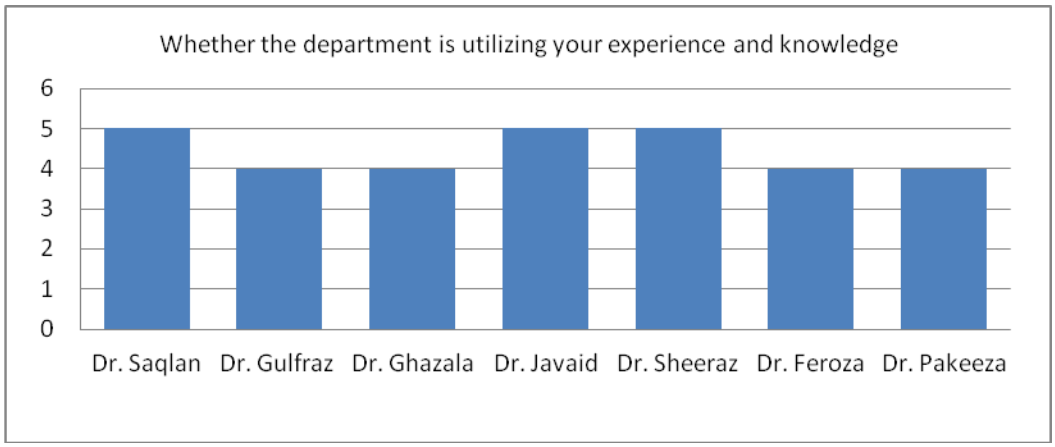
0
Dr. Saqlan
Dr. Gulfraz
Dr. Ghazala
Dr. Javaid
Dr. Sheeraz
Dr. Feroza
Dr. Pakeeza


Whether the department is utilizing your experience and knowledge
6
5
4
3
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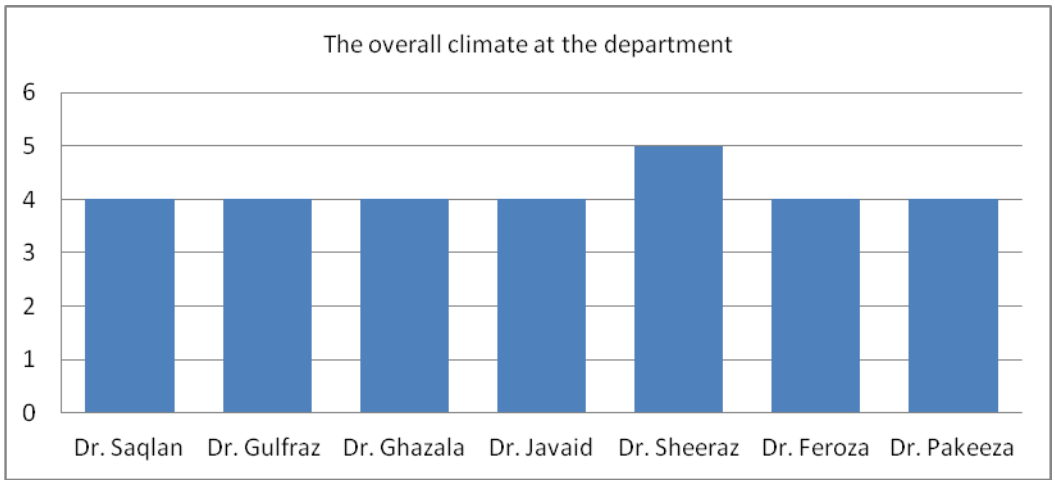
Dr. Saqlan
Dr. Gulfraz
Dr. Ghazala
Dr. Javaid
Dr. Sheeraz
Dr. Feroza
Dr. Pakeeza


The overall climate at the department
6
5
4
3
2
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Dr. Saqlan
Dr. Gulfraz
Dr. Ghazala
Dr. Javaid
Dr. Sheeraz
Dr. Feroza
Dr. Pakeeza

ANNEXURE III:

RESULTS OF GRADUATING STUDENTS SURVEY

BS Microbiology programe was intiated in 2014 and none of the badge of BS has been graduated yet.

Proforma 7: ALUMNI SURVEY RESULTS:

As no graduates of BS Microbiology program have been produced yet so alumini survey results are not available.

Annex-IV

Faculty Resume

Name	**DR GHAZALA KAUKAB RAJA**
Personal	**Nationality:** Pakistani **Address:** Department of Biochemistry, PMAS Arid Agriculture University Rawalpindi Shamsabad Murree Road, Rawalpindi 46300. Pakistan
Experience	***Associate Professor*** *(TTS Scale)* **27th May 2010-Present** ***Associate Professor*** 28th April 2007-27th May 2010 Department of Biochemistry, PMAS Arid Agriculture University Rawalpindi, Pakistan **Assistant Professor** 27th *October 2001- 28th April 2007* Department of Biochemistry, PMAS Arid Agriculture University Rawalpindi, Pakistan oholic fatty liver disease (NAFLD) in Pakistani Population Funding Agency; Pakistan Science Foundation (**In Process**) **Lecturer** 26th *August 1999- 27th October 2001* Department of Biological Sciences, PMAS Arid Agriculture University Rawalpindi, Pakistan
Honor and Awards	**Postdoctoral Research Fellowship**s *May 2012-November 2012* Human Genomics group, Pennington Biomedical Research Centre, Baton Rouge, LA, USA (Funded by UIBB Developmental Grant, Higher Education Commission Pakistan) *November 2003-September 2004* Structural Biochemistry group ICMB, University of Edinburgh, Scotland, UK (Funded by the Ministry of Science and Technology, Government of Pakistan) Membership of Public Population Project in Genomics (P^3G) corporation, Quebec, Canada Membership of Organization for Women in Science for the Developing World (OWSDW), Trieste, Italy
Memberships	
Qualifications	**1998** *PhD*: Biochemistry, University of Western Australia, Perth, Australia. 1991 ***MPhil*: Endocrinology, Quaid-i-Azam University, Islamabad, Pakistan** **1988** *MSc*: Biological Sciences, Quaid Department of Biological Sciences, PMAS -i-Azam University, Islamabad, Pakistan **1985** *BSc*: Zoology, Botany and Chemistry, Postgraduate College for Women, Rawalpindi, Pakistan **1982** *FSc*: Biology, Chemistry and Physics, Postgraduate College for Women, Rawalpindi, Pakistan
Service Activity	

Brief Statement of Research Interest	Protein isolation, extraction, purification and crystallization Molecular Biology techniques (DNA extraction, PCR, Genotyping, Sequencing) Ion Exchange (Akta Prime) and Gel Filtration (FPLC) 2-D Gel electrophoresis, SDS-PAGE and Agarose Gel Electrophoresis Use of animal models (rat) in metabolic studies
Publications	1. Nusrat Saba, Osman Yusuf, Sadia Rehman, Saeeda Munir, Naghman Bashir, Atika Mansoor, Ghazala Kaukab Raja. (2015) Association of Tumor necrosis factor alpha 308 G/A polymorphism with asthma in Pakistani population. **Iran J Allergy Asthma and Immunology**. 14(3):287-291 2. Abdul Rehman, Muhammad Gulfraz, Ghazala Kaukab Raja, Muhammad Inam Ul Haq, Zahid Anwar. (2015) A Comprehensive Approach to Utilize an Agricultural Pea peel (Pisum sativum) Waste as a Potential Source for Bio-ethanol Production. **Romanian Biotechnological Letters**. 20(3): 2015 3. Shehla Anjum, Aysha Azhar, Muhammad Tariq, Shahid Mahmood Baig, Hanno J Bolz, Syed Muhammad Saqlan Naqvi, Ghazala Kaukab Raja. (2014) GJB2 Gene Mutations Causing Hearing Loss in Cansanguineous Pakistani Families. **Pakistan Journal of Life & Social Sciences.** 12(3):126-131 4. Muhammad Javid Asad, Nasib Zaman, Ghazala Kaukab Raja, Abida Rao, Raja Muhammad Tahir. (2014) Presence of HCV RNA in peripheral blood mononuclear cells may predict the patients' response to interferon and Ribavirin therapy. **Annals of Saudi Medicine**. 34(5): 401-406 5. Philip E Stuart, Trilokraj Tejasvi, Pakeeza A Shaiq, Preya Kullavanijaya, Raheel Qamar, Ghazala K Raja, Yanming Li, John J Voorhees, Gonçalo R Abecasis, James T Elder and Rajan P Nair (2014). A Single SNP Surrogate for Genotyping HLA-C*06:02 in Diverse Populations. **J Invest Dermatol.** doi:10.1038/jid.2014.517 6. Ghazala Kaukab Raja, Mubeen Khan, Nusrat Saba, Raja Muhammad Saqlain, Nafees Ahmed, Atika Mansoor. (2014) Association of Adam33 Gene SNPS with Asthma in a Local Pakistani Population. **Am J Pharm Health Res.** 2(9): 2321–3647(online) 7. Ghazala K. Raja, Mark A. Sarzynski, Peter T. Katzmarzyk, William D. Johnson, Yourka Tchoukalova, Steven R. Smith, Claude Bouchard. (2014) Commonality versus specificity among adiposity traits in normal-weight adults**. Int J Obes (Lond).** 38(5):719-23. doi: 10.1038/ijo.2013.153. Epub 2013 Aug 16 8. Iffat Tahira, Muhammad Saqlain, Abid Mahmood, Nafeesa Qudsia Hanif, Ghazala Kaukab Raja. (2014) Study of β-Lactoglobulin Milk Protein Variants in Buffalo. **Pakistan J. Zool**. 46(2): 549-552 9. P.A. Shaiq, P.E. Stuart, A. Latif, C. Schmotzer, A.H. Kazmi, M.S. Khan, M. Azam, T. Tejasvi, J.J. Voorhees, G.K. Raja, J.T. Elder, R. Qamar, R.P. Nair. (2013) Genetic Associations of Psoriasis in a Pakistani Population. **British J. Dermatol.** 169(2):406-11. doi: 10.1111/bjd.12313. 10. P. A. Akram, A. Klausegger, A. Latif, J. W. Bauer, R. Qamar and G. K. Raja. (2012) Missense Mutation in *LAMA3* Associated with Herlitz Junctional Epidermolysis Bullosa in a Pakistani Family. **Pak. J. Zool**. 44(6): 1697-1702 11. Shahid Mahmood Baig;Dure Sabih;Kashif Rahim;Aysha Azhar;Muhammad Tariq; Muhammad Sajid Hussain; Syed Muhammad Saqlan Naqvi; Ghazala Kaukab Raja;Tahir Naeem Khan; Muhammad Jameel;Zahra Iram; Samiya Noor; Usman Raza Baig; Javed Anver Qureshi; Shehla Anjum Baig; Syeda Marriam Bakhtiar. (2012). β-Thalsssemia in Pakistan: a pilot program on prenatal diagnosis in Multan. **J. Pedia. Hematol and Oncol**. 39: 90-92 12. Pakeeza A. Shaiq, Alfred Klausegger, Fawad Muzaffar, Johann W. Bauer, Muhammad I. Khan, Azra Khanum, Raheel Qamar and Ghazala K. Raja. (2012). Founder mutation c.676insC in three unrelated kindler syndrome families belonging to a

	particular clan from Pakistan. **J. Dermatol**. 39: 1-2 13. Shaiq, P. A., Klausegger, A., Bauer, J. W., Azam, M., G. K. Raja and Qamar, R. (2011). Compound heterozygous mutations p.Q1530X and 6103delG in COL7A1 causing recessive dystrophic epidermolysis bullosa in a Pakistani family. **J. Dermatol**. 38: 1-3 14. Raja, G., Brau, L., Palmer, T.N. and Fournier, P. A. (2008) Fiber-specific responses of muscle glycogen repletion in fasted rats physically active during recovery from high intensity physical exertion. **Am J Physiol Regul Integr Comp Physiol.** 295: R633-R641 15. Kakub, G. and M, Gulfraz. (2007). 'Cytoprotective Effects of Bergenia ciliata Sternb Extract on Gastric Ulcer in Rats'. **Phytotherapy Res.** 21: 1217-1220 16. Raja, G., Mills, S., Palmer, T. N. and Fournier, P. A. (2004). Lactate availability is not the major factor limiting muscle glycogen repletion during recovery from an intense sprint in previously active fasted rats. **J Exp Biol**. 207(Pt 26): 4615-21 17. Raja, G., Brau, L., Palmer, T. N. and Fournier, P. A. (2003). Repeated bouts high intensity exercise and muscle glycogen sparing in the rat. **J. Exp. Biol.** 206 (Pt 13): 2159-2166 18. Fournier, P. A., Brau, L., Ferreira, L. D. M. C. B., Raja, G., Fairchild, T., James, A. and Palmer, T. N. (2002). Glycogen resynthesis in the absence of food ingestion during recovery from moderate or high physical activity. Novel insights from rat and human studies. **Comp. Biochem. Physiol. A Mol Integr Physiol**. 133 (3): 755-763 **Review article** 19. Ferreira, L. D. M. C. B., Brau, L., Nikolovisky, S., Raja, G., Palmer, T. N. and Fournier, P. A. (2001). Effect of streptozotocin-induced diabetes on glycogen resynthesis in fasted rats post-high intensity exercise. **Am. J. Physiol. Endocrinol. Metab.** 280: E83-E91 20. Bräu, L., Ferreira, L. D. M. C., Nikolovisky, S., Raja, G., Palmer, T. N. and Fournier, P. A. Nikolovisky, S., Raja, G., Palmer, T. N. and Fournier, P. A. (1997). Regulation of glycogen synthase and phosphorylase during recovery from high-intensity exercise in the rat. **Biochem. J**. 322: 303-308 Peters, T. J., Nikolovisky, S., Raja, G., Palmer, T. N. and Fournier, P. A. (1996). Ethanol acutely impairs glycogen repletion in skeletal muscle following high intensity short duration exercise in the rat. **Addiction Biol**. 1: 289-295
Research Grants and Contracts.	*Principal Investigator*: *2002-2003*, Cloning of RG1 from Rat Skeletal Muscle Funding Agency; University of Arid Agriculture Rawalpindi Pakistan **(Completed)** *Principal Investigator*: *2010-onwards*, Prevalence of Non-alc *Principal Investigator*: *2014-onwards*, Identification of genetic risk factors for metabolic diseases in Pakistani populations Funding Agency; Higher Education Commission Pakistan (**In Process**) Principal Investigator*: Study of genetic variations in milk proteins encoding genes in local goat breeds* Funding Agency; Pak-US Natural Sciences Linkage Programme (NSLP), Pakistan Science Foundation (**Under Review**)

Name	**DR. MUHAMMAD JAVAID ASAD**
Personal	Postal Address : Associate Professor Department of Biochemistry, Pir Mehr Ali Shah Arid Agriculture University Rawalpindi Murree Road, Rawalpindi,Pakistan
Experience	27-08-11-To date **Associate Professor** Department of Biochemistry, Pir Mehr Ali Shah Arid Agriculture University Rawalpindi 14-10-06 -27-08-11 **Assistant Professor** Department of Biochemistry, Pir Mehr Ali Shah Arid Agriculture University Rawalpindi 01-07-04 to 14-10-06 **Lecturer** Department of Chemistry and Biochemistry, University of Agriculture, Faisalabad 11-01-01 to 30-06-04 **Assistance Professor** Department of Biochemistry Independent Medical College, Faisalabad
Honor and Awards	➢ Chairman, Department of Biochemistry PMAS-AAUR from November 01, 2013 – December 02, 2013. ➢ Member of National Curriculum Revision Committee (NCRC) in the discipline of Biotechnology of HEC, 2013. ➢ Member of Executive Council of Chemical Society of Pakistan from January 2011- to date. ➢ Awarded one year Postdoctoral Fellowship in Biological Sciences by Higher Education Commission of Pakistan, Worked as Postdoctoral Fellow at University of Waterloo, Ontario, Canada (May 9,2009-May 12,2010) ➢ Issued appreciation letter by Vice Chancellor, University of Arid Agriculture Rawalpindi for delivering technical lecture as Resource Person to the participants of International Workshop on Techniques Related to Molecular Biology and Immunology, held at Department of Biochemistry University of Arid Agriculture Rawalpindi (December 18-23, 2006). ➢ Issued appreciation letter by Vice Chancellor, University of Arid Agriculture Rawalpindi as Resource Person to the participants of Training Workshop on Real Time PCR, held at Department of Biochemistry University of Arid Agriculture Rawalpindi (June 8-11, 2010). ➢ Issued appreciation letter by Vice Chancellor, PMAS- Arid Agriculture University Rawalpindi as Resource Person to the participants of Training Workshop on SNP Genotyping: Strategies & Applications in Human Genetics(April 20-22,2011) ➢ Approved Ph.D. Supervisor (Biochemistry), Higher Education Commission of Pakistan
Memberships	
Qualifications	Post Doctorate-2 (Industrial Biotechnology) 2014-1015 University of Rochester, Rochester, USA

	Post Doctorate-1 (Biotechnology) 2009-2010 University of Waterloo, Waterloo,Canada. Ph.D. (Biochemistry) 2006 University of Agriculture, Faisalabad. M. Phil. (Biochemistry) 2001 University of Agriculture, Faisalabad. M.Sc.(Biochemistry) 1998 University of Agriculture, Faisalabad.

Brief Statement of Research Interest	Fermentation process development. Bioconversion of lignocellulosic biomass and production of amylases, cellulases and ligninases, single cell protein, organic acids and other industrial products. Biocatalysis: Enzyme kinetics, purification, characterization, enzyme engineering, immobilization and industrial applications of microbial enzymes; Liquid and solid waste management. Bioremediation of textile dyes and industrial effluents by white rot fungi and Nutrition.
Publications	1. Ibrahim, S., **M.J Asad**, R.T Mahmood, F.H Wattoo, S. Akhter and D. Shahwar. 2017.Retinoid BMS411 (4-{[(5,5-dimethyl-8-phenyl-5,6-dihydronaphthalen-2-yl) carbonyl] amino} benzoic acid), a potential inhibitor of NS5A protein of hepatitis C virus, a candidate for combined therapy of hepatitis C infection.Acta.Virol.,61(2):204-211. **(I.F= 0.477)** 2. Mahmood, R.T.,**M.J. Asad** , M. Asgher , M. Gulfrazand T. Mukhtar. 2017.Analysis of lingolytic enzymes and decolorization of disperse violet s3rl, yellow brown s2rfl, red w4bs, yellow srlp and red s3b by brown rot fungi, Pak. J. Agri. Sci., Vol. 54(2):407-413.**(I.F= 0.609)** 3. Azhar, M., **M.J Asad**, M. Ovais,N. Zaman, H. Aziz, J. Irfan ,I. Ahmad and A. Raza. 2017.The absence of HCV RNA and Ns5a protein in peripheral blood mononuclear cells is a prognostic tool for sustained virological response, Viral Immunology. 30(8): 568-575. **(I.F= 1.432)** 4. S, Aamir.,N.Rafiq, I.Ullah, M.JAsad, M.S. Ahmad, U.Waheed. 2017.Knowledge, attitude and practices (KAP) of the families of β-thalassaemia children in thalassaemia centers of Rawalpindi and Islamabad. Pakistan,J. Pak. Med. Assoc., **(I.F= 0.606)** 5. Batool, I., M. Gulfraz, **M.J. Asad**, F. Kabir, S. Khadam and A. Ahmed.2017. Cellulomonas sp. Isolated from Termite Gut for Saccharification and Fermentation of Agricultural Biomass. BioResources.com. 13(1) : 752-763**(I.F= 1.321)** 6. Asad, M.J.,M.F Shafique and S.A. Khan. 2017. Performance restoration of dielectric embedded antennas using omega like complementary split ring resonators. Microwave and optical technology letters. 59(2): 357–362(I.F= 0.731) 7. Farooq,N., M. Shoaib, Q. Ain, Z. R. Farooqi, M.J. Asad and A. Shahzad. 2017. Diagnosis of Urinary Tract Infection: Medical Imaging or Laboratory Based. Pak J Med Res., 56 (4) :141-144 8. 9. Syed, F., K.Ali, **M. J. Asad**, M. Gul raz, Z. Khan, M. Imran, R. Taj and A. Ahmad.2016. Preparation and characterization of a green nano-support for the covalent immobilization of glucoamylase from *Neurospora sitophila*. J. Photochem. Photobiol; B: Biol.162:309-317. **(I.F=3.035)** 10. Imran,M., Z. Anwar, M. Irshad,**M.J.Asad** and H.Ashfaq.2016. Cellulase Production from Species of Fungi and Bacteria from agricultural wastes and its utilization in Industry; a Review. Adv. Enz. Res.4:44-55. **(I.F=1.18)**

Name	**DR. M. SHEERAZ AHMAD**
Personal	Assistant Professor (BS-19) Department of Biochemistry, PMAS-Arid Agriculture University Rawalpindi, Pakistan.
Experience	**2010-Present** Assistant Professor BPS-19, Department of Biochemistry, PMAS-Arid Agriculture University Rawalpindi, Pakistan. (01-04-2010 to Present) **Higher Education Commission (HEC) Approved PhD Supervisor** **April-Nov 2011** Visiting Scientist, Department of Chemistry, University of Waterloo, ON, Canada **2008-2010** Lecturer BPS-18, Department of Biochemistry, PMAS-Arid Agriculture University Rawalpindi, Pakistan. (10-09-2008 to 01-04-2010)
Honor and Awards	• Seven month's Post-Doctoral research experience as Visiting Scientist in the Department of Chemistry, University of Waterloo, ON, Canada. • Research experience as PhD research fellow at Molecular Biology laboratory of Quaid-i-Azam University Islamabad Pakistan. • Six months research experience as Research Associate in Molecular Carcinogenic lab of Lancaster University UK.
Memberships	
Qualifications	**Post-Doctoral Research** (April-Nov, 2011) Department of Chemistry, University of Waterloo, ON, Canada **Doctor of Philosophy (PhD)** Biochemistry/Molecular Biology (2004-2008) Department of Biochemistry, Quaid-i-Azam University, Islamabad with Partial Research work at Lancaster University UK **Master of Science (M.Sc)** 2002 to 2004 Department of Biological Sciences, Quaid-i-Azam University, Islamabad, Pakistan. **Bachelors of Science (B.Sc)** 2000 to 2002 Govt Gordon College Rawalpindi, University of the Punjab, Lahore, Pakistan

Brief Statement of Research Interest	• Biological evaluation and toxicological studies of natural products and synthetic substances for drug development using variety of techniques including; antimicrobial, anticancer and antioxidant screening, toxicological studies on cell lines using clonogenic assay, alkaline SCGA (Comet) assay, cytokinesis-block micronucleus (CBMN) assay, FTIR microspectroscopic analysis of biological tissue / cells. • Isolation, purification and characterization of bioactive substances (both natural and synthetic) having medicinal importance using TLC, HPLC, NMR, Mass-crystallography, IR etc. • Molecular encapsulation of bioactive substances/ drugs using nanotechnological tools; molecular encapsulation by multisubunit bacterioferritin protein and application of phytosomes for phytomedicines. • Data analysis by softwares like Comet IV software, OPUS software, Pirouette software, Prism Graphpad, ChemDraw etc
Publications	1. Muhammad Maqsood, Rahmatullah Qureshi, Masroor Ikram, Safdar Ali, Muhammad Rafi, Junaid Ahmed Khan, and **M. Sheeraz Ahmed**: Preliminary Screening Of Methanolic Plant Extracts Against Human Rhabdomyosarcoma Cell Line, From Salt Range, Pakistan, Pakistan Journal of Botany, 47(1): 353-357, 2015. **Impact Factor: 1.207** 2. Salma Batool, Muhammad Gulfraz, Abida Akram, S.M. Saqlan Naqvi, Ihsan-ul-Haq, Bushra Mirza, **M. Sheeraz Ahmad**: Evaluation Of Antioxidant Potential And Hplc Based Identification Of Phenolics In Polygonum Amplexicaule Extract And Its Fractions. Pakistan Journal of Pharmaceutical Sciences, 2015, 28(2), 415-419. **Impact Factor: 0.95** 3. Gulfraz, Muhammad; Ahamd, Dawood; Ahmad, **M Sheeraz Ahmad**, Qureshi, Rehmatullah; Mahmood, Raja Tahir; Jabeen, Nyla; Abbasi, Kashif Sarfraz. Effect of leaf extracts of Taraxacum officinale on CCl4 induced Hepatotoxicity in rats, in vivo study. Pakistan Journal of Pharmaceutical Sciences; 2014, 27(4), 825-829. **Impact Factor: 0.95** 4. Mukhtiar Hussain, Zia-Ur-Rehman, **M Sheeraz Ahmad**, Muhammad Altaf, Helen Stoeckli-Evans, Saqib Ali: Structural and biological studies of new monomeric, tetrameric, and polymeric organotin(IV) esters of 3-(benzo[d][1,3]dioxol-4-yl)propanoic acid. Journal of Coordination Chemistry, 2013. 66(5), 868 –880. **Impact Factor: 2.224** 5. Dawood Ahmed, M Gulfraz, M Sheeraz Ahmad, Raja M tahir, Pervez Anwar. Cytoprotective potential of methanolic leaves extract of Taraxacum officinale on CCl_4 induced Rats, Pensee Journal, 2013, Vol 75, No. 11. **Impact Factor: 0.017** 6. Kanwal Batool, **M. Sheeraz Ahmad**, Ch. Abdul Rauf, S.M. Saqlan Naqvi. Amplification and sequencing of internal transcribed regions 1,2, and 5.8 S RNA from local isolates of Fusarium species. Pakistan Journal of Botany, 2013, 45 (SI), 301-307. **Impact Factor: 1.207** 7. Ihsan-ul-Haq, Nazif Ullah, Gulnaz Bibi, Semab Kanwal, **Muhammad Sheeraz Ahmad**, Bushra Mirza: Antioxidant and anticancer activities and phytochemical analysis of Euphorbia wallichii root extract and its fractions. Iran. J. Pharm. Res. 2012, 11 (1): 241-249. **Impact Factor: 0.51**

	8. Mukhtiar Hussain, Muhammad Hanif, **Muhammad Sheeraz Ahmad**, Saqib Ali, Bushra Mirza: Structure Elucidation and Inhibitory Effects of Self Assembled Organotin (IV) Esters of p-tolyl Acetic Acid on Bacterial, Fungal, Brine Shrimps and Potato tumor cells. Drug & Chem. Toxicol, 2010, 33(2), 183-192. **Impact Factor: 1.098** 9. Muhammad Hanif, Mukhtiar Hussain, Saqib Ali, Moazzam H. Bhatti, **Muhammad Sheeraz Ahmad**, Bushra Mirza and Helen S. Evans: *In Vitro* Biological studies and structural elucidation of Organotin(IV) derivatives of 6-nitropiperonylic acid: Crystal Structure of $\{[(CH_2O_2C_6H_2(o\text{-}NO_2)COO)SnBu_2]2O\}_2$. Polyhedron, 2010, 29, 613–619. **Impact Factor: 2.047** 10. Mukhtiar Hussain, Muhammad Hanif, Saqib Ali, Saira Shahzadi, **Muhammad Sheeraz Ahmad**, Bushra Mirza and Helen S. Evans: In vitro Antitumor and Antibacterial Assay of Organotin(IV) Complexes of 2,3-Methylenedioxybenzoic Acid; X-Ray Crystal Structure of [(C2H5)2Sn(C8H5O4)2]. Journal of the Iranian Chemical society, 2010, 7(1), 155-163. **Impact Factor: 1.406**

Name	**Dr. Feroza Hamid Wattoo**
Personal	Assistant Professor (BS-19) Department of Biochemistry, PMAS-Arid Agriculture University Rawalpindi, Pakistan.
Experience	**2011-to date**- Assistant Professor, University Institute of Biochemistry and Biotechnology, PMAS-Arid Agriculture University, Rawalpindi, Pakistan. **2009-2011** Assistant professor, Institute of Biochemistry, University of Sindh, Jamshoro. **2004-2009** Lecturer, Institute of Biochemistry, University of Sindh, Jamshoro, Pakistan. **2002-2004** Research Associate, Institute of Biochemistry, University of Sindh, Jamshoro,
Honor and Awards	1. Member, Board of Studies, Institute of Biochemistry, University of Sindh, Jamshoro 2. Member, Board of Faculty, University of Sindh, Jamshoro 3. Elected Associate Secretary, (Punjab-Chapter), (2013-2017), Pakistan Society for Biochemistry and Molecular Biology 4. Elected Executive Council Member, (2009-2011), Pakistan Society for Biochemistry and Molecular Biology 5. Elected Associate Secretary- (2007-2009), Pakistan Society for Biochemistry and Molecular Biology
Memberships	
Qualifications	**Post Doc** Agricultural Biochemistry, 2012, Iowa State University, Ames, Iowa 50011, USA **Ph.D.** Biochemistry, 2007 Institute of Biochemistry, University of Sindh, Jamshoro-Pakistan **M.Phil**. Biochemistry,2002, Institute of Biochemistry, University of Sindh, Jamshoro-Pakistan **M.Sc.** Biochemistry,1995 Dr. M.A.Kazi Institute of Chemistry, University of Sindh, Jamshoro. **B.Sc.** Chemistry, Zoology and Botany-1993, Govt. College Thatta, University of Sindh, Pakistan

Brief Statement of Research Interest	Food and Nutritional Chemistry, Bioanalytical and Environmental Chemistry, Biochemical Analysis of Medicinal Plants, Biotechnology and Bionanotechnology, Bioinorganic Chemistry, biochemical analysis in Food and Nutrition Chemistry, Hematology and Micro labs, Chromatographic methods of analysis in Biochemistry**,** Microplate reader, and Coulter counter techniques.
Publications	(1) S. Ata, **F.H. Wattoo**, M. Ahmed, M.H.S.Wattoo, S. A. Tirmizi, A. Wadood. "A method optimization study for atomic absorption spectrophotometric determination of total zinc in insulin using direct aspiration technique." **2014 Apr** doi:10.1016/j.ajme.2014.03.004. (ISI Indexed Journal). (2) Krueger LA, Beitz DC, Onda K, Osman M, O'Neil MR, Lei S, **Wattoo FH**, Stuart RL, Tyler HD, Nonnecke B. "Effects of D-α-tocopherol and dietary energy on growth and health of preruminant dairy calves". ***J Dairy Sci*. (2014)** : S0022-0302(14)00237-9. doi: 10.3168/jds.2013-7315. **(ISI Indexed Journal, JCR-2012 Impact factor 2.566).** (3) S.Ata, **F.H. Wattoo**, I Qasim, M.H.S Wattoo, "Monitoring of anthropogenic influences on underground and surface water quality of Indus River at district Mianwali-Pakistan"., ***Turk J Biochem 3(1): 9–13,2013.* (ISI Indexed Journal, JCR-2012 Impact factor 0.211)**. (4) S.Ata, **F.H. Wattoo**, Momina Feroz, M.H.S Wattoo, S.A Tirmizi, M.J Asad, "Analytical investigation of selected pesticide residues from fruits and vegetables by an improved extraction method using reverse phase high performance liquid chromatography", ***Ethiopian Journal of Environmental Studies and Management 6(4), 342-347, 2013*** (ISI Indexed Journal). (5) K.Mahmood, **F.H.Wattoo**, M.H.S.Wattoo, M.Imran, M.J.Asad, S.A.Tirmizi, "Spectrophotometeric Estimation of Cobalt with Ninhydrin" ***Saudi J. Biol. Sci.: 19(2):247–250, 2012.*** (ISI Indexed Journal, Sciencedirect). doi:10.1016/j.sjbs.2012.01.001) (6) M. H.S Wattoo, A. Quddos , A. Wadood, M. B. Khan , **F.H.Wattoo,** S.A. Tirmizi, K.Mahmood, "Synthesis, characterization and impregnation of lead sulphide semiconductor nanoparticle on polymer matrix" ***J.Saudi Chem Soc. 16: 257-261, 2012.*** (ISI Indexed Journal; JCR-2012 Impact Factor 1.288). (7) S.Ata**, F.H.Wattoo**, L.R.Sidra, M.H.S.Wattoo, S.A.Tirmizi Imran Din andI. U. Mohsin, "Biosorptive removal of lead and cadmium ions from aqueous solution: The use of carrot residues as low cost non-conventional adsorbent" :***Turk J Biochem. 37(3): 272-279, 2012***. (ISI Indexed Journal, JCR-2012 Impact factor 0.211). (8) Hafeez Ullah, **F.H.Wattoo**, M.H.S.Wattoo, M.Gulfraz, S.A.Trimzi, S. Ata and A.Wadood."Synthesis, spectroscopic characterization and antibacterial activities of Schiff bases derived from dehydroacetic acid with various substituted anilines", ***Turk J Biochem. 37(4): 386-391, (2012).*** (ISI Indexed Journal, JCR-2012 Impact factor 0.211). (9) Iqbal, **F.H.Wattoo**, M.H.S.Wattoo, R.Malik, S.A.Tirmizi, M.Imran, A.B.Ghangro, "Adsorption of Acid Yellow dye on Flakes of Chitosan Prepared from Fishery Wastes", ***Arabian J. Chemistry 4(3): 389–395, 2011.*** (ISI Indexed Journal; JCR-2012 Impact Factor 2.266). (10) N.Mehboob, M.J.Asad, M.Imran, M.Gulfraz, **F.H.Wattoo**, S.H.Hadri, M.Asghar, "Production of lignin peroxidase by *Ganoderma leucidum* using solid state fermentation", ***Afr. J. Biotechnol.: 10(48): 9880–9887 , 2011.*** (ISI Indexed Journal; JCR-2011 Impact Factor 0.57).

Name	**PAKEEZA ARZOO SHAIQ**
Personal	Assistant Professor (BS-19) Department of Biochemistry, PMAS-Arid Agriculture University Rawalpindi, Pakistan.
Experience	1. Currently serving as Assistant Professor (BPS-19), Department of Biochemistry, PMAS-AAUR, Pakistan from June, 2014 2. Served as Lecturer (BPS-18), Department of Biochemistry, PMAS-AAUR from June, 2010-June, 2014. 3. Served as Visiting Lecturer at PMAS-AAUR taking practical classes of Tissue Culture and Biotechnology. 4. Served as lecturer in HOAP. 5. Served as Administrator at 'THE EDUCATORS'
Honor and Awards	1. Post Doc Fellow at Department of Immunology and Genetics, Rudbeck laboratories, Uppsala University, Uppsala, Sweden (2012). 2. Visiting Research Scholar at Psoriasis Genetics Laboratory, Department of Dermatology, University of Michigan, USA (2009-2010). 3. Got IRSIP (International Research Initiative program) fellowship for 6 months from HEC, Pakistan. 4. Got DEBRA scholarship for mutation analyses of EB patients at Salzburg, Austria (2009). 5. Got HEC Indigenous Scholarship for Ph. D. 6. Got Merit Scholarship (Teacher Assistantship) during Ph.D. course work. 7. Got 3rd position in college in B.Sc. examination. 8. Got 3rd position in college in SSC examination.
Memberships	
Qualifications	Ph.D. (BCH) 2010 PMAS.AAUR 4.00/4.00 M.Sc (BCH) 2004 PMAS.AAUR 3.47/4.00 B.Sc 2001 The University of Punjab 1st Div HSSC 1999 FBISE, Islamabad 1st Div SSC 1997 FBISE, Islamabad 1st Div

Brief Statement of Research Interest	Sampling or recruitment of patients from hospitals and remote areas of Pakistan, DNA, RNA, Protein extraction and Quantification, Plasmid extraction, Callus and Plant tissue culturing, Animal Cell Culturing, Media preparation and Autoclaving, Preparation of stock solutions and Buffers, Agarose Gel Electrophoresis, Polyacrylamide Gel Electrophoresis, DNA recovery from Gel, Polymerase Chain Reaction, RFLP designing and analysis, ARMS-PCR, Touch Down PCR, Primer Designing, Haplotype Analysis and Founder Effect Analysis, DNA sequence analysis, DNA Sequencing, Data analysis using Cyrillic, Vector NTI, etc. Data collection through databases like NCBI genome browser, UCSC, Ensembl, etc. Expertise in using Biomek workstation,and High throughput genotyping via TaqMan Assay, SnapShot, Paralogue Ratio Test, etc. Western blotting, Cell Cloning,etc.
Publications	1. **Pakeeza A. Shaiq**, Alfred Klausegger, Johann W. Bauer, Maleeha Azam, Ghazala K. Raja, Raheel Qamar (2011). Compound heterozygous mutations p.Q1530X and 6103delG in *COL7A1* causing recessive dystrophic epidermolysis bullosa in a Pakistani family. J. Dermatol. 39(5):472-4. 2. **Pakeeza A. Shaiq**, Alfred Klausegger, Fawad Muzaffar, Johann W. Bauer, Muhammad I. Khan, Azra Khanum, Raheel Qamar, Ghazala K. Raja (2012). Founder mutation c.676insC in three unrelated Kindler syndrome families belonging to a particular clan from Pakistan. J. Dermatol. 39(7):640-1. 3. **Pakeeza A. Shaiq**, Alfred Klausegger, Amir Latif, Johann Bauer, Raheel Qamar and Ghazala Kaukab Raja (2012). Missense mutation in *LAMA3* associated with Herlitz Junctional Epidermolysis Bullosa in a Pakistani family. vol. 44(6), pp. 1697-1702. 4. **Pakeeza A. Shaiq**, P.E. Stuart, A. Latif , C. Schmotzer, A. H. Kazmi, M. S. Khan, M. Azam, T. Tejasvi, J.J. Voorhees, G.K. Raja, J.T. Elder, R. Qamar, R.P. Nair (2013). Genetic Associations of Psoriasis in a Pakistani Population. Br. J. Dermatol. doi: 10.1111/bjd.12313. 5. **Pakeeza A. Shaiq** , J. Klar, B. Bergendal and N. Dahl (2013). ***WNT10A*** mutations account for ¼ of population-based isolated oligodontia and show phenotypic correlations. Am. J. Med. Genet. (A). 164A(2):353-9. 6. J. Klar, A. Khalfallah, **Pakeeza A. Shaiq,** H. T. Gazda and N. Dahl (2014). Recurrent *GATA1* gene mutations in Diamond-Blackfan anaemia. Br. J. Haematol. 166:949-51. 7. Schuster J., T. N. Khan, M. Tariq, **P. A. Shaiq**, K. Mäbert, S. M. Baig and J. Klar (2014). Exome sequencing circumvents missing clinical data and identifies a *BSCL2* mutation in congenital lipodystrophy. BMC med genet. 15:71 doi:10.1186/1471-2350-15-71. 8. Philip E. Stuart, Trilokraj Tejasvi, **Pakeeza A. Shaiq**, Priya Kullavanijaya, Raheel Qamar, Ghazala K. Raja, Yanming Li, John J. Voorhees, Gonçalo R. Abecasis, James T. Elder, Rajan P. Nair (2014). A Single SNP Surrogate for Genotyping HLA-C:06:02 in Diverse Populations. (Accepted in J Invest Dermatol., 10 December 2014; doi: 10.1038/jid.2014.517). 9. Muhammad Fiaz, **Pakeeza A. Shaiq**, Raja Muhammad Saqlain, Syed M. S. Naqvi, Bernard MY Cheung, Ghazala K. Raja (2015). Association of genetic variants of Apolipoprotein A5 gene with the Metabolic Syndrome in the Pakistani population. (Submitted to J Biomedical Science)