Self-Assessment Report-2016

M.Phil./Ph.D.

Department of Genetics

University of Karachi

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CONTENTS

INTRODUCTION

Recognizing Genetics as an important and emerging field, Department of Genetics was established in 1969 at University of Karachi with directive to conduct teaching and research on diverse aspects of Genetics.

The department accommodate about 25 M.Phil./Ph.D. students and has four research laboratories that hold the necessary equipments for conducting research in different areas like Human Molecular Genetics, Microbial Genetics, and Plant Genetics etc. For carrying out plant breeding experiments, field is also available. Recently a small poultry house has also been set up to conduct research on chickens in near future.

HEC funded development project to strengthening department accounting Rs. 1.5M was used to buy teaching and research laboratory equipments, glassware, chemicals, books and other items.

Department offers about 20 postgraduate (M.Phil./Ph.D.) courses fulfill the extensive scheme of study and supported by latest text books and research publications to meet the need of these degrees.

Seminar Library of department contains a rich collection of more than 1000 books that cover various areas of Genetics. Furthermore students are encouraged to get hold of e-papers related to their research no matter by making contact to relevant authors or publisher.

This Self Assessment Report (SAR) is based on eight criteria. The first criterion outlines the program mission and objectives. Criterion 2 provides information about the curriculum development. Criterion 3 enlists the laboratories and other relevant information. The fourth criterion is pertinent to the information about students' support and advising. The last four criteria provide information about process control, faculty characteristics and institutional facilities and support.

CRITERION 1: PROGRAMME MISSION, OBJECTIVES AND OUTCOMES

Standard 1-1 Programme Mission and Objectives

Mission Statement

The program in Genetics is the main interdisciplinary Ph.D. program in the Department of Genetics, University of Karachi and offers research opportunities in a diverse range of specialties: Bioinformatics and Genomics; Conservation and Population Genetics; Medical Genetics; Microbial Genetics; Molecular, Cellular and Developmental Genetics, and Plant

Genetics. The goal of the program is to provide research opportunities to aspiring research scientists in these various fields for successful careers in academia and industry. Completion of the Ph.D. degree requires core curriculum coursework, passing of the examinations, completion and defense of a research project. The Ph.D. degree is awarded principally on demonstrated ability to conduct significant and original scientific research.

Objectives

1. To describe the aspects of the flow of genetic information from DNA to proteins
2. To apply the principles of inheritance as formulated by Mendel.
3. To provide the knowledge about the transmission, distribution, arrangement, and alteration of genetic information and how it functions and is maintained in populations.
4. To give the knowledge about the applications of molecular genetics techniques to genomics, genetic engineering and medicine.
5. To bring the concepts of molecular genetics and how molecular approaches are furthering knowledge and understanding of gene function.

Standard 1-2 Programme Outcomes

1. To expose Ph.D. scholars to cutting edge science in the field of molecular genetics.
2. To train our Ph.D. students to become independent scientists. We expect that by the end of their Ph.D. training, our students will be able to independently.
3. To train Ph.D. scholars to effectively communicate scientific ideas and research through oral presentations/participations, written reports required in topic courses, drafting of manuscripts that describes their research, research proposals and Ph.D. thesis/dissertation.

Standard 1-3 Overall Performance Using Quantifiable Measures

1. The department is having qualified teachers with full acquaintance of their respective subjects, knowledge of research and techniques for different field of genetics.
2. There are two professors, four associate professors, three assistant professors and two lecturers in the department, most of the faculty members are foreign qualified and HEC approved supervisors.

3. All faculty members are involved in research directly or indirectly as supervisor and committee member of the post-graduate students.
4. Four faculty members have completed Postdoc from different foreign universities/institutes.
5. One lecturer has completed MS from IOWA University as full bright scholar and selected as Ph.D. scholar for Cambridge University.
6. All faculty members have got research projects funded from various funding sources.
7. Four research laboratories have been established with basic necessary equipment that help to carry out field and bench work on different areas of genetics.
8. The department has got Rs 1.5 million project funded by HEC under which facilitate the laboratory equipment to strengthen the academic and research activities of the department.

Table 1 Performance measures for research activities year 2013-2015

Faculty	**Publications**
Dr. Maqsood Ali Ansari	03
Dr. Uzma Badar	08
Dr. Obaid Yusuf Khan	02
Dr. Fouad Qureshi	01
Dr. Simeen Mansoor	05
Dr. Erum Shoeb	09
Dr. Shakeel ur Rehman Farooqi	03
Dr. Nadia Khan	05
Dr. Shumaiza Anis	-
Ms. Ayesha Riaz	01
Ms. Sarwat Afshan	01

Table 2 Quantitative assessment of the department (Year 2013-2015)

S.No.	Programmes	No.
1	M.Sc. degree awarded	122
2	M.Phil. degree awarded	-
3	Ph.D. degree awarded	4
4	Postdoc fellowship	1
5	Students: Faculty ratio	154:11
6	Technical: Non-technical ratio	9:5

CRITERION 2: CURRICULUM DESIGN AND ORGANIZATION

Intent

All courses for M.Phil./Ph.D. were initially developed and finalized by faculty members. During the course of time, a few courses have been revised and some new courses added based on the need felt by the department. Curriculum and course contents are finally approved by the University Academic Council.

Degree Plan - Pre-requisites

M.Phil.

Masters' degree examination (16 years education) with a minimum of 50% marks or its equivalent from a recognized institution/department in related subjects.

Ph.D.

M.Sc./M.S/M.Phil. in first division or an equivalent examination from a recognized institution/department in the field of study related to the subject. Also appeared in the department aptitude test (50% marks) and interview. In addition, research proposal must be submitted to the members of department research committee (DRC).

The selection criterion for each course is as follows:

1. The course is relevant to the M.Phil./Ph.D. degree program
2. It meets the national and international requirements for the degree
3. Adequate facilities are available in the department to offer the courses

Each course in the program is to be completed for credits specifying the following:

1. Course title
2. Course objectives and outcome
3. Text book and references

Computer usage: Internet facility is used by faculty members to update their knowledge regarding each course, research studies and recent references. Students also use this facility to solve their problems, assignments and presentations.

Laboratory facilities are provided to the students for their practical exercise, given in the curricula. Post-graduate students also use laboratories for their theses research where equipment, material and chemicals are provided.

Degree requirements

M.Phil.

The duration of course for M. Phil degree shall not be less than two years. Each student has to complete 30 credits for the award of degree. All students of M. Phil degree will be required to qualifying the course work and thesis defense. List of major courses for M.Phil. is given in Table 3.

Ph.D.

The duration of course of Ph.D. degree shall not less than three years. A minimum eighteen credits of course work is compulsory for Ph.D. degree. After completing the course work, examination is taken. Student is required to submit thesis to be approved by the University and examined by two foreign internationally recognized scientists from the universities of technologically advanced countries.

Table 3 Course Requirements for M. Phil/Ph.D.

S.No.	Course No.	Course Title	Credit Hours
1	GENET-711	Technologies in Genetics	3+0
2	GENET-712	Protein Structure Function and Analysis	3+0
3	GENET-713	Eukaryotic Gene Expression	3+0
4	GENET-714	Human Molecular Genetics	3+0
5	GENET-715	Genomics	3+0
6	GENET-716	Computational Genome Analysis	3+0
7	GENET-717	Cell Biology	3+0
8	GENET-718	Topics in Genetics	3+0
9	GENET-719	Advanced Microbial Genetics	3+0
10	GENET-720	Advanced Chicken Genetics	3+0
11	GENET-801	Independent Reading in Genetics	3+0
12	GENET-802	Current Topics in Genetics	3+0
13	GENET-803	Research Grant Proposal Writing	3+0
14	GENET-804	Research Presentation	3+0
15	GENET-851	Poster Presentations	3+0
16	GENET-852	Critical Analysis Writing	3+0
17	GENET-853	Research Paper Writing	3+0

Standard 2-1 Correlation of Courses with Objectives

The curriculum of Department is consistent with the program objectives. Ph.D. students to become independent and creative researchers, able to develop their own research topics and pursue successful carriers in academic or industrial settings. The main objective of our PhD courses are to train the students to successfully pursue up-to-date research topics using state-of-the art techniques in the fields of molecular and cellular biology, molecular genetics, cytogenetics and plant genetics. Altogether, the projects offered cover some of the most advanced fields of molecular and cellular biology and of molecular and clinical genetics; many are focused on medically oriented topics. Ph.D. students are encouraged to participate in national, and sometimes international scientific meetings, where they present their work as posters or, when appropriate, oral communications. Moreover, students are encouraged to apply

for participation in theoretical or experimental courses and meeting, and interacting with distinguished sectors of the international scientific community. This activity also helps students to take informed decisions about their professional future. These courses meet all the criteria and fulfills the requirements.

Standard 2-2 Theory, Problem Analysis/Solution and Design in Programme

Elements	**Title of Courses**
Theoretical Background	Cell Biology
	Topics in Genetics
	Eukaryotic Gene Expression
	Current Topics in Genetics
	Independent Reading in Genetics
Problem Analysis	Computational Genome Analysis
	Protein Structure Function and Analysis
	Advanced Microbial Genetics
	Advanced Chicken Genetics
	Genomics
Solution Designs	Human Molecular Genetics
	Technologies in Genetics
	Research Grant Proposal Writing
	Research Presentation
	Poster Presentations
	Critical Analysis Writing

Standard 2-6 Information Technology Content Integration throughout the Programme

During curriculum development, all aspects of information technology were considered and after a critical analysis, relevant aspects were integrated into the program. One course of computational Genome Analysis (3 credit hour) based on computer practical was included in the curriculum to fulfill the requirements of the students.

Standard 2-7 Communication Skills

1. Research Presentation (one credit hour) is compulsory for students.
2. Critical Analysis Writing (one credit hour) is offered to the students which require writing a comprehensive report on a topic and presenting it in the class.
3. Assignments are given to all students in each course on specific titles relevant to the course which are presented orally and given as written assignments by the students which improve their oral and written communication skills.
4. Students are expected to take part in the writing of formal scientific articles i.e. Research Paper Writing course (one credit hour) destined to reputed national and international journals.

CRITERION 3: LABORATORIES AND COMPUTING FACILITIES

Four laboratories are used by students and faculty for research studies including: human genetics, microbial genetics, chicken genetics, viruses and plant genetics studies.

Research work for the graduate and post-graduate students

- Adequacy for instructions: Laboratories meet the requirements in terms of equipment, chemicals, furniture and general facilities.
- Major apparatus: Major equipment available in the labs include: microscopes, deep freezers, refrigerators, pH meters, electric balances, incubators, slides, glass ware, centrifuge machine, spectrophotometer and thermo cycler.
- Safety regulations: First aid kit are available in all labs.

Standard 3-1 Laboratory Manuals/Documentation/Instructions

Books and manuals owned by individual faculty are used by the students. A number of books and manuals have been prepared in the department.

Standard 3-2 Adequate Support Personnel for Labs

Laboratories are maintained by one senior lab assistant, three lab assistants and three lab attendants who assist the students in research studies, practical, cleaning and washing, etc. Students are instructed for lab work by respective faculty members.

Standard 3-3 Adequate computing infrastructure and facilities

The department has computer facility for students. They can access the digital library services. However, there is not enough computers to facilitate the studentsmust need improvement of this aspect.

CRITERION 4: STUDENT SUPPORT AND ADVISING

Directorate of Students Affairs of the University organizes support programs, cultural activities for students and guides them in case of any problem. Students can easily contact with the department students' advisor and share their problems and guidance. The university staff provides information regarding admission, scholarships, career opportunities, etc.

Standard 4-1 Effective Faculty/Student Interaction

Courses must be offered with sufficient frequency and number for students to complete the program in a timely manner.

- Courses are taught as per strategy and university policy.
- Subject courses are offered as per scheme of study of the department after approval of Academic Council of the university. Courses are offered by trained faculty in the relevant subject and as per their availability.

Standard 4-2 Structured Courses and interaction between students and faculty members

- Courses are structured and decided among the faculty members in the departmental board of study meeting.
- Courses to be offered are decided before the commencement of semester and the faculty members interact frequently among themselves and with students.
- Students are encouraged to ask question, give comments and take part in the discussions in the class.
- Emphasis is given on effective interaction between the students and between students and teachers.

Standard 4-3 Professional Advising and Counselling

- Students are informed about program requirements through office of chairperson of the department and through personal communication of teachers with them.
- The counseling of students is continuous process and students are free to contact relevant teachers whenever they face any professional problem.
- Students are also facilitated for interaction with faculties/scientists in other universities and research organizations whenever they need and there is open option for the students to get membership of professional societies.

CRITERION 5: PROCESS CONTROL

Standard 5-1 Admission Process

The process of admission is well established and followed as per rules and criterion set by University for post graduate students of M.Sc., M.Phil. and Ph.D.

- Admission criteria for M. Sc program: Sixteen years of education in relevant field/subjects.
- Admission criteria for M.Phil. program: M.Sc. in relevant field/subjects.
- Admission criteria for Ph.D. program: Eighteen years of education in relevant field/subjects.
- All these entries are based on the recommendations of admission committees.
- Admission criteria is revised when required before the announcement of admissions.

Standard 5-2 Registration and Student

Registration of students is done once every year at the time of admission. When a student is admitted for each degree, he/she is evaluated through the result of each course for each semester. If the students fulfill the criteria of the University (a specific CGPA after each semester) they are promoted to the next semester.

- Students are evaluated through Final exams and through written assignments and oral presentations.
- In general, the students are registered on competition bases keeping in view the academic and research standards.

Standard 5-3 Faculty Recruitment and Retention Process

The University follows the recruitment policy and rules.

- Posts are advertised in national newspapers and university website, and applicants are short-listed on the basis of experience, qualification, publications and other qualities/activities as fixed by the University
- The candidates are appear to test and interviewed by the University Selection Board.
- Selection of candidates is approved by the Syndicate for issuing orders to join within a specified period.
- Appointments of new candidate depends upon the number of approved posts.
- Tenure Track System (TTS) has also been introduced by the University which is a good incentive for retaining highly qualified faculty members.
- HEC also supports appointment of highly qualified members as foreign faculty professor, national professors and deputes them in various departments.

Standard 5-4 Effective Teaching and Learning Process

Periodical update of curriculum is done depending upon the requirements, innovations and new knowledge generated.

- New courses are developed and included in the curriculum when need arises.
- Books on various aspects of genetics are available in the department library and in University library where documentation, photocopying and internet facilities are also available. .
- Students also take notes during the lectures and photocopies of slides is also provided in addition to printed material.
- All efforts are made to impart the course material and knowledge to meet the objectives of the curriculum.

Standard 5-5 Programme requirements completion process

The process that ensures that graduates have completed the requirements of the program must be based on standards, effective and clearly documented procedures. This process must be periodically evaluated to ensure that it is meeting its objectives.

In the examination system of the University, the following are clearly mentioned;

- The evaluation procedure consists of final examination, assignments, reports and oral presentations.
- The controller of examinations announces the dates of examinations. After each semester, the controller office notifies results of the exams.
- The minimum passing marks for each course is 45 %for M.Sc. and for M. Phil/Ph.D. is 50%.
- In theory, weightage of each component of examination is as under:
- Assignments 20 %
- Final Examination 80%
- Gold medals are awarded to the students who secure highest cumulative marks in each department. Degrees are awarded to the students in the convocation which is held every year.

CRITERION 6: FACULTY

Standard 6-1 Programme Faculty Qualification and Number

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

Currently, there are eleven full time faculty members out of which nine are Ph.D. and one M.Phil. in genetics. The fields of specialization of faculty members include: human molecular genetics, microbial genetics and plant molecular genetics.

Standard 6-2 Current Faculty, Scholarly activities and development

All faculty members must remain current in the discipline and sufficient time must be provided for scholarly activities and professional development. Also, effective programs for faculty development must be in place.

- In each semester courses are offered according to work load of faculty members
- Division of students for supervision is made on the basis of faculty expertise/research interests.

Table 4 Faculty designation and qualification

Designation	Name	Qualification
Professor	Dr. Maqsood Ali Ansari	M.Sc. (Pak), MS, PBC Biotech(USA), PhD (UK)
	Dr. Uzma Badar	M.Sc., Ph.D. (Karachi)
Associate Professor	Dr. Obaid Y. Khan	M.Sc. (Pak), Ph.D. (UK)
	Dr. Fouad Qureshi	M.Sc., Ph.D. (Karachi)
	Dr. Simeen Mansoor	M.Sc., Ph.D. (Karachi)
	Dr. Erum Shoeb	M.Sc., Ph.D. (Karachi)
Assistant Professor	Dr. Shakeel-ur-Rehman Farooqi	P.G.D (Statistics), M.Sc., (Pak), Ph.D. (USA)
	Dr. Nadia Khan	M.Sc., Ph.D. (Karachi)
	Dr. Shumaiza Anis	M.Sc., Ph.D. (Karachi)
Lecturer	Ms. Ayesha Riaz	M.Sc. (Pak), MS (USA)
	Ms. Sarwat Afshan	M.Sc., M.Phil. (Karachi)

Existing faculty development programs at department and university level

- Faculty members attended conferences/workshops/seminars outside and within university and also abroad.
- Laboratory, library and internet facilities are available for scholarly work and academic improvement
- Support for attending conferences lead to enhancement of research initiatives.
- All faculty members got financial support for research projects from university-funded program and also from HEC.

Standard 6-3 Faculty Motivation and Job satisfaction

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 to them through university research programme. There are programs and processes in place to attract good faculty members.

CRITERION 7: INSTITUTIONAL SUPPORT

Standard 7-1 New Trends in Learning

Supportive Infrastructure and Facilities in learning:

a. Four well-equipped labs and two class rooms with teaching aids (multimedia, overhead projector) and number of books are available in the department.

b. However, for Ph.D. students with computer and internet facility is desired to make working/research/ study environment conducive for higher learning.

Standard 7-2 Library Collections and Staff

Department seminar library are open for all the students with specified timings. There are lot of books with different fields of genetics.

Standard 7-3 Class Rooms and Offices Adequacy

There are two classrooms in the department which possesses proper teaching facilities such as multimedia projector and overhead projector. Lack of number of class rooms with special reference for M.Phil./Ph.D.

CRITERION 8: INSTITUTIONAL SUPPORT

The university administration is making all possible efforts for strengthening the existing departments by attracting highly qualified faculty and by getting financial support through R&D Project. One such project of Rs.1.5 million was awarded by HEC for strengthening of the Department.

Standard 8-1 Support and Financial Resources

There must be sufficient support and financial resources to attract and retain high quality faculty and provide the means for them to maintain competence as teachers and scholars. Financial support is too low to meet expenses of the department and only Rs. 1 million were allocated, expenses including student research, chemicals.

Standard 8-2 Number and Quality of GSs, RAs, & Ph.D. Students

There must be an adequate number of high quality graduate students, research assistants and Ph.D. students. The admission of M.Sc., M.Phil. and Ph.D. students is held once a year. A strict merit policy is applied for admission and aptitude test is required for M.Phil. and Ph.D.. Detail of students enrolled during last two years is given in Table 5 and student-faculty ratio in Table 6.

Table 5 Enrollment in different degree programs in 2014 and 2015

Year	No. of Graduate Students			Research Assistants	Total
	M.Sc.	M.Phil.	Ph.D.		
2014	110	20	3	-	133
2015	122	5	7	-	154
Total	232	25	10	-	277

Table 6 Graduate students and faculty ratio in 2014-2015

Year	No. of Faculty	No. of Students	Ratio
2014	12	133	12:133
2015	11	154	11:154

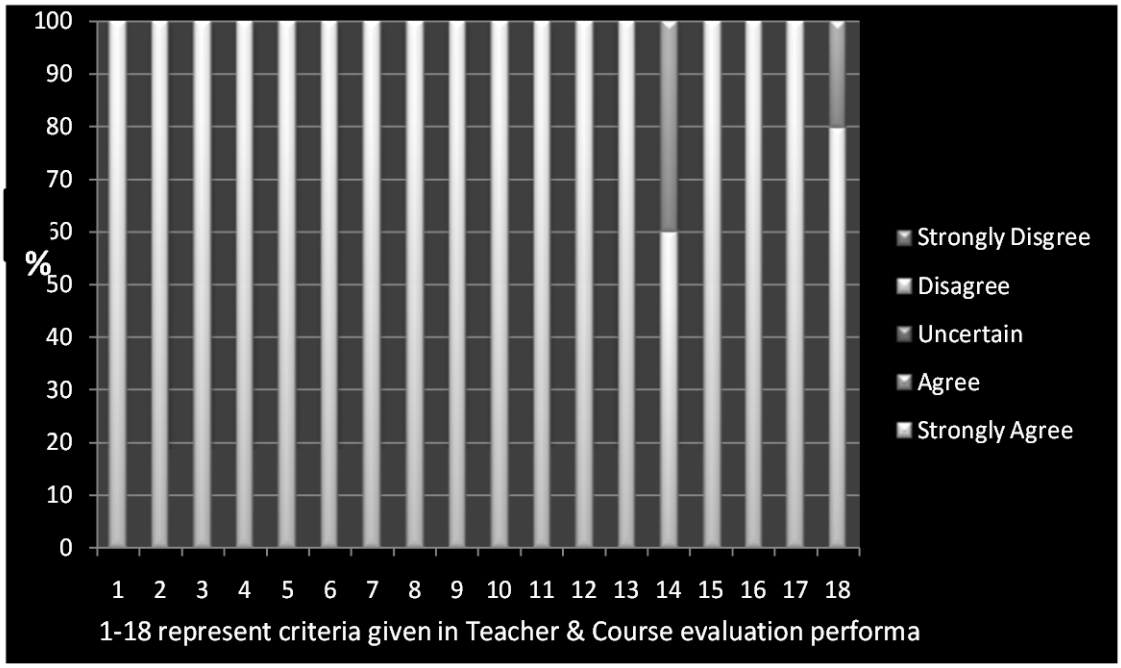
Standard 8-3 Financial Support for Library, Labs and Computing Facilities

An amount of about Rs. 1 million per annum (applicable from 2016) is considered sufficient to meet the needs of the department which is too low to maintain and run the departmental business.

TEACHER AND COURSE EVALUATION

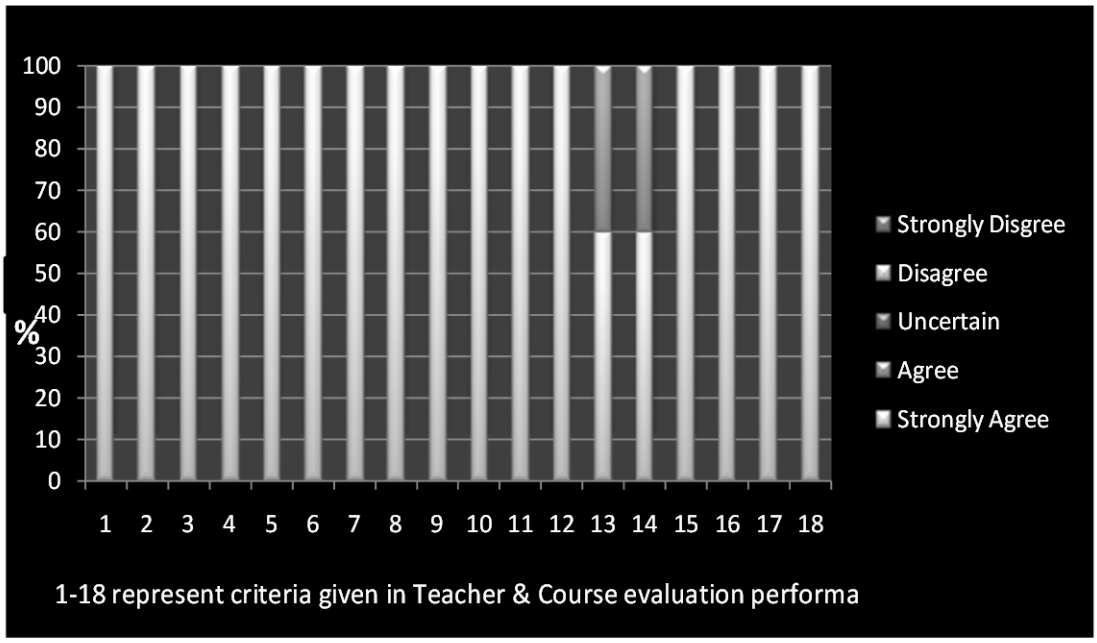
1. **Teacher**: Dr. Obaid Y. Khan

   Course: GENET-713 and 717



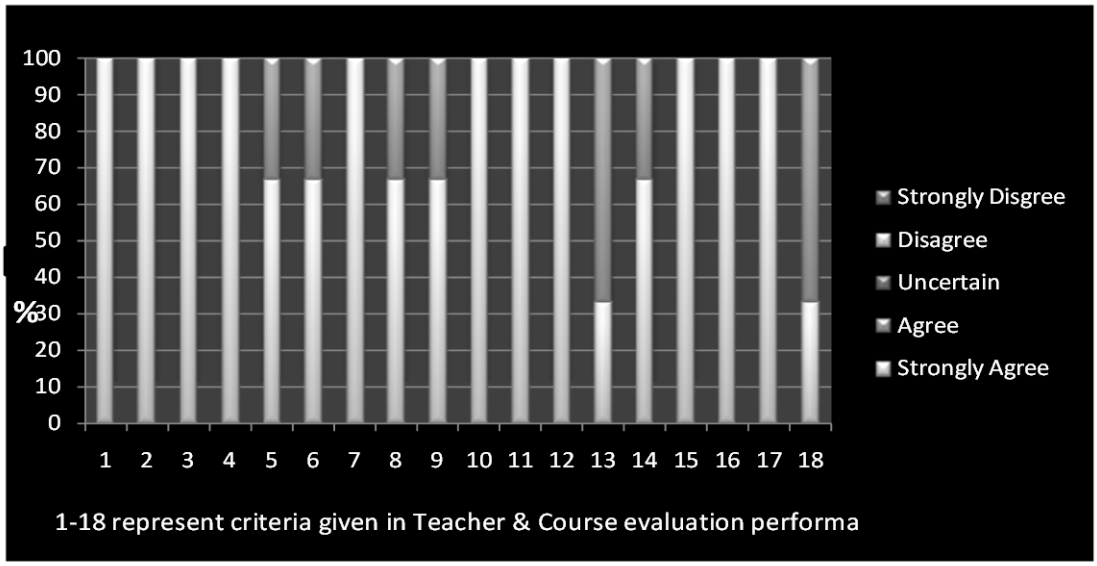
2. Teacher: Dr. Erum Shoeb

   Course: GENET-711 and 718



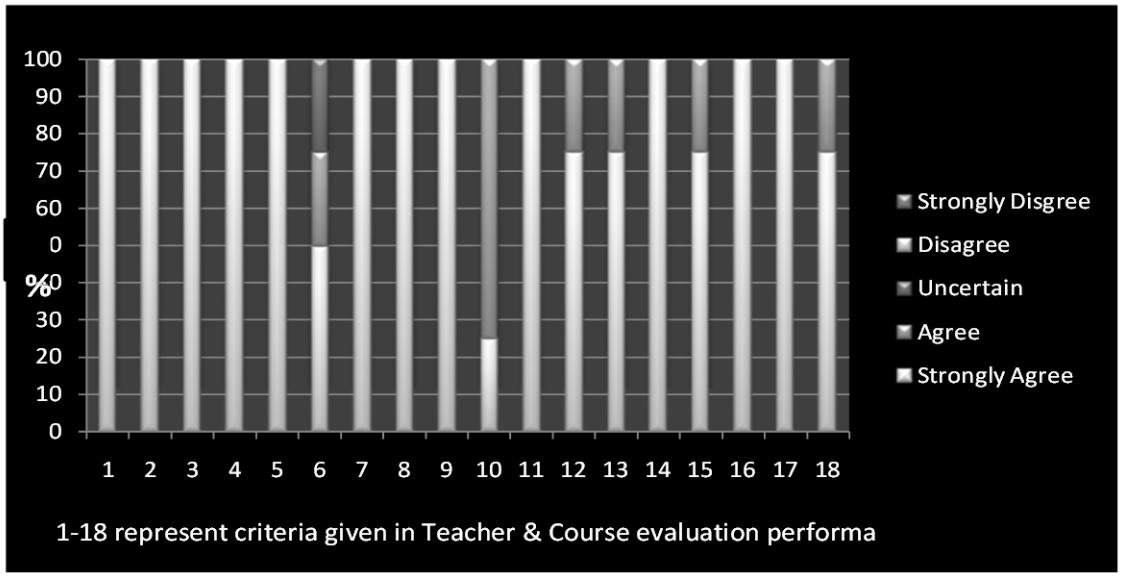
3. Teacher: Ms. Aisha Riaz

Course: GENET-712



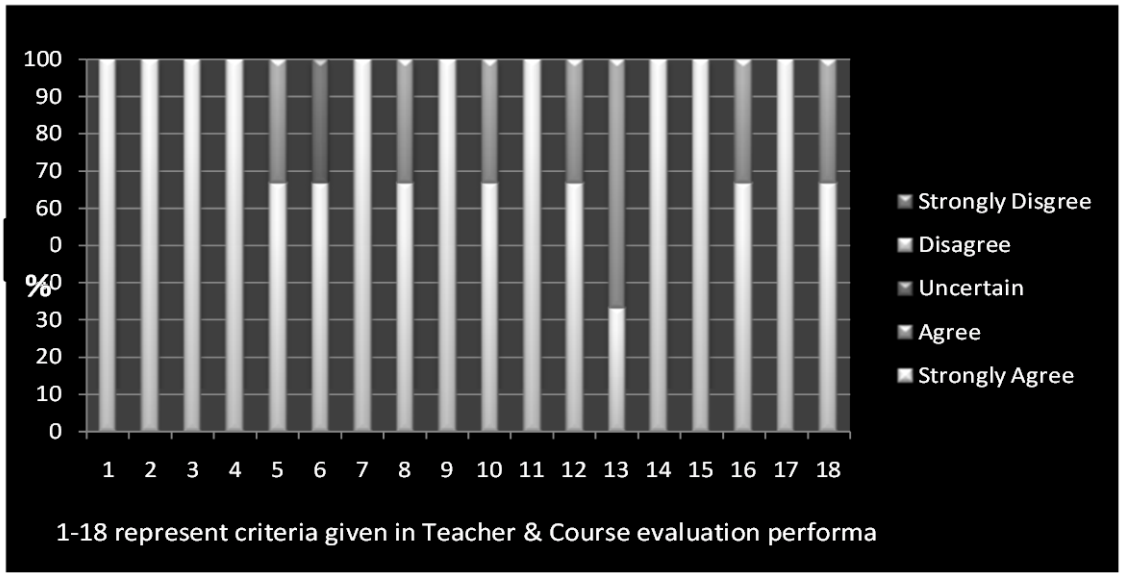
4. Teacher: Dr. Fouad Qureshi

Course: GENET-712 and 714



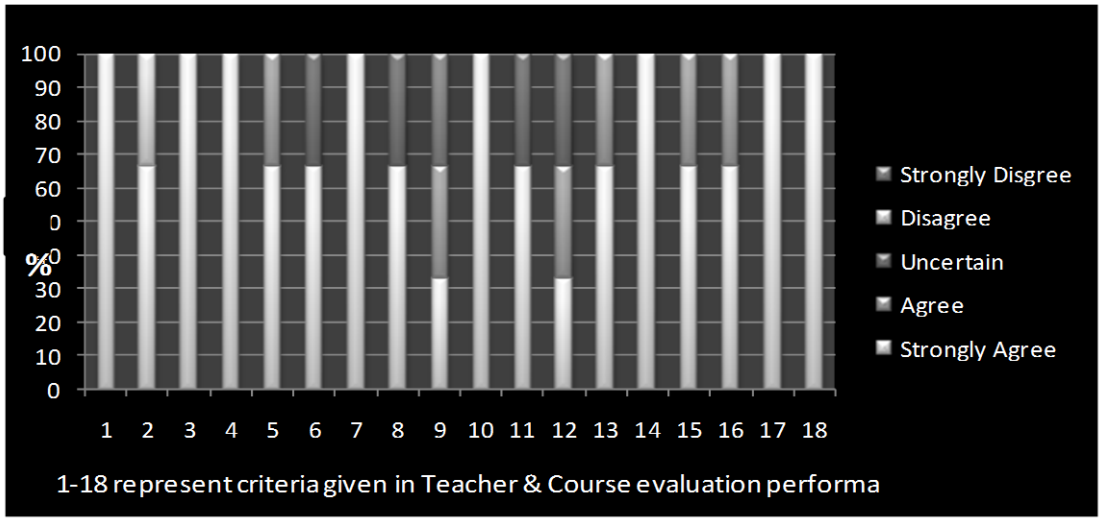
5. Teacher: Dr. Uzma Badar

Course: GENET-718



6. Teacher: Dr. Shakeel Farooqi

Course: ASR-701



CV OF FACULTY MEMBERS

DR. UZMA BADAR

Dept. of Genetics,

University of Karachi – Pakistan.

Cell: +92333-2212191 - Off*: +9221*-9261300-17 - Email: ubadar@uok.edu.pk

PROFESSIONAL EXPERIENCE

Professor, Department of Genetics, University of Karachi, Karachi – Pakistan.

HEC Approved Supervisor **2009-todate**

(Higher education Council)

Pakistan

Presidential Young Innovators (PYI) Award (2007-2009) (PI)

Project entitled as "Construction of multiplex biosensor for the monitoring of heavy metal contaminants in the polluted environments or industrial effluent".

PROFESSIONAL TEACHING EXPERIENCE

- Professor, Dept. of Genetics, University of Karachi, Karachi 2014- todate
- Associate Professor, Dept. of Genetics, University of Karachi, Karachi 2009 - 2014
- Asst. Professor, Dept of Genetics, University of Karachi, Karachi 2006 – 2009
- Co-operative teacher (Lecturer) in Department of Genetics, University of Karachi, Karachi 2000 - 2006
- Ph. D. Scholar 1997-2000

Taught three courses, Microbial Genetics, Evolution and Behavioral Genetics to undergraduate students and conducted the labs of Cytogenetics, Human Genetics, Microbial Genetics, Genetic Engineering, Classical Genetics, and Biostatistics.

And also two courses of Principles of Genetics and Cytology and cell biology in Agriculture Department.

PROFESSIONAL RESEARCH EXPERIENCE

Research supervised

M. Sc. and M.phil/Ph.D Research supervised

Detection of lux operon

Isolation of Bioluminescent bacteria

Studies on reporter genes

Studies on metal resistance genes in bacteria

Identification and characterization of luminescent bacterial strain

EDUCATION QUALIFICATION

Ph.D: **2004**

"Studies of Copper and Chromium resistance and their remediation by indigenous Bacterial strains"

Field: *Environmental Biotechnology and Molecular Biology*

Dept. Genetics University of Karachi,

Karachi – Pakistan

M. Sc. **1997**

Thesis entitled as ***"Biofilm formation by copper accumulating Acinetobacter sp."***

ATTAINMENTS:

Dean Office Project Karachi University **2012-2013**

Dean Office Project Karachi University **(2011)**

Extraction and purification of luciferase enzyme.

Dean Office Project Karachi University **(2009)**

Project entitled as "I. Identification and characterization of luminescent bacterial strain".

Dean Office Project Karachi University **(2007)**

Project entitled as "Screening of Reporter genes in bacteria."

PARC Project: (Co-PI) **(2006-2008)**

Genetic mapping of bacteria stains isolated from Sind.

EPA Project **(1998-1999)**

Removal of Heavy Metal Pollutant (s) from Effluent Using Biotechnology from Pakistani Resources. **News was shown** on **Zee Europe** 26th August 1999 and on Pakistan television (Ptv) in **Karobari dunyan.**

I have established the technology of biofilm formation using indigenous waste material such as foam sponge etc.

HEL Link Program (U.K) **(1998)**

Three month research project in Birmingham University

Birmingham- UK.

HEL Link Program (U.K) **(2000)**

Three month research project in Dundee University

Dundee, Scottland- UK.

PUBLICATIONS INTERNATIONAL

Research Papers in International Journals

1. Shoeb E., Ahmed N., Akhter J., Badar U., Siddiqui K., Ansari F., Waqar M., Imtiaz S., Akhtar N., Shaikh Q.A., Baig R., Butt S., Khan S., Khan S., Hussain S., Ahmed B. and Ansari M.A., 2015. Screening and Characterization of biosurfactant producing bacteria isolated from Arabian Sea coast of Karachi. Turkish Journal of Biology, 39(2): 210-216. DOI: 10.3906/biy-1405-63 [Impact Factor: 1.216]
2. Maheen Waqar, Uzma Badar, Erum Shoeb. 2014. Genetic and environmental dynamics to drug addiction: International Journal of Prevention and Treatment of Substance Use Disorders, Volume 1 (2). 53-62.

3. Uzma Badar, Nuzhat Ahmed, Erum Shoeb, and Geoffrey M Gadd. 2014. Identification of the *pco* operon in *Enterobacter* species isolated from contaminated soil. International Journal of Advanced Research, Volume 2, Issue 3, 227-233.
4. Maqsood Ali Ansari, Samina Imtiaz, Erum Shoeb, Uzma Badar and Obaid Yousuf Khan. 2014. Determination of Antibiotic and Metal Resistance Patterns in Bacteria Isolated from Potable Water from Karachi, Pakistan. International Journal of Advanced Research, Volume 2, Issue 1, 333-341.
5. Erum Shoeb, Uzma Badar, Faiza Akhlaq, Faiza A. Ansari, Samina Imtiaz and Jameela Akhter. 2013. Determination of stress resistance in biosurfactant-producing bacterial isolates. Int. J. Biol. And Biotechnol., 10 (3): 419-426.
6. Uzma Badar, Nuzhat Ahmed and Erum Shoeb 2013. Bioaccumulation and biosorption of copper by *Pseudomonas* species. *Int. J. Biol. Res.,* 1(1): 67-73.
7. Jameela Akhter, Nuzhat Ahmed, Uzma Badar, Maheen Waqar and Erum Shoeb. 2013. Heavy metal and antimicrobial resistant bacteria isolated from Karachi coastal area as an indicator of pollution. *Int. J. Biol. Res.,* 1(1): 57-66.
8. Uzma Badar, Erum Shoeb, Fouad M Qureshi, Jameela Akhtar, Nuzhat Ahmed . 2013. Removal of copper via bioreactor by soil isolate *pseudomonas stutzeri*. Academic Research International. Vol 4(3).
9. Erum Shoeb, Faiza Akhlaq, Uzma Badar, Jameela Akhter, Samina Imtiaz. 2013. Classification and industrial applications of biosurfactants. Academic Research International. Vol 4(3).
10. Shoeb E., Badar U., Akhter J., Ansari F.A., Waqar M. and Ansari M.A., 2012. Screening of surfactant producing bacterial strains isolated from soil samples of an automobile workshop. Karachi University Journal of Science 40, 31-36.
11. Badar U., Shoeb E., Daredia K., Shawar D., Akhtar J. and Ansari M. A., 2012. Screening and Characterization of Luminescent Bacterial Strain. Journal of Basic & Applied Sciences 8, 602-606 ISSN: 1814-8085 / E-ISSN: 1927-5129/12 © 2012 Lifescience Global.
12. Shoeb E., Badar U., Akhter J., Shams H., Sultana M. and Ansari M.A., 2012. Horizontal Gene Transfer of Stress Resistance Genes through Plasmid Transport. World J Microbiol Biotechnol 28(3):1021–1025: DOI 10.1007/s11274-011-0900-6.
13. Affan Q., E. Shoeb, U. Badar, J. Akhtar, 2009. Isolation and characterization Of Bacterial Isolates Having Heavy Metal Tolerance. Journal of Basic and Applied Sciences. Vol. 5, No. 2, 55-60.
14. Farooq S, E. Shoeb, U. Badar, J. Akhtar, 2008. Isolation and characterization Of Copper Tolerant Bacterial Isolates. Pakistan journal of biochemistry and molecular Biology, 41(4): 176-180.
15. Nuzhat Ahmed, Uzma Badar and Afsheen Arif. 2006. Recycling of Metal Contaminated Wastewater. A case study". *Pakistan Journal of Biochemistry and Molecular Biology,* Vol 39, No.1-2.
16. Nuzhat Ahmed, Afsheen Arif, Aisha Nawaz and Uzma Badar (2005). Optimization of Chromate Reduction by Indigenous Bacteria. Pak. J. Biochem. Mol. Biol. 38(1-2): 45-48.
17. Ahmed, N., A. Nawaz, U. Badar 2005. Screening of Copper Tolerant Bacterial Strains and their Potential to remove Copper from the Environment. Bulletin of Environmental Contamination and Toxicology. 74 (2).
18. Pattanapipitpaisal P, Mabbett AN, Finlay JA, Beswick AJ, Paterson-Beedle M, Essa A, Wright J, Tolley MR, Badar U, Ahmed N, Hobman JL, Brown NL, Macaskie LE. 2001.

Reduction of Cr(VI) and bioaccumulation of chromium by gram positive and gram negative microorganisms not previously exposed to Cr-stress. Environmental Technology. vol 7, 731-745.
19. Qureshi, F. M., J. Akhtar, U. Badar, F. Fasim, S. Raihan, M. T. Hasan and N. Ahmed. 2001. Towards effective bioremediation in third world countries. J. Contaminated soils, sediments and water. Oct. 2000, 310-316.
20. Qureshi, F. M., U. Badar, and N. Ahmed.2001. Biosorption of copper by bacterial biofilm on PVC flexible conduit. Applied and Environmental Microbiology, Vol. 67 (9), 4349-4352.
21. Badar, U., N. Ahmed, A. J. Beswick, P. Pattanapipitapaisal and L. E. Macaskie. Reduction of chromate by microorganisms isolated from metal contaminated sites of Karachi, Pakistan. Biotech. Lett. 22: 829-836, 2000.
22. N. Ahmed, U. Badar, M-T. Hassan & S. Raihan (1997). Isolation of Local Copper Tolerant Bacteria in Pakistan for Biofilm Formation on Various Supports and Subsequent Biosorption. Resource and Environmental Biotechnology. Vol 2, pp. 65-72.

PRESENTATIONS National & International

Paper (Oral) Presentations:

Paper Presented on "Genetics of copper resistance in indigenous bacterial isolates from tannery Effluents", In an international symposium on Genetics for a better future in Islamabad, November 26-28th 1996.

Paper Presented on "Biofilm formation by Copper accumulating bacterial isolates." Third International Symposium on Genetic Engineering & Biotechnology, 24-28th Feb'1998.

Paper presented in Seminar on "Air Water and Ecosystem: Our Children's Heritage" in collaboration with British Council and University of Birmingham, 20th March'03.

Paper presented on Genetic Counselling and Screening a training workshop in collaboration with HEC on "Genetics for Medical Professionals" at Karachi University, 6th-11th Dec. 2004.

Paper presented on "Identification of the copper-resistance operon in *Enterobacter* species isolated from soil." In an 4th International Symposium on Genetic Engineering and Biotechnology 4-8 December 2005, Karachi Pearl Continental Hotel.

Paper Presented on "**The *Pco/Cop* Copper Resistance Operon In Bacterial Species Isolated From Metal Contaminated Soil.**" In an international symposium on Genomics, Proteomics, Metabolomics: Recent Trends in Biotechnology, University of Punjab, Lahore, 22nd -23rd October 2007.

Paper presented on "Biosensors In Agriculture : Luminescent Bacterial Strain", in 4 days workshop on Biofertilizers, Importance and development using Indigenous Resources at Karachi University, 17th -2-th August 2009 organized by Centre for Molecular Genetics, University of Karachi, British Council and DFID.

Paper presented on "Isolation and characterization of luminescent bacteria from Arabian Sea" in 35th All Pakistan Science Conference on "Genomics for Health and Prosperity". In University of Karachi, 20-23 December, 2008.

Paper presented on, "**Isolation And Characteriuzation Of Luminescent Bacteria From Arabian Sea", in EnviroArabia 2010,** 6th Specialty Conference and Exhibition on Environmental Progress in the Petroleum and Petrochemical Industries, April 18th – 21st, 2010, at Gulf International Convention Centre Gulf Hotel, Kingdom of Bahrain.

Paper presented on, "An overview on Luminescent bacterial strain." In a workshop on Genetic Diseases in Pakistani Population. Newcastle University, U.K. 5-10th July 2010.

PAPERS IN REFREED PROCEEDINGS

Badar, U., R. Abbas and N. Ahmed. 2001. Characterization of Copper and chromate resistant bacteria isolated from Karachi tanneries effluents. In Ahmed, N., Qureshi., F. M., and Khan, O.Y (eds). Industrial and Environmental Biotechnology. 43-53. Horizon Scientific Press, Norfolk, U.K.

Ahmed, N., S. Raihan and **U. Badar**. (2000). Microbial process for pollution control: Bioremediation. In proceeding Geoengineering in Arid Lands, Mohamed & Al Hosani (eds), Balkema, Rottardam, ISBN press, 571-576.

Ahmed, N., **Badar, U**. and Raihan, S. Resistance and Accumulation of Heavy Metals by Indigenous Bacteria: Bioremediation (2001). In Proceeding: In Ahmed, N., Qureshi., F. M., and Khan, O.Y (eds). Industrial and Environmental Biotechnology. 43-53. Horizon Scientific Press, Norfolk.

Ahmed, N., F. M. Qureshi and **U. Badar**. 2001. Biotechnological approaches for the control of environmental pollution: bioremediation. Proceedings of the first international Conference on Biotechnology Applications for the Arid Regions. 9-11 April 2001. Hosted by Kuwait Institute for Scientific Research, Kuwait.

Ahmed, N., **U. Badar**, F. Fasim and F. Qureshi. Recycling of Metal Contaminated Wastewater: A Case Study. 2002. In Environmental and ground water pollution, Sherif, M., Singh. V. P. and Al Rashid (eds), Swets & Zeittlinger Publication USA. pp. 175-186.

Ahmed, N**., U. Badar**, F. M. Qureshi and F. Fasim 2003. Biosorption and Bioaccumulation of Heavy Metals by bacteria isolated from contaminated sites of Karachi, Pakistan. IBS 2003 Proceedings.

Ahmed N., **U. Badar**, and T. Moatter, 2005. Identification of the copper-resistance operon in *Enterobacter* species isolated from soil. In an 4th International Symposium on Genetic Engineering and Biotechnology.

Uzma Badar, Erum Shoeb and Nuzhat Ahmed. 2010. Isolation of Luminescent Bacterial Strains from Sea Organisms and Karachi Coastal Areas. In proceedings of EnviroArabia 2010, 6th Speciality Conference on Environmental Progress in the Petroleum and Petrochemical Industries. (Submitted).

SEMINAR AND CONFERENCES ORGANIZED

Member of organizing committee

Seminar on **"Biotechnological Application of Metal-reducing Bacteria Bioremediation"** by Dr. John R. Lloyd School of Biological Sciences University of Birmingham

U.K., 15th May 1997.

Seminar on **"Metal Microbe interaction"** by Prof. Geoff M. Gadd, University of Dundee

U.K. 21st March'2000.

A workshop on **"Price of a leather** Social and economical cost of having tanneries in Karachi in collaboration with the British Council and Pakistan Tanners Association on Oct 17, 2000.

Pakistan Oct 17, 2000.

Seminar on **"Antibiotic Abuse; A major threat to human health."** By Dr. Hilary K. Young, university of Dundee, U.K.

Dundee, U.K.

An international Conference on **"Hazardous effects pollutants on women workers"** 16th-18th Dec' 1996. This was sponsored by Overseas Development Administration U.K.

U.K.

Third International Symposium on Genetic Engineering & Biotechnology with the theme of **Industrial & Environmental Biotechnology** 24-28th Feb'1998 at Hotel Marriott, Karachi.

Karachi.

A National Conference on **Human Rights based strategies for women during pregnancy"**Feb16-18Feb'1999.

Karachi

Workshop on "No Water No Life" in collaboration with British Council and University of Birmingham

Birmingham U.K

Seminar on “Air Water and Ecosystem: Our Children’s Heritage” in collaboration with British Council and University of Birmingham, 20th March’03.

Birmingham U.K.

Organized a training workshop in collaboration with HEC on “Genetics for Medical Professionals”. 2004

Karachi, Pakistan

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Pakistan
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Date of Birth: October11, 1965
Nationality: Pakistani

CNIC # 42201 0673251-9

Teaching Experience:

- University of Karachi, Pakistan

Professor March 2014 to date

Lecturing M.Sc. and MS students in the Department of Genetics, and supervising students various PhD, M.Phil. and M.Sc. research projects.

Associate Professor October 2009 to March 2014

Lecturing M.Sc. and MS students in the Department of Genetics, and supervising students various PhD, M.Phil. and M.Sc. research projects.

Assistant Professor October 1995 to October 2009

Lectured M.Sc. and MS students in the Department of Genetics, and supervised students various M.Phil.and M.Sc. research projects.

- Liaquat National Hospital and Medical College
School of Diagnostic Laboratory Sciences. Karachi, Pakistan

Visiting Faculty 2006 to date

Lecturing Medical and medical technology students of the school. Also involved in collaborative research with the Biochemistry Department of the college.

- University of York, UK

Demonstrator 2000-2003
Worked as a Demonstrator in the courses held for 1st and 2nd year undergraduate students.

- California State University, Los Angeles, USA.

Teaching Associate 1992-1993
Taught undergraduate students in the labs of courses Human Anatomy & Physiology, Molecular Biology etc.

Education and Research experience:

- University of Kent, UK
-

Post-Doctoral Research Associate 2004 -2006

Worked as a Molecular Biologist in Professor Geeves lab on* Dictyostelium *Myosins.
The project involved mutating, cloning and expressing different Myosin protein genes in *Dictyostelium*. Kinetic analyses of the proteins were than done in the lab by various methods such as stopped flow, pressure jump, flash photolysis etc. This is one of the leading labs in the world on kinetic studies on muscle proteins.

- University of York, UK

PhD 2000-03

Thesis title: Genetic analysis of thin filament regulation in *Drosophila melanogaster*.The research project was conducted under the supervision of Professor Sparrow and was mainly focused on the study of a troponin T mutant of a muscle protein in *Drosophila* known as $up^1$and a suppressor mutant of TnI mutation hdp^2. The project was aimed to study the affects of the mutations on different muscle types of the flies in order to understand the regulation of muscle contraction.

- The Aga Khan University Hospital, Karachi Pakistan

Senior Research Assistant 1993-95

Conducted research work on RFLP of *Mycobacteria* in the Department of Microbiology. This project was supported by European Economic Committee for Medicine.

- **California State University, Los Angeles, USA.**

Research Assistant, for Post Baccalaureate Certificate in Biotechnology, 1992-93

Worked as a Research Assistant for the certificate and MS degree on the project of cloning and expression of Sendai virus hemagglutinin-neuraminidase gene in baby hamster kidney cells.

Master of Science in Biology (MS), 1992-93

Courses: Molecular genetics, general virology, microbial genetics, genetic engineering laboratory, gene manipulation etc.

- University of Karachi, Pakistan

Master of Science in Genetics (M.Sc.), 1986-89.

Courses: Human genetics, clinical genetics, cytogenetics, immunogenetics, genetic engineering, principles of plant breeding, poultry breeding etc.

Research work: Study of resistance in bacteria against the fungicide 'Neocidol'.

Bachelor of Science, 1986.

Courses: Microbiology, Biochemistry, and Chemistry.

Industrial Experience:

- ***Abbott Lab (Pvt) Ltd. Pakistan.***

Supervisor 1990-92

Worked as a supervisor in Production Department. Dealt with quality and production control and worked on projects like the survey of antibiotic resistance in bacteria.

Award:

International fee waiver award recipient at CSULA 1992-93

Society memberships:

Member Alliance For the Prudent Use Of Antibiotics (APUA) USA.

President Microbiology Society, Islamia Science College, Karachi 1985-86

Vice President Microbiology Society, Islamia Science College, Karachi 1984-85

Founder member Islamia Science College Old Students Association.

Extra curricular activities:

Captain staff cricket team, University of Kent 2004-06

Vice Captain cricket team, Department of Biology, University of York 2002-03

Captain cricket team, Department of Genetics, University of Karachi 1988-89

Publications:

1. Shoeb, E., Ahmed, N., Akhter, J., Badar, U.,**Ansari**, M.A. (2015). Screening and characterization of biosurfactant-producing bacteria isolated from the Arabian Sea coast of Karachi**. *Turk. J. Biol*. 39(2):210-216**

2. Alam, J.M., Baig, J.A., Matinuddin, S., **Ansari**, M.A. (2015). Comparative study on analytical precision of iron profile on conventional hitachi 912 and modular cobas 6000 c501 systems. *Int. J. Chem. Pharmaceutic. Sc*. 6(1):1-5

3. **Ansari**, M.A., Imtiaz, S., Shoeb, E., Badar, U., Khan, O.Y. (2014). Determination of Antibiotic and Metal Resistance Patterns in Bacteria Isolated from Potable Water from Karachi, Pakistan. *Int. J. Adv. Res*. 2 (1), 333-341

4. Alam, J.M., Farooqui, S.I., Hussain, A., Mahmood, S.R., Naheed, S., **Ansari**, M.A. (2013) Significance of Lactate Estimation in Debilitated Myopathies and Treatment Programs. *Pak. J. Rehabil*. 2(1), 4-8

5. Alam, J.M., Sherwani, S. K., Farooqui, S., Mahmood, S.R., **Ansari,** M.A., Bashir, A. (2013). Comparitive analysis of correlation among Creatine kinase (CK), Aldolase and M.yoglobin (Mb) concentrations in patients suffering from Myopathies. *Int. J. Adv. Res*. 1 (6), 133-139

6. Shoeb, E., Badar, U., Akhter, J., Shams, H., Sultana, M., **Ansar**i, M.A. (2012). Horizontal gene transfer of stress resistance genes through plasmid transport. *World J Microbiol. Biotechnol*. 28, 1021-1025

7. Shoeb, E., Badar, U., Akhter, J., Ansari, F.A., Waqar, M., **Ansar**i, M.A. (2012). Screening of surfactant producing bacterial strains isolated from soil samples of an automobile workshop. *Kar. Uni. J. Sc.* 40, 31-36

8. Badar U., Shoeb E., Daredia K., Shawar D., Akhtar J., **Ansari** M.A. (2012). Screening and Characterization of Luminescent Bacterial Strain. *J. Basic & Appl. Sc*. 8, 602-606

9. Alam, J.M., Islam, Z., Sherwani, S. K., Asghar, S.S., Mahmood, S.R., Sultana, I., **Ansari,** M.A. (2012). Determination of Hyperlactatemia and Acidosis in adult patients with cardiac diseases and dysfunctions. *FUUAST J. Biol*. 2 (2), 49-54

10. Alam, J.M., Sherwani, S. K., Ahmad, A., Hussain, A., Ali, H., Sultana, I., **Ansari,** M.A. (2012). Assessment and correlation of serum biochemical parameters and parathyroid hormone in selected adult population suffering from various stages of kidney diseases (CKD). *FUUAST J. Biol*. 2 (1), 13-17

11. Alam, J.M., Mahmood, S.R., Hussain, A., Shaheen, R., Ishrat, I.A., Arif, M., Sultana, I., **Ansari,** M.A. (2011). Diagnostic importance of tumor markers, neuron specific enolase (NSE), carcino-embryonic antigen (CEA) and cancer antigen(CA 15-3), in serum and pleural effusions of patients with malignant pulmonary diseases. *Int. J. Biol. Biotech*. 8 (1), 71-78

12. Alam, J.M., Baig, J. A., Hussain, A., Mahmood, S.R., Sultana, I., **Ansari,** M.A. (2011). Evaluation of neuron specific enolase (NSE) levels in children with bacterial and viral memingitis. *Int. J. Biol. Biotech*. 8 (1), 65-70

13. Alam, J.M., Hussain, A., Islam, Z., Mahmood, **Ansari,** M.A. (2011). Comparative analysis of vitamin B12 levels and effects of its deficiency in selected adult population diagnosed with various clinical conditions. *J. Baqai Med. Univ*. 14 (2), 3-8

14. Alam, J.M., Baig, J.A., **Ansari,** M.A., Naheed, S., Kazmi, T., Shaheen, R., Sultana, I., Jamall, S. (2010). Assesment of abnormalities in lipoprotein components in hyperlipidemic, diabetic and non-diabetic patients. *Pak. J. Biochem. Mol. Bio*l. 43(4), 195-199

15. Alam, J.M., Baig, J.A., Mahmood, S.R., Asghar, S.S., **Ansari,** M.A., Jamall, S. (2010). Diagnostic utility of neuron specific enolase (NSE) in serum and pleural fluids from patients with lung cancer and tuberculosis. . *Pak. J. Biochem. Mol. Bio*l. 43(3), 131-134

16. Baig, J. A., Alam, J.M., **Ansari,** M.A., Hussain, A., Naheed, S., Shaheen, R., Sultana, I. (2010). Evaluation of NT pro BNP of diagnostic significance in patients with chronic kidney diseases. *Pak. J. Biochem. Mol. Bio*l. 43(2), 99-104

17. Alam, J.M., Hussain, A., Mahmood, S.R., Asghar, S.S., Ali. I.I., Sultana, I., **Ansari,** M.A.(2010).Evaluation of carcino-embryonic antigen (CEA) and diagnostic significance in adult patients suffering from colorectal carcinoma (CRC) and GIT malignancies. *J. Baqai Med. Univ*. 13 (2), 3-10

18. Alam, J.M., Baig, J.A., Mahmood, S.R., Asghar, S.S., Ashraf, F., Sultana, I., **Ansari,** M.A.(2010). Estimation of total Biolavailable and free testosterone levels in various age groups of men. *J. Baqai Med. Univ*. 13 (2), 11-18

19. **Ansari,** M.A., Nongthomba, U., Cummins, M., and Sparrow, J. 2007. A mutation in the Tropomysin gene is possibly responsible for suppressing the effects of Troponin-I mutation in the *Drosophila melanogaster* muscles. *Int. J. Biol. Biotech*. 4 (4), 317-330

20. **Ansari**, M.A., Nongthomba, U., and Sparrow, J. 2007. Phenotypic affects of Troponin-T mutation up^1 on *Drosophila melanogaster* behaviour. *Int. J. Biol. Biotech*. 4 (2-3), 227-230

21. ***** Nongthomba, U., **Ansari**, M., Thimmaiya, D., Stark, M., and Sparoow, J.C. 2007. Aberrant splicing of alternative exon in the *Drosophila* troponin-T gene affects flight muscle development. *Genetics.* 177, 295-306

22. ***** Clark, R., **Ansari**, M.A., Dash, S., Geeves, M.A. and Coluccio, M. 2005. Loop 1 of transducer region in mammalian class 1 myosin, Myo1b, modulates actin affinity, ATPase activity and nucleotide access. *J. Biol Chem.* 280, 30935-30942

23. Nongthomba, U., Clark, S., Cummins, M., **Ansari**, M., Stark, M. and Sparrow, J. 2004. Troponin I is required for myofibrillogenesis and sarcomere formation in *Drosophila* flight muscle. *J. Cell Sci*. 117, 1795-1805

24. Ali, N.I., Siddiqui. I.A., Zaki, M.J. and **Ansari**, M.A. 2001. Variations Between Strains of Pseudomonas Bacterium: Effects on Root-Infecting Fungi. *Pak. J. Biol. Sci*. 4 (1), 17-19

25. **Ansari**, M.A. and McQueen, N. L. 2000. Functional Studies of the Sendai Virus HN Gene Product in BHK-21 Cells. *Pak. J. Biol. Sci*. 3 (9), 1506-1508

26. **Ansari**, M.A. and McQueen, N. L. 1999. Expression of Sendai virus HN Gene in BHK-21 Cell Line. *Pak. J. Biol. Sci*. 2 (4), 1283-128

***** Joint first author of the paper

CURRICULUM VITAE

OBAID YUSUF KHAN, Ph.D.

Associate Professor

Department of Genetics
University of Karachi
Karachi-75270, Pakistan

RESEARCH INTERESTS

Genetic Polymorphism and Phylogenetics of Hepatitis C and D virus; DNA barcoding in marine life. Pharmacogenetics.

RESEARCH PROJECTS

- Phylogenetics of Hepatitis D Virus.
- Genetic Polymorphism in Hepatitis C Virus Genome.
- Genetic Polymorphism of Thiopurine S-Methyltransrerase (TPMT) Gene in Pakistani Population.
- DNA Barcoding of Fish Species from Northern Arabian Sea.

RESEARCH TRAINING AND EXPERIENCE

December 2004 to May 2005: Postdoctoral Research at Department of Pharmacology, Creigthon University, Omaha, NE, USA.

September 2002 to November 2004: Postdoctoral Research at CUMC Cancer Center, Creigthon University, Omaha, NE, USA.

May 2002 to August 2002: Postdoctoral Research at Dept. of Molecular and Cellular Biology, Baylor College of Medicine, Houston, TX, USA.

November 1998 to May 2002: Research at Centre for Molecular Genetics University of Karachi, Pakistan

September 1993 – May 1998: Ph.D. project at Division for Molecular Genetics Institute for Biological and Life Sciences, University of Glasgow, Scotland, U.K.

RESEARCH PROJECTS COMPLETED

Molecular Characterization and Genetics of Natural Polymer Production by Marine Bacteria from the Arabian Sea. The study may to lead to discovery of strains producing longer-chain or novel Polyhydroxyalkanoate (PHA) polymers, which may have better commercial applications as biodegradable plastic. The project executed in 2001 and was funded by a 1-year grant of **US$ 11,750** from International Foundation of Science, Sweden.

MOLECULAR BIOLOGY SKILLS

Genomic DNA extraction from tail biopsies and genotype screening of transgenic mice using PCR.

Protein Interaction using GST pull down and Immunoprecipitation.

Steroid receptor coactivation assays using cotransfection and luciferase assay.

Basic microbiological techniques for handling standard bacterial strains; culturing/maintaining of lactic acid and several environmental bacteria in various media and their identification.

Techniques of bacterial genetics such as conjugation, transformation, isolation of plasmids DNA, curing of plasmids; Genetic characterization of bacteria viz. Screening for plasmid-borne resistance phenotypes; Screening of lactobacilli for bacteriocin production.

Basic Molecular biology techniques viz. Plasmid and bacterial DNA extraction: restriction digest and analysis of bacterial DNA.

Subcloning of DNA fragments into plasmid vectors and associated standard molecular biology techniques.

Purification of plasmid DNA for transfection using CsCl/EtBr density centrifugation technique

PCR, RT-PCR, designing of primers for PCR, subcloning of PCR generated fragments, generation of cDNA using RT-PCR and cDNA subcloning; Epitope tagging of proteins at the DNA level using PCR subcloning.

Total RNA extraction from cultured animal cells and animal tissues; Southern and Northern blot analysis

Manual DNA sequencing of plasmid DNA and PCR fragments using cycle sequencing.

Maintenance and preservation of established cell lines in culture, using standard and specialized cell culture methods.

Primary cell culture of neonatal rat cardiocytes.

Plasmid DNA transfection into cultured cells using calcium phosphate and liposome-mediated methods.

Construction of recombinant adenoviral vectors, isolation and screening of recombinant vectors, viral plaque purification, viral DNA extraction and restriction pattern analysis, amplification and purification of adenovirus using CsCl density gradient, titration and concentration determination of purified adenoviruses.

Handling of retrovirus producing cell lines Isolation of vectors from retrovirus producer cell lines Expression analysis of retroviral vectors carrying reporter genes.

Gene expression analysis using beta-galactosidase, CAT assay and Luciferase assay and *in vitro* expression analysis of recombinant adenovirus vectors.

Immunocytochemistry of cells in culture and Western blot analysis, for expression analysis of recombinant adenoviral vectors.

Advanced Bioinformatics skills in doing DNA and Protein sequence analysis online, and using software such as MEGA, jModelTest2, MrBayes and BEAST, RDP-4, used for phylogenetic analysis.

EMPLOYMENT

Permanent faculty member at the Department of Genetics, University of Karachi, Karachi, Pakistan. Joined as a Lecturer in December 1988.

CURRENT POSITION

Associate Professor, Department of Genetics, since January 2001.

HEC-Approved Research Supervisor.

Lecturing postgraduate (M.Sc.) students in courses of genetics viz; Molecular Genetics, Quantitative Genetics, Human Genetics, Developmental Genetics, Advances in Evolution, Eukaryotic Gene Expression (M.S./M.Phil.), Human Molecular Genetics (M.S./M.Phil.), Cell Biology (M.S./M.Phil.) and Topics in Genetics (M.S./M.Phil.).

Designing and conducted laboratory work for postgraduate students of Molecular Genetics, Human Genetics and Quantitative Genetics.

Supervised one Ph.D. student; Ph.D. completed in June 2013.

Supervising two M.Phil. Research students.

EDUCATION

1993 – 1998; University of Glasgow, Glasgow, Scotland, U.K., Ph.D. in Molecular Genetics

1985 – 1988; University of Karachi, Karachi, Pakistan, M.Sc. in Genetics

1981 – 1984; D.J. Sind Govt. Science College (University of Karachi), Karachi., B.Sc. in Biology (Chemistry, Zoology, Microbiology)

MEMBERSHIPS

Member Board of Faculty of Science, University of Karachi.

Member, Board of Studies, Department of Genetics.

Member of the Higher Education Commission (HEC) curriculum development committee for Genetics.

RESEARCH PUBLICATIONS

Ansari, M. A., Imtiaz, S., Shoeb, E., Badar, U. and Khan, O. Y. 2014. Determination of Antibiotic and Metal Resistance Patterns in Bacteria Isolated from Potable Water from Karachi, Pakistan. International Journal of Advanced Research 2(1):333-341.

Fatima, S., Khan, O. Y. and Azhar, A. 2013. Comparative analysis of lipid levels between coronary heart disease patients and normal healthy subjects. Pakistan Journal of Biochemistry and Molecular Biology 46(3):89-91.

Perveen, S., Nasir, I., Shahid, S.M., Azhar, A., Khan, O.Y. 2012. Phylogenetic analysis of HDV isolates from HBsAg positive patients in Karachi, Pakistan. Virology Journal, Vol:9 pp:162-

Dhananjayan, S.C., Ramamoorthy, S., Khan, O.Y., Ismail, A., Sun, J., Slingerland, J., O'Malley, B.W. and Nawaz, Z. 2006. WW domain binding protein-2, an E6-associated protein interacting protein, acts as a coactivator of estrogen and progesterone receptors. Molecular Endocrinology 20(10):2343-54.

Cao, X., Qin, J., Xie, Y., Khan, O., Dowd, F., Scofield, M., Lin, M.F., and Tu, Y. 2006. Regulator of G-protein signaling 2 (RGS2) inhibits androgen-independent activation of androgen receptor in prostate cancer cells. Oncogene 25(26): p. 3719-3734.

Khan, O.Y., Fu, G., Ismail, A., Srinivasan, S., Cao, X., Tu, Y., Lu, S., and Nawaz, Z. 2006. Multifunction Steroid Receptor Coactivator, E6-Associated Protein, Is Involved in Development of the Prostate Gland. Molecular Endocrinology 20(3): p. 544-559.

Khan O.Y., Nawaz Z. Nuclear hormone receptor co-regulators. 2003. Current Opinions in Drug Discovery and Development. 6(5): p. 692-701.

Ahmed N., Jamil, N., Khan, O.Y., Yasmeen, S., Haq, Z., Ahmed, V.U., and Rahman A.U. 2000. Commercially important products from Marine bacteria: Marine Biotechnology. In Proceedings of National ONR Symposium on Arabian Sea as a Resource of Biological Diversity. V. U. Ahmed (ed) pp. 104-114.

Naz, N., Samad, R., Ahmed, N. and Khan, O.Y. 1997. Isolation and Characterization of indigenous Lactobacillus strains. Karachi University Journal of Science. 25 (1): p. 87-95.

Jameel, R., Ahmed, N., Khan, O.Y. and Azim, M. 1996. Biodegradation of Basudin (an organophosphate pesticide by indigenous bacteria. Karachi University Journal of Science. 24(1): 109-116.

Ahmed, N., R. Amir and Khan, O.Y. 1995. Genetic characters of Marinococcus species isolated from mangrove soils. In Proceedings of the Pak-U.S. Conference on Arabian Sea: Living Marine Resources and the Environment.

Khan, O.Y., Naz, N., Ahmed, N. and Qureshi, F.M. 1995. Genetic characterization of indigenous Lactobacillus strains isolated from food sources. In: Biotechnology for Environment and Agriculture (Ahmed, N., Ishaq, M., Khan, O. Y. and Sarwar, F. (Eds.). Karachi University Press. p. 343-352.

Raihan, S., Sarwar, F., Azim, M., Khan, O.Y. and N. Ahmed. 1995. Isolation, Characterization and Assessment of Metal Accumulation of Bacterial Isolates From Industrial Waste. In Ahmed, N., M. Ishaq, O. Y. Khan, and F. Sarwar (eds), Biotechnology for Environment and Agriculture, University Press, Karachi, pp. 143-152.

Naz, N., Khan, O.Y., P.J. Warner and N. Ahmed. Plasmid profiles and bacteriocin production of indigenous Lactobacillus strains. In Recent Advances in

Biochemical Research in Pakistan, Qasim, R., S. N. Husnain, M. Ishaq, and A. Azhar (Eds.), Karachi University Press, Karachi, 1994, 253-264.

Ahmed, N., A. Afzal and Khan O.Y. 1993. Involvement of plasmid in polysaccharide biosynthesis by *Klebisella pneumoniae*. Karachi University Journal of Science. 21(1&2): 181-188.

BOOKS

Industrial and Environmental Biotechnology. Editors: Nuzhat Ahmed, Fouad M. Qureshi, and Obaid Y. Khan. 2001. Horizon Scientific Press, U.K.

Biotechnology for Environment and Agriculture. Editors: Ahmed, N., M. Ishaq, Khan O.Y. and F. Sarwar. 1995. Karachi University Press, Karachi.

Simeen Mansoor
Department of Genetics
University of Karachi
Karachi 75270
Simeenm@uok.edu.pk

Education:

Ph. D. 2011(Genetics) Title: Alteration of proteins and enzymes during temperature stress in mung bean *(Vigna radiata)*

M.Sc.. 1989**. First Class Third Position.** Department of Genetics, University of Karachi also completed a research thesis on, **" Temporal and spatial expression of soluble and wall bound enzymes in mung bean *(vigna radiata)."***

B. Sc. 1985. **First Class.** University of Karachi, Karachi. Took courses of Microbiology Biochemistry and Chemistry.

H.SC. 1982. **Second Class (58%)**. Board of Intermediate Education, Karachi. Took courses of Physics, Chemistry and Biology.

S.S.C. 1980. **Second Class (55%).** Board of Secondary Education, Karachi. Took courses of Maths, Physics, Chemistry and Biology.

Teaching:

Associate Professor, in the Department of Genetics since 10.03.2014 till to date. Offered courses of Experimental Design, Immunogenetics, Topics in Genetics, Technologies in Genetics, Protein structure, function and analysis.

Assistant Professor, in the Department of Genetics since 26.03.01 till 09.03.14. Offered courses of Cytogenetics, Advanced Biometry, Experimental Design, Human Genetics, Principles of Plant Breeding, Advanced plant Breeding, Topics in Genetics, conducted Seminars.

Lecturer in the Department of Genetics**.** 30.10.95 till 2001. Offered courses of Microbial Genetics, Clinical Genetics, Immunogenetics, Developmental Genetics, and Research techniques. Cytogenetics.

Cooperative Teacher: July 1989-1995**.** Conducted labs of Cytogenetics, Microbial Genetics, Molecular Genetics, Cell Physiology and Biochemistry, Classical Genetics, Poultry Breeding and Genetics, Human Genetics, Quantitative Genetics, Experimental Design, Research

Technique, Clinical Genetics, Evolution, Principles of Plant Breeding and Advanced Plant Breeding.

Research experience:

Ph.D. (Genetics,2011), entitled "Alteration of proteins and enzymes during temperature stress in mung bean (*Vignaradiata)"* submitted to the University of Karachi in partial fulfillment of the requirement for the degree of Philosophy of science in Genetics.

M.Sc. thesis entitled "Analysis of soluble and wall bound isozymes during various phases of development in *Vigna radiata* (mung bean)" , submitted to the University of Karachi in partial fulfillment of the requirement for the degree of masters of science in Genetics.

Research supervised:

MS/Ph.D. Thesis supervising entitled "Alleviation of salt stress through exogenous application of heat shock and phytohormones on various mung bean genotypes" (Enrolled in 2013).

MS/Ph.D. Thesis supervising entitled "Genotoxicity of cadmium and alleviation of Cd toxicity by certain hormones and chemicals on mung bean (*Vignaradiata*) genotypes" (Enrolled in 2011).

M.Sc. Project supervised entitled "Calcium alleviates Cd stress in mung bean seedlings" during 2014

M.Sc. Project supervised entitled "Effect of aqueous onion extract on growth and antioxidant enzymes activities in mung bean seedlings under cadmium stress" during 2014.

M.Sc. Project supervised entitled "Effect of baking powder on growth and antioxidant enzymes activities in mung bean seedlings" during 2014.

M.Sc.. Literature review entitled "Assessment of abiotic stress in mung bean and other organism" during 2014.

M.Sc. Project supervised entitled "Accumulation of MDA and Proline, activity of antioxidant enzymes in mung bean treated with industrial waste water during 2012.

M.Sc. Project supervised entitled "Effect of mobile phone radiations on Mung bean and Wheat Seedlings" during 2010.

Project supervised entitled "Effect of heavy metal stress on Mung bean (*Vigna radiata*) Seedlings" during 2010.

Project supervised entitled "Effect of Salicylic acid on heat stress on Mung bean (*Vigna radiata*) seedlings" during 2009.

Project supervised entitled “Effect of salicylic acid on salt stress in mung bean (*Vigna radiata*)” during 2008.

Literature review entitled “Effect of different types of environmental stresses on plant” during 2008.

Project supervised entitled “Cytotoxic and genotoxic effects of commonly used food colours on the root tip cells of onion (*Allium cepa*)” during 2008.

Literature review entitled “Genotoxic effect of different types of pollutions" during 2008.

Project supervised entitled “Cytotoxic effect of industrial waste water on onion root tips” during 2004.

Project supervised entitled “Cytotoxic effect of various plant extracts on wheat root tips” during 2004.

Literature review entitled "the effect of plant extracts on plants, human being and animals" during 2004.

Project supervised entitled “Effect of sodium chloride on intravarietal plant performance of mung bean (*Vigna radiata*)” during 2004.

Literature review entitled “Biochemical and physiological and morphological response of plants under salt stress" during 2004.

Project supervised entitled “Biochemical analysis of proteins and Enzymes under stress conditions in mung bean (*Vigna radiata*) seedlings” during 1997.

Workshop/courses/symposia:

Poster presented in the “Plant and Animal Genome Conference XXIV”, held in Town and Country Resort Hotel, San Diego during 9th till 13th January 2016, entitled ‘Induction of Thermotolerance Through Heat Acclimation and Phytohormones in Mung Bean Seedlings’

Oral presentation in “3rd International Conference on Environmental Horizon”, jointly organized by Department of Chemistry and International Center for Chemical and Biological sciences (ICCCS), University of Karachi on 9-11 January 2015, entitled “Role of Gibberellic acid on alleviating temperature stress and changes in acid phosphatase activity in mung bean seedlings”.

Poster presented in the “3rd International Conference on Environmental Horizon”, jointly organized by Department of Chemistry and International Center for Chemical and Biological sciences (ICCCS), University of Karachi on 9-11 January 2015, entitled” Effect of aqueous

onion extract on growth and antioxidant enzymes activities in mung bean seedlings under cadmium stress".

Poster presented in the "3rd International Conference on Environmental Horizon", jointly organized by Department of Chemistry and International Center for Chemical and Biological sciences (ICCCS), University of Karachi on 9-11 January 2015, entitled" Calcium alleviates cadmium stress in mung bean seedlings"

Oral presentation in "Internatinal conference on Emerging Trends in Scientific Research" held in Pearl International Hotel, Kuala Lumpur during 15th and 16th March 2014 entitled "Morpho-biochemical evaluation of mung bean under textile industrial wastewater stress and alleviation of stree by exogenous application of calcium"

Oral presentation in "2nd International Conference on Environmental Horizon, Greening The Blues" jointly organized by Department of Chemistry and International Center for Chemical Science (ICCCS) on 1st-3rd January 2014 , entitled "Cytotoxic evaluation of some commonly used food colours using onion (*Allium cepa*) root tips".

Attended "29 Postgraduate training course on "The use of Nuclear and other Techniques in Food and agricultural Research" at Nuclear institute For Food and Agriculture (NIFA), Peshawar during 16-27th September, 2013.

Attended "Hands on training workshop on biological data basis and research tools in bioinformatics" at Baqai Institute of Information Technology, Baqai Medical University, held on June 2-3, 2012.

Attended "Hands on Modern techniques in research on Abiotic Stress tolerance in plants" from September 05-09, 2011 at Nuclear Institute for Agriculture and Biology (NIAB), Faisalabad.

Attended the Staff development course under the scheme of Natural Academy of Higher Education, held from December 12- January 7, 2006.

Attended a workshop on Real Time PCR held on August 15, 2005 in the Department of Genetics, University of Karachi.

Attended a work shop on Cephid Smart Cycler (A real time PCR) held on July 6, 2005 in the department of Genetics, University of Karachi.

Poster presented in the 'International Conference on Environmental Horizon' jointly organized by Department of Chemistry and International Center for Chemical Science (ICCCS) from 19-21

December 2005, entitled "Genotoxic effect of waste water from different industries of Karachi on *Allium cepa"*

Attended the international workshop on "Human Genome Diversity" from 9-14th October 2000 at Biomedical and Genetic Engineering Division (B &GED) Dr. A.Q Khan Research laboratories, Islamabad in Collaboration with International Center for Genetic Engineering and Biotechnology, Trieste, Italy.

Attended the 27th postgraduate training course on nuclear and other advance techniques in agricultural and biological research, held at Nuclear Institute of Agricultural and Biology (NIAB), Faisalabad from 8-19th November 1999.

Poster presented in the 6th International Symposium on protein structure function relationship from 5-7th February 1999, entitled " Wall bound Invertases in young, mature and senescent tissues of mung bean" , organized by HEJ research institute of Chemistry, University of Karachi.

Poster presented in the 6th International Symposium on protein structure function relationship from 5-7th February 1999, entitled " Synthesis of heat shock protein due to temperature stress in mung bean seedlings" organized by HEJ research institute of Chemistry, University of Karachi.

Participated in the workshop of scientific writing in the department of Genetics, from 16- 9th June 1997

Honors and activities:

Chair a session in "International conference on Emerging Trends in Scientific Research" held in Pearl International Hotel, Kuala Lumpur during 15th and 16th March 2014

HEC Approved Research Supervisor.

Member of MS **admission committee** in the department of Genetics from 2011 till 2013

Member of **Departmental admission committee** during 1991-1993, 2008 and 2010

Student Advisor in the Dept of Genetics since October 2009 till to date**.**

Participated in the **revision of courses** offered in the Department of Genetics.

Maintaining the **Minutes of Staff Meeting** of department of Genetics.

Nominated for the preparation of **Semester and Examination time tables.**

Receiving research grant from **Dean Faculty of Science** since 1997 till to date

Member of **Board of Studies** in Genetics from 1995 till 2004.

Member of **Board of Faculty of Science** from 1995 till 2003.

Incharge **Departmental tabulator** from 2000 to 2006, and from 2014

Member **organizing committee of workshop** on "Science in mass media" from July 7-9, 2005 held in the department of Genetics.

Member **organizing committee of workshop** on "Techniques in molecular Genetics" sponsored by UNDP/ TOKTEN from April 10-16, 1999, in the department of Genetics, University of Karachi.

Life time member of Pakistan Botanical Society.

Received a certificate by University of Karachi for participating in **Technofare** 1987.

Worked as a **Social Secretary of Biochemical society**, Govt. Islamia Science College, Karachi.

Received a medal for the **best student of biochemistry** from Biochemiocal society, Govt. Islamia Science College Karachi.

Received a merit certificate for obtaining **first division in B.Sc** from Govt. Islamia Science College, Karachi.

List of Publications:

5. Mansoor, S., F.N. Naqvi and T. Salimullah. 1997. Temporal and special expression of peroxidases in mung bean (*Vigna radiata*). Karachi University Journal of Science. 25(1): 131-139.
6. Mansoor, S and F.N. Naqvi. 2000. Changes in the wall bound invertase activity in young and mature tissues of mung bean (*Vigna radiata*). Pakistan Journal of Biological Sciences. 3:1550-1552.
7. Mansoor, S and F.N. Naqvi. 2000. Analysis of soluble and wall bound acid phosphatase during various phases of development in mung bean(*Vigna radiata*). Pakistan Journal of Biological Sciences.3:2206-2207.
8. Mansoor, S., F.N. Naqvi and T. Salimullah. 2002. Soluble forms of invertase in mung bean (*Vigna radiata*) during germination and developmental stages of various tissues. Pakistan Journal of Biological Sciences.5: 1063-1066.
5. Mansoor, S., F.N. Naqvi.2011.Heat stress and acquisition of thermotolerance in mung bean (*Vigna radiata* (L.) Wilczek)**.** International Journal of Biology and Biotechnology. (2): 281-286

6. Mansoor, S., F.N. Naqvi.2011.Effect of GA_3 pretreatments on thermotolerance in mung bean (*Vignaradiata* (L.) Wilczek). International Journal of Biology and Biotechnology. (2):287-293.
7. Afzal, M., S. Mansoor. 2012. Effect of mobile phone radiations on morphological and biochemical parameters of mung bean (*Vigna radiata*) and wheat (*Triticum aestivum*) seedlings. Asian Journal of Agricultural Science. 4(2): 149-152
8. Shakeel, S., S. Mansoor. 2012. Pretreatment effect of salicylic acid on protein and hydrolytic enzymes in salt stressed mung bean seedlings. Asian Journal of Agricultural Science. 4(2): 122-125
9. Shakeel,S., S. Mansoor. 2012. Salicylic acid prevents the damaging action of salt in mung bean [(*Vigna radiata* L.) Wilczek] seedlings. Pakistan Journal of Botany.44(2):559-562
10. Mansoor, S., F.N. Naqvi. 2012. Effect of gibberrelic acid on a- amylase activity in heat stressed mung bean (*Vigna radiate L*) seedlings. African Journal of Biotechnology. 11(52):11414-11419.
11. Mansoor, S., S. Khan. 2012. Induction of thermotolerance through salicylic acid in mung bean (*Vigna radiata*) seedlings. . Int.J. Biol.Biotech., 9(3): 267-271
12. Mansoor, S., A.I. Baig. 2012. Effect of textile industrial waste water on growth, proteins, lipid peroxidation and proline in mung bean seedlings. Int.J. Biol.Biotech., 9(4): 373-377
13. Mansoor, S., F.N. Naqvi. 2013. Isoamylase profile of mung bean seedlings treated with high temperature and gibberellic acid. African Journal of Biotechnology. 12(13):1495-1499.
14. Mansoor, S., F.N. Naqvi. 2013. Effect of heat stress on lipid peroxidation and antioxidant enzymes in mung bean (*Vignaradiata L*) seedlings. African Journal of Biotechnology.12(21):3196-3203.
15. Hassan, M., S. Mansoor. 2014. Oxidative stress and antioxidant defense mechanism in mung bean seedlings after Cadmium and Lead treatments. Turkish Journal of Agriculture and Forestry. 38: 55-61
16. Mansoor S., A. Seher. 2014. Genotoxic evaluation of industrial and kitchen wastewater using *Allium cepa* assay. Int.J. Biol.Biotech., 11(2-3): 255-260

17. Mansoor S., A.I Baig. 2014. Morpho-biochemical evaluation of mung bean under textile industrial wastewater stress and alleviation of stress by exogenous application of calcium. Proceeding Book of ICETSR, Hand book on Emerging Trends in Scientific Research. Maylasia. 285-296

ERUM SHOEB PH.D.

Objective

Association with a scientific research organization to acquire experience in the field of biological sciences.

Experience

Oct, 2015 – to date: Department of Genetics, University of Karachi
Associate Professor

- Taught courses and conducted labs of M.Sc. Courses: Behavioral Genetics and Research Techniques
- Taught courses to M.S. students: Topics in Genetics and Technologies in Genetics
- Research Supervision of more than 20 M.Sc. and M.S. Research students

Feb, 2008 – October, 2015: Department of Genetics, University of
Assistant Professor

- Taught courses and conducted labs of M.Sc. Courses: Molecular Biology of Nucleic Acid, Genetic Engineering, Principles of Evolution, Advances in Evolution, Paper Presentation, Behavioral Genetics, Quantitative Genetics, Classical Genetics and Research Techniques
- Taught courses to M.S. students: Topics in Genetics and Technologies in Genetics
- Research Supervision of M.Sc.and M.S. Research students

1995 – Feb, 2008: Department of Genetics, University of Karachi

Lecturer

- Worked as the Course Incharge of Biometry, Advanced Biometry, Research Techniques, Cytogenetics, Microbial Genetics, Evolution, Advances in Evolution, Human Genetics and Behavioral Genetics.
- Conducted the labs of Plant breeding, Advanced Plant Breeding, Molecular Genetics, Microbial Genetics, Research Techniques, Evolution, Classical Genetics, Quantitative Genetics, Cytogenetics, Poultry Breeding, Human Genetics, Experimental design, Biometry and Advanced Biometry.
- Research Supervision to M.Sc. Students.
- Volunteered as Incharge Seminar Library of the Department of Genetics for several years (1996-2001).

Research Experience

- Worked as PI on HEC funded Research Project under NRPU, titled as "Screening and Characterization of marine bacteria for the production of biosurfactants at lab scale and study of their genetic determinants for future industrial applications", 2012-2014.
- Research Project as PI on "Investigation of cheaper methodology for the isolation of biosurfactant-producing bacteria and molecular screening of promising isolates", funded by Dean Office, University of Karachi, 2012-2013.
- Research Project as PI on "Characterization of Biosurfactant producing Bacteria", funded by Dean Office, University of Karachi, 2011-2012.

- R esearch Project as PI on “Heavy Metal Tolerance in Bacteria”, funded by Dean Office, University of Karachi, 2009-2010.
- R esearch Project as PI, the topic of studies was “Characterization of Lactobacilli strains having probiotic potential”, funded by Dean Office, University of Karachi, 2008-2009.
- Worked as Assistant Link Coordinator in a project on “Research and Training on DNA Sequencing” 2004-2007, HEC-BC-HEL

Achievements

- Secured two Gold Medals in M.Sc. for getting first class first position and for getting highest marks in the course of Plant Breeding
- Selected for S & T Indigenous Ph.D. Scholarship by Ministry of Science and Technology, Government of Pakistan in 2000

Memberships

- Member Editorial Board Austin Journal of Genetics and Genomic Research. 2014 - To date
- Member Editorial Board African Journal Pure and Applied Chemistry (AJPAC). 2011 - To date
- Member Organization of Women in Sciences & Development (OWSD). 2009- To date
- Member, Board of Faculty, Faculty of Science, University of Karachi, Karachi. 2007 – 2008
- Member, National Curriculum Revision Committee, Higher Education Commission, Pakistan. 2005 – To date

Papers Presented

- Attended and presented a paper in an International Conference of Women in Science, Engineering and Technology-2012. Title was "Demonstration of horizontal gene transfer through plasmid transport" in Dhaka University, Dhaka, Bangladesh, 2-4 February, 2012.
- Attended and presented a paper in TWOWS Fourth General Assembly and International Conference on Women Scientists in a Changing World. Title was "Overproduction of Flagellin Protein in presence of Nickel Identified in Bacillus Cereus" in Beijing International Convention Center (BICC), Beijing, China, 28-30 June, 2010.
- Attended and presented a paper in EnviroArabia 2010, 6thSpeciality Conference on Environmental Progress in the Petroleum and Petrochemical Industries. Title was "Overproduction of Flagellin Protein in presence of Nickel Identified in Bacillus Cereus" in Gulf International Convention Centre Gulf Hotel, Kingdom of Bahrain, 18-21 April, 2010.
- Attended and presented a paper in 35th All Pakistan Science Conference on "Genomics for Health and Prosperity". Title was "Identification of tolerance against heavy metals among indigenous isolates among indigenous isolates" in University of Karachi, 20-23 December, 2008.
- Attended and presented a paper in International Symposium on Microbial Technologies for sustainable Agriculture, on "Overproduction of FlagellinProtein in presence of Nickel: Identified in Bacillus Cereus" in NIBGE, Faisalabad, Pakistan. 12-16 March, 2007.
- Attended and presented a paper in International Symposium on Biotechnology for Economic Prosperity on "Identification of a unique mechanism of tolerance against

nickel in Bacillus cereus", Organised by National Commission on Biotechnology, Ministry of Science and Technology, Pakistan at Nathiagali, 2006.

- Attended and presented a paper in 4th International Symposium of Genetic Engineering and Biotechnology on "Genomics, Bioinformatics, Biotechnology & Economic Development" on "Correlation of heavy metal tolerance mechanisms with Antibiotic tolerance in Bacteria"organized by Centre for Molecular Genetics in Karachi, December, 2005.

Research Publications

- Shoeb E., Ahmed N., Akhter J., Badar U., Siddiqui K., Ansari F., Waqar M., Imtiaz S., Akhtar N., Shaikh Q.A., Baig R., Butt S., Khan S., Khan S., Hussain S., Ahmed B. and Ansari M.A., 2015. Screening and Characterization of biosurfactant producing bacteria isolated from Arabian Sea coast of Karachi. Turkish Journal of Biology, 39(2): 210-216. DOI: 10.3906/biy-1405-63 [Impact Factor: 1.216]
- Ansari F.A., Hussain S., Ahmed B., Akhter J. And Shoeb E., 2014. Use of Potato peel as cheap carbon source for the bacterial production of biosurfactants. Int. J. Biol. Res., 2(1): 27-31.
- Ali I., AkhtarJ.,Shoeb E. and Ahmed N., 2014. Gene Cloning of Leishmania Major Thiol-Specific Antioxidant Antigen (TSA) Gene from Pakistan: A Step towards Vaccine Development. Academic Research International Vol. 5(3): 37-49. ISSN: 2223-9944, eISSN: 2223-9553. [Impact Factor: 0.25]
- Waqar M., Badar U. and Shoeb E., 2014. Genetic and Environmental dynamics to drug addiction. International Journal of Prevention and Treatment of Substance Use

Disorders, 1(2): 53-62.

- Ansari M.A., Imtiaz S., Shoeb E., Badar U. and Khan O.Y., 2014. Determination of Antibiotic and Metal Resistance Patterns in Bacteria Isolated from Potable Water from Karachi, Pakistan. International Journal of Advanced Research, Volume 2, Issue 1, 333-341. ISSN 2320-5407 [Impact Factor: 1.659]
- Badar U., Ahmed N., Shoeb E. and Gadd G.M., 2014. Identification of the pco operon in Enterobacter species isolated from contaminated soil. International Journal of Advanced Research (2014), Volume 2, Issue 3 , 227-233. ISSN 2320-5407 [Impact Factor: 1.659]
- Shoeb E. and Waqar M., 2013. Allelic variation in the genes for Drug abuse and addiction: an overview. Int. J. Biol. Res., 1(2):137-142.
- Shoeb E., Badar U., Akhlaq F., Ansari F.A., Imtiaz S. and Akhter J. 2013. Determination of stress resistance in biosurfactant-producing bacterial isolates. Int. J. Biol. Biotech., 10 (3): 419-426.
- Shoeb, E., Akhlaq, F., Badar, U., Akhter, J. and Imtiaz, S. 2013. Classification and Industrial Applications of Biosurfactants. Academic Research International, 4(3), 243-252 [Impact Factor: 0.25]
- Badar, U., Ahmed, N. and Shoeb, E. 2013. Bioaccumulation and Biosorption of copper by *Pseudomonas* Species. International Journal of Biology Research, 1 (1): 15-20.
- Badar, U., Shoeb, E., Qureshi, F.M., Akhtar, J. and Ahmed, N., 2013. Removal of Copper via Bioreactor by soil isolate *Pseudomonas stutzeri*. Academic Research International, 4(3), 253-259 [Impact Factor: 0.25]

- Akhter, J., Ahmed, N., Badar, U., Waqar, M. and Shoeb, E., 2013. Heavy Metal and Antimicrobial Resistant Bacteria Isolated from Karachi Coastal Area as an Indicator of Pollution. International Journal of Biology Research, 1 (1): 20-25.
- Shoeb, E., Badar, U., Akhter, J., Shams, H., Sultana, M. and Ansari, M.A., 2012. Horizontal Gene Transfer of Stress Resistance Genes through Plasmid Transport. World J MicrobiolBiotechnol. 28(3):1021–1025: DOI 10.1007/s11274-011-0900-6DOI: 10.1007/s11274-011-0900-6. [Impact Factor: 1.532]
- Badar, U., Shoeb, E., Daredia, K., Shawar, D., Akhtar, J. and Ansari, M. A. 2012. Screening and Characterization of Luminescent Bacterial Strain. Journal of Basic & Applied Sciences, 8, 602-606 ISSN: 1814-8085 / E-ISSN: 1927-5129/12 © 2012 Lifescience Global.
- Shoeb, E. and Ahmed, N. 2012. Genetic Basis of Heavy Metal Tolerance in Bacteria: A Review. Int. J. Biol. Biotech. 9 (1-2): 115-121.
- Shoeb, E., Badar, U., Akhter, J., Ansari, F.A., Waqar, M. and Ansari, M.A. 2012. Screening of surfactant producing bacterial strains isolated from soil samples of an automobile workshop. Karachi University Journal of Science, 40 (1): 31-36.
- Waqar, M. and Shoeb, E. 2012. Genetic Basis of Learning Disabilities: Mini Overview. Int. J. Biol. Biotech. 9 (3): 331-333.
- Shoeb, E., Ahmed, N., Warner, P.J., Morgan, S., Azim, M. 2010. Identification of a Unique Mechanism of Tolerance Against Nickel in *Bacillus cereus* isolated from Heavy Metal Contaminated Sites. The Internet Journal of Microbiology,

Volume 9 Number 1. DOI: 10.5580/1caf

- Ajmal, S., Akhtar, J., Shoeb, E. and Ahmed, N. 2010. Resistance to the toxicity of conjugative bile salts and Assessment of plasmid borne antibiotic resistance among Indigenous lactobacillus isolates of Pakistan. The Internet Journal of Nutrition and Wellness. Volume 10 Number 1.
- Affan, Q., Shoeb, E., Badar, U. and Akhtar J. 2009. Isolation And Characterization of Bacterial Isolates Having Heavy Metal Tolerance. Journal of Basic and Applied Sciences, 5(2): 55-60.
- Shoeb, E. and Ahmed, N. 2009. Overproduction of Flagellin Protein in presence of Nickel: Identified in Bacillus Cereus. Fauzia Y. Hafeezet. al. (ed.). International Symposium on Microbial Technologies for sustainable Agriculture: 125-137.
- Farooq, S., Shoeb, E., Badar, U. and Akhtar, J. 2008. Isolation and Characterization of Copper Tolerant Bacterial Isolates. Pakistan journal of biochemistry and molecular Biology, 41(4): 176-180.
- Shoeb, E. and Ahmed, N. 2006. Correlation of Multiple Stress Tolerance in Indigenous Bacteria. Int. J. Biol. Biotech., 3(1): 113-120.

Education

2002-2006	Department of Genetics, University of Karachi	Ph.D. Genetics
1991-1993	Department of Genetics University of Karachi	M.Sc. Genetics First class first position

Nadia Khan
Lab 209, Department of Genetics,
University of Karachi 75270, Pakistan
Cell: 0321-2500619
nadiakhan@uok.edu.pk

Education:

2013-2015 Post doctorate in Wheat Molecular Genetics**,** Department of Crop MolecularBiology, Institute of Crop Science, Chinese Academy of Agriculture Sciences Chinese Academy of Agricultural Sciences (CAAS) Beijing, China.
Thesis title: Genetic dissection of stem water soluble carbohydrates and agronomic traits in wheat under different water regimes
Supervision: Prof. Dr. Rui-Lian Jing

2003-2010 Ph.D. in Wheat Agronomy and BiochemicalCharacterization, Department of Genetics, University of Karachi, Pakistan
Thesis title: Morpho-biochemical characterization of wheat genotypes under abiotic stress
Supervision: Prof. Dr. Farzana N. Naqvi

2000-2001 Master's in Genetics, Department of Genetics, University of Karachi, Pakistan

Work Experience:

2011-to date **Assistant Professor**, Department of Genetics, University of Karachi, Pakistan
Taught courses and conducted labs of M.Sc.
Courses: Advanced Plant Breeding, Cellular Physiology and Biochemistry, Clinical Genetics, Developmental Genetics, Elements of Biometry, Experimental design, Principles of Plant Breeding, Seminar Presentation
Research supervision of M.Sc. and M.Phil./Ph.D. students

2009-2011 **Teaching Assistant**, Department of Genetics, University of Karachi, Pakistan

List of Publications:

- Li Qian, Wang Jing-yi, **Khan Nadia**, Chang Xiao-ping, Liu Hui-min and Jing Ruilian. Polymorphism and association analysis of a drought-resistant gene *TaLTP-s* in wheat. 2015. Journal of Integrative Agriculture (accepted) [IF: 0.833].
- **Nadia Khan** and Farzana N.N. 2014. Antioxidant enzymes and protein profiles in wheat seedlings under abiotic stress. AJRC. 2(12):155-167.
- Hadeesa Naz and **Nadia Khan**. 2014. Role of Abscisic Acid and Water Stress on the Activities of Antioxidant Enzymes in Wheat. Current Res. J. Biol. Sci. 6(4): 168-172.
- **Nadia Khan** and Farzana N. Naqvi. 2013. Agro-biochemical traits of wheat genotypesunder irrigated and non-irrigated conditions. Cereal Research Communication. 2:1-12 [IF: 0.607].
- **Nadia Khan**.2013. Changes in the Antioxidant Enzymes activity of wheat seedlings under Abscisic acid (ABA) and water stress. Int. J. Biol. Biotech. 10(1):79-82
- **Khan, N** and F. N. Naqvi. 2012. Genetic characterization of wheat under water stress. LAP Lambert Publication ISBN 978-3-8473-3776-8.
- **N. Khan** and F.N. Naqvi.2012. Correlation and Path Coefficient Analysis in Wheat Genotypes under Irrigated and Non-Irrigated Conditions. Asian Journal of Agricultural Sciences. 4(5):346-351.
- **Khan, N** and F. N. Naqvi. 2012. Alterations in reducing sugar in *Triticum aestivum* under irrigated and non-irrigated condition. African Journal of Biotechnology. 11(21): 4849-4852.
- **Khan, N** and F. N. Naqvi. 2011. Effect of water stress in bread wheat hexaploids. Current Research Journal of Biological Sciences. 3: 487-498.
- **Khan, N** and F. N. Naqvi. 2011. Heritability of Morphological Traits in Bread Wheat Advanced Lines Under Irrigated and Non-Irrigated Conditions. Asian Journal of Agricultural Sciences. 3: 215-222.

- **Khan, N** and F. N. Naqvi. 2010. Effect of water stress on lipidperoxidation and antioxidant enzymes in local bread wheat hexaploids. Journal of Food, Agricultureand Environment. 8: 521-526.
- Mohsin, T., **N. Khan** and F.N. Naqvi. 2009. Heritability, phenotypic correlation and path coefficient studies for some agronomic characters in synthetic elite lines of wheat. Journal of Food, Agriculture and Environment. 7: 278-282.
- Mohsin, T., **N. Khan** and F.N. Naqvi. 2006. Effect of exogenous plant growth regulators on embryonic development of *vigna radiate* (mung bean): differential expression of amylase in immature & mature embryos cultured *in vitro*. Pakistan Journal of Biological Sciences.9: 160-163.

Research Presentations:

- Simeen, M., Sarwat, A and **Nadia, K**. 2016. Induction of thermo tolerance through heat acclimation and phytohormones in mung bean seedlings poster presented in Plant and Animal Genome XXIV on Jan 9-13. San Diego, CA, USA.
- **N. Khan.** 2013. Antioxidant enzymes and protein profiles in wheat seedlings by dehydration stress, hydrogen peroxide and abscisic acid poster presented in International Conference on Inter Drought-IV held on Sept 2-6, 2013 Abst. P 33, Perth, Australia.
- **N. Khan.** 2012. Changes in the Antioxidant Enzymes Activity of Wheat Seedlings Under ABA and Water Stress Poster accepted in the Plant Abiotic Stress Tolerance II held on February 22-25, 2012 Vienna, Austria.

- **Khan, N** and F.N. Naqvi. 2009. Alterationsin the activities of water stress antioxidant enzymes in *Triticum aestivum* under conditions poster presented in The 3rd International Conference on Integrated Approaches to Sustain and Improve Plant Production under Drought Stress" held on 11th Oct – 16th Oct, 2009 Abst. P 4.1 Shanghai, China. This visit was sponsored by FAO.

- **Khan, N** and F.N. Naqvi. 2009. Alterationsin reducing sugars in *Triticum aestivum* under irrigated and non-irrigated condition poster presented in "FEBS Workshop: Adaptation Potential in Plants" held on 19th-21st March, 2009 Abst. P.26 at Gregor Mendel Institute, Vienna, Austria.

- **Khan, N** and F.N. Naqvi. 2005. Morpho-biochemical characterization of wheat *(Triticum aestivum*L.) genotypes under drought stress poster presented in "The 2nd International Conference on Integrated Approaches to Sustain and Improve Plant Production under Drought Stress" held on 24th Sep – 28th Sep, 2005 Abst. P 4.19 at "*La Sapienza*", University of Rome, Italy. This visit was sponsored by USAID.

Travel Grants:

2013 United Nations Food and Agriculture Organization (FAO), Rome and Crawford Fund, Australia attended International Conference on Inter Drought-IV and Master Class on "Adaptation to Drought" in Perth, Australia ($840)

2009 United Nations Food and Agriculture Organization (FAO) attended The 3rd International Conference on Integrated Approaches to Sustain and Improve Plant Production under Drought Stress in Shanghai, China (1800 US$)

2005 USAID, attended Inter Drought-II and WUEMED workshop in Rome, Italy (€1.000,00)

Competitive Research Grants:

2012-2013 Deans' Science Grant "Effect of phytohormones and water stress on the activities of antioxidant enzymes in wheat" (955.34 US$)

2011-2012 Deans' Science Grant "Genetic diversity in agronomic traits and cereal storage protein" (1909.76 US$)

Courses and Workshops:

2014 Wheat Genomics and Molecular Breeding in China V, Hefei, Anhui, China held on Aug 17-19.

The 15th Plant Genomics Conference in China, Hefei, Anhui, China held on Aug 19-22.

2013 Master Class on Adaptation to Drought held on August 27-31.

2012 Hands on training workshop on Biological Database and Research Tools in Bioinformatics at Baqai Institute of Information Technology, Baqai Medical University held on June 02-03.

2011 Hands on Training on Modern Techniques in Research on Abiotic Stress Tolerance in Plants organized by Nuclear Institute for Agriculture and Biology (NIAB) and Pakistan Atomic Energy Commission, Faisalabad held on Sept, 05-09.

2010 Workshop on Advanced Microscopy jointly organized by the M.A.H. Qadri Biological Research Centre, Centre for Plant Conservation, Department of Microbiology and Dr. Panjwani Centerfor Molecular Medicine &Drug Research (ICCBS), University of Karachi held on Feb 4-6.

Course on Professional Competency Enhancement Program for Teachers in collaboration with HEC and NAHE held at University of Karachi held on April 12-May 08.

2006 Course on Statistical Package (SPSS) for experimental data analysis, 2006 organized by Human Resource Center and Department of Genetics, University of Karachi.

2005 Workshop in WUEMED Improving Water Use Efficiency in MEDiterranean Agriculture: what limits the adoption of new technologies? held on 29th Sep – 30th Sep at CNR- Consiglio Nazionale delle Ricerche, Rome, Italy.

Workshop on REAL TIME PCR (15th August) held at the Department of Genetics, University of Karachi with the collaboration of Bioflux Corporation, Tokyo, Japan.

Workshop on Cephid Smart Cycler(A real time PCR machine) held on July 6th at the Department of Genetics, University of Karachi.

2003 Workshop on Application of cell-culture technology immunodiagnostics(Dec 15th– 20th)organized by Department of Microbiology, M.A.H. Qadri Biological Research Centre, University of Karachi and Pakistan Society for Microbiology**,** Karachi.

Workshop on PCR application in research and diagnostics (Oct 16th-18th)jointly organized by Department of Biochemistry, University of Karachi & PSBMB-Rahila Research and Reference Laboratories, Karachi, Pakistan.

HEJRIC-TOKTEN workshop on Animal cell culture(Dec 23rd 02 to Jan 03) at HEJ Research Institute of Chemistry, jointly sponsored by United Nations Development Program/National Talent pool of Pakistan & Methodist Research Institute, Clarian Health Partners, Inc. Indianapolis, U.S.A.

Member:

- Department QEC committee (March 2016 to date)
- Department Research Committee for M.Phil. and Ph.D. Programme (2011 to date)
- Organizing committee in the workshop on Science in mass media (June 7th - 9th, 2005) held at the Department of Genetics, University of Karachi.

Present Activities/Projects:

Completed Projects

- Effect of phytohormones and water stress on the activities of antioxidant enzymes in wheat
- Genetic diversity in agronomic traits and cereal storage protein

Ongoing activities

- Response of wheat genotypes to salinity stress
- Effect of water stress on wheat genotypes
- The genetics of hypercholesterolemia in Pakistani population
- Mutation in β-thalassemia in Pakistani Population
- Genetic causes of depression in Pakistani Population
- Mutation in breast cancer patients in Pakistani Population

Paper in preparation:

- Genetic dissection of stem water-soluble carbohydrates and association mapping of agronomic traits in wheat.

Computer Skills:

- Word-highly proficient
- Power Point-highly proficient
- Excel- highly proficient
- Internet- highly proficient
- SPSS- highly proficient
- MEGA- highly proficient
- Power Marker- highly proficient
- STRUCTURE- highly proficient
- TASSEL- highly proficient

SARWAT AFSHAN

Department of Genetics
University of Karachi
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Education

- Enrolled in Ph.D. under the supervision of Dr. Shakeel R. Farooqi, Genetics, University of Karachi, Pakistan, 2012
- M.Phil., Genetics, University of Karachi, Pakistan, 2010
- M.Sc.., Genetics, University of Karachi, Pakistan, 2000 (First division)
- B.Sc., Botany, Zoology, Chemistry, University of Karachi, 1997 (First division)
- Intermediate, Pre-Medical, P.E.C.H.SGovt.College for Women, Karachi, 1995 (First division)
- S.S.C, Science, Ali Ali Boys/Girls Secondary School, Karachi, 1993 (First division)

M.Phil. Thesis Thesis title: Biochemical Characterization of Endosperm Proteins of Hexaploid Wheat Cultivars; Thesis Supervisor: Prof. Dr. Farzana Nasir Naqvi

Research Interest

- Biochemical characterization of proteins or protein profiling
- Study of the agronomic and morphological parameters
- Plant Tissue Culturing

Teaching Interest

- Clinical Genetics
- Cyto-Genetics
- Plant Breeding
- Immunogenetics

Research Experience

- Research Assistant to Prof. Dr. Atiya Abbasi , H.E.J Institute of Chemistry, University of Karachi, Pakistan, December 2008 – January 2009
- Research Officer at Plant Tissue Culture Lab, Pakistan Council of Scientific & Industrial Research Laboratories Complex (PCSIR), Karachi, Pakistan, March – November 2008

Teaching Experience

- Lecturer, Department of Genetics, University of Karachi, February 2011till To date

- Cooperative Teacher , Department of Genetics, University of Karachi, Pakistan February 2009 – January 2011

Paper Publications

Afshan, S. and F.N. Naqvi. 2011. Allelic Variation in High Molecular Weight Glutenin Subunits in Pakistani Bread Wheat Genotypes. Cereal Research Communications. 39: 109-119

Afshan, S. and F.N. Naqvi. 2011. Genetic diversity of hexaploid wheat based on polymorphism in quality characteristics. Asian Journal of Agricultural Sciences. 3(4): 435-441.

Fatima, H. and S. Afshan. 2013. Evaluating the Response of Wheat Genotypes to Salinity Stress. Asian Journal of Agricultural Sciences. 5(6): 126-129.

Research Projects

DFS Research Grant awarded entitled "Polymorphism in hexaploid wheat accessions based on agronomic characteristics and grain quality traits", year 2011.

Research Supervised

Literature Review and Research Project entitled, "Response of Wheat Genotypes to Salinity Stress", during the year 2012.

Literature Review and Research Project entitled, "Use of Fertilizers and the Quality of Wheat Proteins", during the year 2012.

Literature Review and Research Project entitled, "Response of wheat genotypes to temperature stress", during the year 2014.

Literature Review and Research Project entitled, "Correlation between nitrogen phosphorus and potassium (NPK) fertilizer and the chlorophyll content", during the year 2014.

Literature Review and Research Project entitled, "Analysis of allelic variation of high molecular weight glutenins in hexaploid wheat accessions of Pakistan", during the year 2015.

Literature Review and Research Project entitled, "Effect of heat shock on different wheat genotypes" during the year 2015.

Literature Review and Research Project entitled, "Effect of salinity on the morpho-physiological parameters, protein content and peroxidase activity of wild rice", during the year 2015.

Computer Skills

- Good practical knowledge of MS Excel, MS Word, MS Power Point
- Worked on MS Publisher
- Certificate course on SPSS (Statistical Package for Social Sciences) with practical experience

Workshops Organized

- Member Organizing Committee, Staff Development Course 4, held on 7th – 23rd May, 2007. Organizedby Human Resource Centre, University of Karachi and National Academy of Higher Education, HEC.
- Member Organizing Committee, Staff Development Course 3, held on 20th Dec, 2006 – 23rd Jan, 2007. Organizedby Human Resource Centre, University of Karachi and National Academy of Higher Education, HEC.
- Member Organizing Committee, Workshop 'Science in Mass Media' held on 7th – 9th June, 2005. Organized by Department of Genetics, University of Karachi.

Workshops/ Conferences Attended

- Hands on Training on "Modern Techniques in Research on Abiotic Stress Tolerance in Plants" held on September 5-9, 2011. Organized by the Nuclear Institute for Agriculture and Biology (NIAB), Faisalabad, Pakistan.
- Workshop on Advanced Microscopy held on February 4-6, 2010. Jointly organized by the M.A.H. Qadri Biological Research Centre, Centre for Plant Conservation, Department of Microbiology and Dr. Panjwani Center for Molecular Medicine and Drug Research (ICCBS), University of Karachi, Pakistan.
- 2nd International Symposium-Cum-Training Course on Molecular Medicine and Drug Research held on 12 - 15 January, 2009. Organized by Dr. Panjwani

Center for Molecular Medicine and Drug Research, International Center for Chemical and Biological Sciences, University of Karachi, Pakistan.

- Staff Development Course held on 7th – 30th May, 2007. Organized by National Academy of Higher Education, HEC (Higher Education Commission), Pakistan.
- Workshop on Research Protocol Development held on 8th – 10th March, 2007. Organized by Dr. Panjwani Centre for Molecular Medicine and Drug Research, International Center for Chemical and Biological Sciences, University of Karachi, Pakistan.
- Workshop on Intellectual Property Rights and Patenting held on 25th of November 2006 at Latif Ebrahim Jamal National Science Information Center, University of Karachi. Organized by Human Resource Centre and H.E.J Research Institute of Chemistry, Pakistan.

AYESHA RIAZ

Room 205, Department of Genetics, University of Karachi, Karachi-75270, Pakistan

Phone: 92 21 34825982, Cell: 92 340 2109756 Email: ayriaz@uok.edu.pk

EDUCATION

2013 – 2014 **M. S. (Genetics)** CGPA: 3.67

Iowa State University of Science and Technology

Supervised by Dr. Gustavo MacIntosh

Thesis Title: Characterization of *RNase X25* and *Lamp1* in *Drosophila melanogaster*

2002 – 2003 **M. Sc. (Genetics)** First Class First Position

University of Karachi

Supervised by Dr. ShakeelFarooqi

Research Project: Post-therapy monitoring of Breast cancer patients using molecular diagnosis

1999 – 2000 **B. Sc. (Botany, Zoology, Chemistry)** First Division

University of Karachi

TEACHING EXPERIENCE

2006 – Present **Lecturer**

Department of Genetics, University of Karachi

- Prepared and delivered lectures for a number of courses including basic biostatistics, cell physiology and research techniques
- Demonstrated and supervised experiments for students
- Set up and monitored examinations

2005 – 2006 **Cooperative Teacher**

Department of Genetics, University of Karachi

- Demonstrated and supervised experiments for students
- Examination monitoring
- Helped organize student activities

RESEARCH EXPERIENCE

2013 – 2014 **Graduate Student**

Interdepartmental Genetics Graduate Program,

Iowa State University, Ames, Iowa, USA

- Performed research on thesis project in the lab of Dr. Gustavo MacIntosh
- Research involved characterization of the only RNase T2 enzyme in the fruit fly and the possible role of a lysosomal membrane associated protein in rRNA uptake into lysosomes, using biochemistry, molecular biology and microscopy approaches
- Performed genotyping of Arabidopsis mutants for another ongoing project in lab
- Employed techniques such as quantitative PCR, ribonuclease activity gels and fluorescence microscopy, among others

2011 – 2012 **Lecturer**

Department of Genetics, University of Karachi, Pakistan

- Was awarded Dean, Faculty of Science Research Grant, 2011-12 for the project, "Study on the Effect of Mutations on Siderophore Production by Rhizosphere *Pseudomonas spp."*
- Performed UV mutagenesis on soil isolates belonging to *Pseudomonas spp.* to screen for mutants exhibiting enhanced plant growth promoting potential against the root knot nematode (*Meloidogyne spp.*)
- Employed sterile microbiological techniques for the maintenance and growth of bacterial cultures

2006 – 2007 **Lecturer**

Department of Genetics, University of Karachi, Pakistan

- Was awarded Dean, Faculty of Science Research Grant, 2006-07 for the project, "Screening for Genetic Resources from the Rhizosphere Microflora of Mung Bean (*Vigna radiata)"*
- Performed screening and characterization of bacterial isolates from Mung Bean rhizosphere for potential plant growth promoting bacteria
- Employed sterile microbiological techniques for the maintenance and growth of bacterial cultures

2003 **M. Sc. Student**

Department of Genetics, University of Karachi, Pakistan

- Worked on part of a research project in the lab of Dr. Shakeel Farooqi
- Performed DNA/RNA extractions, gel electrophoresis and reverse transcriptase PCR on peripheral blood samples from breast cancer patients to monitor expression of carcino embryonic antigen (CEA)

PUBLICATIONS

- Ambrosio L, Morriss S, **Riaz A**, Bailey R, Ding J, MacIntosh GC (2014). "Phylogenetic analyses and characterization of RNase X25 from *Drosophila melanogaster* suggest a conserved housekeeping role and additional functions for RNase T2 enzymes in protostomes". PLoS ONE 9(8): e105444. doi:10.1371/journal.pone.0105444 (Impact factor: 3.234)
- In preparation:

Riaz A, Ambrosio L, Bassham D, MacIntosh GC. Effects of LAMP1 mutations on lysosome organization in *Drosophila melanogaster*. To be submitted.

SCHOLARSHIPS AND AWARDS

● Selected for Fulbright Foreign Student Program 2012 for M. S. in Genetics from the Iowa State University, USA

● Zaidi Abid Gold Medal for highest marks in M. Sc. (Genetics), 2003

● Karachi Cotton Association Gold Medal for obtaining highest marks in the subject of Plant Breeding in M. Sc. (Genetics), 2003

POSTER PRESENTATIONS

- April, 2105. Generation of *RNase X25* mutations in *Drosophila*. 10th Annual Stupka Undergraduate Research Symposium. Iowa State University, Ames, USA.
- April, 2014. Phylogenetic analyses and characterization of RNase X25 from *Drosophila melanogaster* suggest a conserved housekeeping role and additional functions for RNase T2 enzymes in protostomes. George Washington Carver Life and Legacy Symposium. Iowa State University, Ames, USA
- April, 2013. RNAi to disrupt RNase X25 expression in *Drosophila*. 8th Annual Stupka Undergraduate Research Symposium. Iowa State University, Ames, USA

UNIVERSITY SERVICE

Department of Genetics, University of Karachi

Organizing Committee Member. Science in Mass Media: A Three Day National Workshop (2005)

Assisted in facilitating Staff Development Courses for university teachers (2010, 2007)

Coordinated Students' Week activities multiple times

PROFESSIONAL MEMBERSHIPS

American Society for Microbiology

REFERENCES

Available upon request

Shumaiza Anis

Cell No: 0334-5599544

E-mail: shumaiza.anis@uok.edu.pk

JOB EXPERIENCE

- Lecturer – Department of Genetics, University of Karachi 2011- 2016
- Cooperative Lecturer – Department of Genetics, University of Karachi 2009-2011

EDUCATION

Department of Genetics, University of Karachi

- **Ph.D.** 2016
  Dissertation: "23S rRNA gene mutations conferring macrolide resistance in *Helicobacter pylori"*

Department of Genetics, University of Karachi

- **M. Sc. (Genetics)** 2002

Department of Physiology, University of Karachi

- **B. Sc.** 2000
  Major: Physiology
  Minor: Microbiology, Chemistry

COURSES TAUGHT

- Molecular Biology of Nucleic Acids (2+1 Credit Hours)
- Immunogenetics (3+0 Credit Hours)
- Developmental Genetics (2+0 Credit Hours)
- Microbial Genetics (2+1 Credit Hours)
- Molecular Genetics (2+1 Credit Hours)
- Cellular Physiology and Biochemistry (2+1 Credit Hours)
- Paper Presentation (1+0 Credit Hours)

RESEARCH GRANT

- Dean Faculty of Science, University of Karachi, research grant awarded for the project entitled "*Helicobacter pylori vacA* and *cagA* genotypes in different anatomical sites of stomach of dyspeptic patients".

- Dean Faculty of Science, University of Karachi, research grant awarded for the project entitled "Detection of *Helicobacter pylori* in gastric biopsies and gastric juice samples through PCR".

TRAINING

One and half month training of Digital Karyotyping, Synchronized and non-Synchronized T lymphocyte culturing from Bone marrow and blood, G-banding and metaphase slide preparation at Cytogenetic laboratory of National Health Guard Affairs, King Abdul-Aziz Medical City, Saudi Arab.

PUBLICATION

- Anis, S., S. R. Farooqi and S. K. Niaz. 2016. Study on mutations affecting domain V of 23S rRNA gene of *H. pylori* (manuscript sent in Helicobacter Jounal)

- Anis, S., S. R. Farooqi and S. K. Niaz. 2016. Effectiveness of PCR primers for the detection of *Helicobacter pylori* DNA in dyspeptic patients of Pakistan (manuscript sent in J of Infectious Diseases for developing Countries)

- Anis, S., and S. R. Farooqi. 2016. Estimating nucleotide diversity using restriction sites polymorphism in 23S rRNA gene of *Helicobacter pylori* (manuscript in FEMS).

- Anis, S., and S. R. Farooqi and S. K. Niaz. 2016. Study on Pathogenicity markers i.e. vacA, cagA, iceA genotype of *H. pylori* isolated from dyspeptic patients of Pakistan (manuscript in Preparation).

- Anis, S., and S. R. Farooqi and S. K. Niaz. 2016. Clinical, demographic and socio-economic profile of *Helicobacter pylori* positive dyspeptic patients (manuscript in preparation).

CONFERENCE PAPERS

- Polymerase Chain Reaction-Restriction Fragment Length Polymorphism for the Detection of 23S rRNA gene Mutation in Helicobacter pylori using Gastric juice and Biopsies. 2012. J. Gastroenterology and Hepatology. **27:** 7.
- Detection of A2142G and A2143G mutations in 23S rRNA gene of Helicobacter pylori in biopsies from multiple gastric sites. 2011. Helicobacter. **16:** 119.

- Resistant and Susceptible Genotypes of Helicobacter pylori in Patients with and without history of Clarithromycin and Erythromycin Exposure. Presented in 7th conference on new frontiers in Microbiology and infection: Helicobacter pylori from Basic Sciences to Clinical Research conference, held in Villars-sur-Ollon, Switzerland, Oct 2-6, 2011.
- Simultaneous evaluation of in-house CLOtest and biopsy site for diagnosis of *Helicobacter pylori* infection Using PCR as reference method. 2010. Pakistan Journal of Gastroenterology. **24:** 70.
- Gastric juice polymerase chain reaction for the diagnosis of *Helicobacter pylori* infection. 2010. Pakistan Journal of Gastroenterology. **24:** 75.
- Importance of Corpus and Fundus Biopsies for the diagnosis of *H. pylori* infection in dyspeptic patients of Pakistan. Presented in Gastric Cancer Congress, held in Seoul, Korea, 2009.

SKILLS AND INTREST

- Conversant with Statistical Software i.e. Statistical Package for Social Scientist(SPSS)
- Conversant with Phylogenetic Software i.e. PHYLIP
- Conversant with Microsoft Word Document, Excel and Power Point
- Conversant with Bioinformatics Soft ware
- Reading books and surfing internet

SEMINAR / WORKSHOP ATTENDED

- Intellectual Property Protection "Guidelines for Researchers and Industry": Organized by Pakistan Scientific and Technological Information Centre (PASTIC) and Faculty of Civil Engineering, NED University of Engineering and Technology, held on 28th May, 2014.
- International Workshop on Bioinformatics "Database Mining and High Throughput Genomic Analysis": Organized by COMSTEC and SIUT, hekd on 19th – 21th March, 2012.
- Mastering Dissertation/ Thesis/ Paper writing Using SPSS V.20 and EndNote X5": Organized by Research Centre for Training and Development, held on-line on 27-29 January, 2012.
- Research Ethics Workshop: Organized by USAID, held on 27th to 29th June, 2011 at Aga Khan University.
- Professional Competency Program for Teacher (PCEPT): Organized by National Academy of Higher Education (HEC) held on 12th April to 08th May, 2010 at Department of Genetics, University of Karachi.

- Life Sciences Workshop: Organized by HEC on Avian Mycoplasmosis held from January 22-25, 2008 at University of Karachi.
- Update on Antimicrobial Resistance (AMR): Problem and Solution workshop held on 26th April, 2008 at Aga Khan University.
- Statistical Package Training for Trainers: A 32-hour course on the use of statistical package for Experimental data analysis held on April, 2006 at Department of Genetics, University of Karachi.
- Real Time PCR Workshop held on 15th Aug, 2005 at the Department of Genetics, University of Karachi.

PROFESSIONAL MEMBERSHIPS

- American Society of Microbiology (ASM)
- European Society of Clinical Microbiology and Infectious Diseases (ESCMID)
- Federation of European Microbiology Society (FEMS)