UNIVERSITY OF KARACHI

Self-Assessment Report

Department of National Center for Proteomics,
University of Karachi

For M.Phil & Ph.D

Submitted to

Quality Enhancement Cell
University of Karachi

ASSESSMENT TEAM:

1. Dr. Shamshad Zarina (Professor and director)

PROGRAMME TEAM

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3. Dr. Kanwal Haneef
4. Dr. Amber Noman

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INTRODUCTION

The word "proteomics" was coined in 1997 by Marc Wilkins in analogy with genomics hence it reflects the protein complement of the genome. Proteomics is now firmly established in mainstream scientific vernacular, and is the key technology in post-genomic era.

Proteomics is large scale study of proteins being expressed in cell, tissue or organ at a specific time. Being indispensible molecules of living organisms, proteins play critical role in maintaining homeostasis. Understanding their exact role in health and disease is extremely critical to develop therapeutic approach. Advances in methods and technologies have catalyzed an expansion of the scope of biological studies from the reductionist biochemical analysis of single proteins to proteome-wide measurements. Proteomics and other complementary methods are essential components of the emerging 'systems biology' approach that seeks to comprehensively describe biological systems through integration of diverse types of data and, in the future, to ultimately allow computational simulations of complex biological systems.

Establishment of National Centre for Proteomics at University of Karachi is a milestone in field of biological sciences in Pakistan. The aim is to make use of recent revolutionary breakthroughs in the technologies of proteomics and implementing these in relevant areas of biological research. The mandate of the institute is to serve as a core facility to fulfill the investigators' and researchers' needs related to area of proteomics and allied sciences including biochemists, cell biologists, pharmacologists and clinicians.

National Center for Proteomics, University of Karachi was established under a development grant approved by planning commission in 2004. Total funds allocated for the same were Rs. 169.5 million. The construction of building was initiated in 2005. The institute came into existence in the beginning of 2008 and was inaugurated by the Chancellor of University of Karachi, Dr. Ishrat-ul-Ebad (Governor of Sindh) on 1st March 2008. The institute became functional almost a year later and since then, is serving in the field by offering post-graduate degree program, working as a core facility and training HRD in the discipline. Being a dedicated and only center for Protein research in Pakistan, NCP is approached scientists, academicians, faculty and students from all over Pakistan. Backed by trained faculty and dedicated staff, our team is determined to continue offering best education and training in the field of Proteomics.

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Prof. Dr SHAMSHAD ZARINA
Director,
National Center for
Proteomics
University of
Karachi

CRITERION-1

PROGRAMME MISSION, OBJECTIVES AND OUTCOMES

CITERION-1: Program Mission, Objectives and Outcomes

1-1 Mission Statement

Institutional Mission

Proteins are the key components of the cellular machinery, and thus detailed and complete information of "Proteome" regarding any specific state of the cell, could be valuable.

The aspiration of the "National Center for Proteomics" was to establish and provide core facilities that are now widely used in the field of Proteomics, hence to facilitate fundamental understanding of disease states, discovery and detection of biomarkers, translation of these advances to improve clinical diagnostics and population screening, and to acquire a complete set of structural and functional information about proteins that are being specifically expressed at one particular time whether in normal or abnormal provision. Moreover, the Institute encompasses a full commitment to get a hold on recent advancements that are currently being supplemented in the area of Proteomics research. In addition, fulfillment of challenges like development of protein chips for high throughput screening of disease-associated proteins, to benefit researchers' academicians and students all over the country from state -of -the-art facilities available at the center, to collaborate with research institutions and centers all over the Pakistan and to be a part of larger research.

Programme Mission Statement

M. Phil/Ph. D. programs at National Center for Proteomics offer training in protein analysis techniques covering a wide area of studies such as structure function relationship, biological properties and activities, bioinformatics, drug designing, cell biology and molecular analysis. The programs are designed for students with a background in biological sciences such as Biochemistry, Biotechnology, Physiology, Microbiology, and Genetics. The programs focuses on investigation of proteins samples coming from variety of sources including human, animals, microbial and plants. The M. Phil program has particular emphasis on basic training in a range of skills based subjects and provides a professional training for aspiring candidates. The Ph. D program involves the advance level of research with improving the skills further, addressing the interpreting capabilities and developing an individual as an independent researcher.

Standard 1-1: The Programme must have documented measurable objectives that support college and Institution mission statements.

The M. Phil program for post graduates includes:

1. Developing understanding of protein research theoretical as well as with practical approaches to achieve a strong base.
2. To enhance the ability of analysis and understanding of basic protein field and the vast criteria where proteomics could be applied.

3. To learn protein chemistry and computational methods and techniques used and applied to proteomics data analysis and interpretation of results.

4. To put together and apply solutions to problems during experimental procedures.

5. Develop and improve analytical methods for analysis of protein samples.

6. To design and carry out the research project.

The Ph. D program for post graduates includes:

1. Advanced learning and integration into industry, research careers, and other related careers in the areas of protein sciences and management that are important to national and international needs.

2. To work in a team and collaborate with research community to improve scientific network and conduct high quality research work.

3. To grow understanding of current advances and to improve capacity for innovative, independent and decisive thinking for development of hypothetical concept to carry out an inquiry based approach for research work.

4. To utilize the skill of scientific speech for presenting scientific work, discussing issues and writing.

5. To write research proposal for applying for grants for research projects.

Table: Programme Objectives Assessment
1. M. Phil

S. No.	Objectives	How Measured	When Measured	Improvement Identified	Improvement Made
	01	Grading of 1-5	Passing out	In the comment section	Will be implemented in next year plan
	02	″	″	″	″
	03	″	″	″	″
	04	″	″	″	″
	05	″	″	″	″
	06	″	″	″	″

1. Ph. D.

S. No.	Objectives	How Measured	When Measured	Improvement Identified	Improvement Made

	01	Grading of 1-5	Passing out	In the comment section	Will be implemented in next year plan
	02	″	″	″	″
	03	″	″	″	″
	04	″	″	″	″
	05	″	″	″	″
	06	″	″	″	″

Standard 1-2: The programme must have documented outcomes for graduating students. It must be demonstrated that the outcomes support the programme objectives and that graduating students are capable of performing these outcomes.

M.Phil;

The pass out students with understanding of research and protein science will be able to deliver the following capabilities;

- Develop the theoretical base of proteomics.
- Develop efficient perceptive of knowledge and a critical intellect on identifying problems or new insights in the field of interest.
- Show a broad and an advanced understanding of techniques for research and develop research skills and methods applicable.
- Continue to progress their awareness and understanding to develop new skills to a higher level.
- Modify their investigative skills to non-academic jobs.
- Pursue PhD studies.

Ph.D;

The passes out graduates are trained to be able to deliver the following;

- Able to understanding in a systematic way the advanced knowledge which is at the forefront of protein science.
- Gained a detailed understanding of research methodologies and techniques to an advanced level.
- Propose and execute research project independently which is innovative in a discipline, the quality of which is up to the standard of peer review.
- Have knowledge on how to write an effective application for research grant.
- Have knowledge on the requirements and strategy to publish in top academic journals of the field.
- Transfer their analytical skills to non-academic jobs.

PROGRAMME OUTCOMES

After completion of the M. Phil /Ph. D program at National Center for Proteomics, the students shall be able to:

Academic Development

- Students' ability to publish (measured by the quality of their research output)
- Ability to present scientific work (talk or poster presentation)
- Ability to receive prizes and awards (measured by the quality of the prizes)

- Ability to pursue studies in PhD (for M.Phil students)
- Ability to progress in academic career (pass out graduates)

Non-academic development:

- Ability to progress in a non-academic career with their professional knowledge.

Standard 1-3: The results of programme's assessment and the extent to which they are used improve the programme must be documented.

a) Strengths and Weaknesses of the Programme

i) Strengths:

- Strong theoretical base.
- Best possible lab training.
- Critical analysis ability of experiments.
- Training under highly qualified and capable young faculty.
- Transfer of knowledge and exposure to best available resources in the field.

ii) Weaknesses:

- Students coming from different biological fields other than biochemistry find preliminary difficulty to understand the basic concepts.
- The informatics course requires some prerequisites.
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b) Future Development Plans

Periodic assessments have been scheduled to improve the overall performance of programs, students, faculty and research activities that took place at National Center for Proteomics.

Standard 1-4: The department must assess its overall performance periodically.

a) Student Enrolment

S. No	Year	Degree (M.Phil & Ph.D)	
1	2009	--	
2	2010	--	
3	2011	06	
4	2012	03	
5	2013	03	
6	2014	04	
7	2015	03	
8	2016	03	01
9	2017	03	

b) Student/Faculty Ratio

16/3

c) i) Time for M. Phil

M.Phil duration: Minimum of 2 yrs.

iii) Time for Ph.D

Ph. D duration: Minimum of 3 yrs.

d) The average student grade point (CGPA)

Average student grade: 3.0 cGPA

eStudent / Faculty Satisfaction

N/A

CRITERION-2

CURRICULUM DESIGN AND ORGANIZATION

CITERION-2: Curriculum Design and Organization

Programme of Studies offered

Year / Semester wise Scheme of Studies of M. Phil. Programme

M. Phil (Semester I)

S. No	Course Code	Course Title
1	701	Research Methodology
2	702	Techniques in Protein Chemistry and Proteomics-I
3	703	Tools and Techniques in genetic engineering
4	703	Concepts in Proteomics
5	704	Molecular Dynamic Simulation
6	705	Bioinformatics-I
7	710	Biosafety and Biosecurity I

M. Phil (Semester II)

S. No	Course Code	Course Title
6	706	Techniques in Protein Chemistry and Proteomics-II
7	707	Clinical Proteomics
8	708	Advance Molecular Dynamics Simulation
9	709	Bioinformatics-II
10	711	Scientific communication and dissemination skills

Ph. D. (Semester I)

S. No	Course Code	Course Title
1	NCP 801	Research Seminars
2	NCP 802	Writing skills in Research
3	NCP 803	Communication and dissemination skills
4	NCP 804	Mass Spectrometry in Proteomics
5	NCP 805	Molecular Mechanism in signal transduction

Ph. D (Semester II)

S. No	Course Code	Course Title
6	NCP 801	Research Seminars
7	NCP 802	Writing skills in Research
8	NCP 803	Communication and dissemination skills
9	NCP 804	Mass Spectrometry in Proteomics
10	NCP 805	Molecular Mechanism in signal transduction

Standard 2-1: The Curriculum must be consistent and support the programme's documented objectives

The following table manifests how the programme content (Courses) meets the Programme Objectives.

M. Phil

Objectives No.	Course
1.	Techniques in Protein Chemistry and Proteomics

2.	Concepts in Proteomics
3.	Bioinformatics
4.	Techniques in Protein Chemistry and Proteomics-II
5.	Techniques in Protein Chemistry and Proteomics, Clinical Proteomics
6.	Concepts in Proteomics

Ph. D

Objectives No.	Course
1.	Techniques in Protein Chemistry and Proteomics
2.	Concepts in Proteomics
3.	Bioinformatics
4.	Techniques in Protein Chemistry and Proteomics-II
5.	Techniques in Protein Chemistry and Proteomics, Clinical Proteomics
6.	Biosafety and Biosecurity

Standard 2-2: Theoretical background, problem analysis and solution design must be stressed within the programme's core material.

The following table indicates the elements covered in core courses:

Elements	Courses
i) Theoretical Background	Introduction to proteomics and proteins, concepts in Proteomics, Bioinformatics, Biosafety and security, Molecular Mechanism in signal transduction
ii) Problem Analysis	Clinical proteomics, Research projects, Thesis and Publications
iii) Solution Design	Techniques in Protein Chemistry and Proteomics, Tools and Techniques in genetic engineering, Research methodology, Mass spectrometry in Proteomics, Research projects and thesis.

Standard 2-3: The curriculum must satisfy the core requirements for the programme, as specified by the respective accreditation body.

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Standard 2-4: The curriculum must satisfy the major requirements for the programme, as specified by the respective accreditation body/council.

Approved by the Board of Studies, Board of Faculty and Academic Council

Standard 2-5: The curriculum must satisfy the general education, arts and other discipline requirements for the Programme as specified by the

accreditation body.
Approved by the Board of Studies, Board of Faculty and Academic Council

Standard 2-6: Information technology component of the curriculum must be integrated throughout the programme.
The training includes the required IT component.

Standard 2-7: Oral and written communication skills of the student must be developed and applied in the programme.
The objectives of the program includes the oral and written skill development.

CRITERION-3

LABORATORY AND COMPUTING FACILITIES

CITERION-3: Laboratory and Computing Facilities

Laboratory Facilities

To perform the proteomic studies center have facilities for animal cell and tissue culture, protein purification, characterization and identification, gene and protein expression analysis. Listed laboratories are available to carry and conduct experiments in the field of proteomics.

1. Core Facility Lab 1
2. Core Facility Lab 1
3. Mass Spectrometry lab
4. Animal cell and tissue culture lab
5. Computer Laboratory
6. Sanitization Facility

Following is the list of equipments available at NCP

SN	Equipments	Model / Make	Qty
LIST OF MAJOR EQUIPMENT			
1	Mass Spectrometer	USA Thermo Fishers	1
2	Gel documentation and analysis system	Biorad	1
3	AKTA basic 10 chromatography and columns	Amersham Biosciences	1
4	Ultracentrifuge 50Hz	Beckman	1
5	Higher performance refrigerated centrifuge	Beckman	1
6	Super Insulation Freezer/ Upright freezer	Heraeus	2
7	UV-Visible Spectrophotometer	Perkin Almer	2
8	Spot cutter & PD Quest	Biorad	1
9	Mini Protean 3 electrophoresis system.	Biorad	2
10	Mini Trans blot with power supply	Biorad	2
11	Wide mini sub cell	Biorad	2
12	Rockers	Biorad	2
13	High performance liquid chromatography	Perkin Elmer	1
14	Biosafety cabinet	VWR	1
15	Fume hood	VWR	2
16	Cold Room		1
17	Real Time PCR and 2720 thermocycler	Applied Biosystems	1
18	Gradient PCR/ Mastercycler Gradient	Eppendorf	1
LIST OF SMALL INSTURMENTS			

1	Autoclave Model KT-30S & 40S	ALP	2
2	Analytical Balances	Sartorius	3
3	Incubator CO2 Model Heracell-150	Heraeus	2
4	PH meter	Mettler Toledo	2
5	Conductivity Meter		2
6	IEF System	Amersham Biosciences	1
7	Distillation unit	Millipore	1
8	Deionizer		1
9	ELIZA reader	Beckman	1
10	Gel Dryer	Biorad	1
11	Homogenizers	Thomas Scientific	1
12	Microbiological incubator Model B-12	Heraeus	2
13	Freeze dryer	Thermo electron	1
14	Laboratory Centrifuge Model LABOFUGE-200	Heraeus	2
15	Inverted microscope	Olympus, Singapore	1
16	Floor Shaker	VWR	1
17	Bench top Centrifuge	Eppendorf	2
18	Vacuum Concentrator	Eppendorf	1
19	Digital precise shaking water bath	Daihan Scientific	1
20	Forced Convection Laboratory incubator	ESCO	1

Computer Facilities
The center has one digital lab for students.

Internet Facility
The center has internet facility for faculty, M.Phil and Ph.D students.

Standard 3-1: Laboratory manuals/ documentation instruction for experiments must be available and readily accessible to faculty and students
Laboratories have proper SOPs of all experiments and equipments used in the respective facility.

Standard 3-2: There must be adequate support personnel for instruction and maintaining the laboratories.
There are lab assistants to maintain labs and support staff and students to fulfill basic laboratory needs.

Standard 3-3: The University computing infrastructure and facilities must be adequate to support programme's objectives

Computing Facilities
The center have adequate networking and computer facilities.

Multimedia

Currently center has only one multimedia.

Website
The center has URL http://www.ncp-uok.edu.pk unfortunately it is dormant due to non-availability of funds.

Internet
The center has Internet facility for staff and students, interconnected with main communication network of the university.

CRITERION-4

STUDENT SUPPORT AND ADVISING

Criterion-4 Student Support and Advising

The National Center for Proteomics has efficient student support and advising system. The dedicated faculty of NCP provides academic and personal support services to students. NCP assist student to achieve their academic goals and take advantages of various academic opportunities such as research scholarships. The Director displays the opportunities of job, membership of societies and conferences on the NCP notice board regularly. A number of NCP students got scholarships and visited international research institutes including Biophysics Karolinska Institute, Stockholm, Sweden, Dana Farber Cancer Institute, Harvard Medical School, Boston, MA, USA and University College Dublin, Ireland.

Standard 4-1: Courses must have been offered with sufficient frequency and number for students to complete the programme in a timely manner.

Programme	Classes per Week	Practical Classes per Week	Research Guidance
M. Phil.	10	5	Yes
Ph. D.	6	0	Yes

Standard 4-2: Course in the major must be structured to ensure effective interaction between students, faculty and teaching assistants.

A good student and teacher interaction play crucial role for effective teaching and student learning as well as it provides a better atmosphere for classroom and laboratory. NCP courses are structured in a ways that ensure the effective interaction between students and faculty. NCP faculty members have positive interaction with their students and help students to meet their developmental, emotional and educational needs.

Standard 4-3: Guidance on how to complete the programme must be available to all students and access to academic advising must be available to make course decisions and career choices

The Director of Institute and all the faculty members help the students in educational, personal, and career exploration. The Director nominated a faculty member as ‘Students Advisor’ who work with students and help them in educational planning, goal setting and career choices. All the faculty members are always ready to assist students in achieving emotional well-being and help manage personal issues that may interfere with academic progress.

CRITERION-5

PROCESS CONTROL

Criterion-5: Process Control

Standard 5-1: The process by which students are admitted to the programme must be based on quantitative and qualitative criteria and clearly documented. This process must be periodically evaluated to ensure that it is meeting its objectives.

The admission policy for M.Phil. and Ph.D. program is approved by Academic council, University of Karachi. The admissions are announced by the University in March every year. Students have to appear for a test and interview. After qualifying in both, student gets the admission in the programs offered by the Center.

Standard 5-2: The process by which students are registered in the programme and monitoring of students progress to ensure timely completion of the programme must be documented. This process must be periodically evaluated to ensure that it is meeting its objectives.

The students are registered according to the procedure of BASR for the M. Phil and Ph. D. programs. The students' progress is monitored through regular examinations, tutorials, presentations and reports.

Standard 5-3: The process of recruiting and retaining highly qualified faculty members must be in place and clearly documented. Also processes and procedures for faculty evaluation, promotion must be consistent with institutional mission statement. These processes must be periodically evaluated to ensure that it is meeting with its objectives.

Faculty Recruitment / Retaining Policy

Faculty recruitment and retaining policies are adopted as per University Statute. The posts are created through Finance and planning committee and duly approved by syndicate. Posts are advertised in major newspapers. Appointments are conducted on open merit. A selection board would be conducted with the approval of vice chancellor of University of Karachi followed by fulfillment of other formalities of University of Karachi.

Appointments / Promotions Procedure

It is as per University of Karachi Statute**.**

Basic Pay Scale (BPS)
BPS 19
BPS 20
BPS 21

a. Assistant Professor (BPS- 19):
Minimum Qualification
a. PhD in relevant field from HEC recognized University/Institution
b. Master's degree (foreign) or M.Phil. (Pakistan) or equivalent degrees

awarded after 18 years of education as determined by the HEC in the relevant field from an HEC recognized University /Institution.

c. No experience required or a postgraduate Institution or professional experience in teaching/research in the relevant field in a National or International organization may be considered.

b. Associate Professor (BPS- 20)

Minimum Qualification

a. PhD in relevant field from HEC recognized University/Institution.

Experience

b. 5-years post-PhD teaching/ research experience in an HEC recognized University or a post-graduate Institution or professional experience in the relevant field in a National or International organization.

Minimum Number of Publications

c. The applicant must have 10 research publications (with at least 4 publications in the last 5 years in the HEC recognized Journals.

c. Professor (BPS-21)

Minimum Qualification

Ph.D. from an HEC recognized Institution in the relevant field.

Experience

8-10 years of post-Ph.D. teaching/research experience in a recognized University or a post-graduate Institution or professional experience in the relevant field in a National or International organization.

Minimum Number of Publications

The applicant must have 15 research publications with at least 5 publications in the last 5 years in HEC recognized journals.

Bases for Appointments / Promotions

As per the rules of University of Karachi.

Standard 5-4: The process and procedure used to ensure that teaching and delivery of course material to the students emphasizes active learning and that course learning outcomes are met. The process must be periodically evaluated to ensure that it is meeting its objectives.

Regular classes, presentations and lab experiment skills are used to ensure the teaching and training of the students. The progress is further evaluated by the academic participation of the faculty members in various events organized internally or national/international levels.

Standard 5-5: The process that ensures that graduates have completed the requirements of the programme must be based on standards, effective and clearly documented procedures. This process must be periodically evaluated to ensure that it is meeting its objectives.

The completion of program is documented through final examination/viva/thesis or any other final reporting.

CRITERION-6

FACULTY

Criterion-6: Faculty

Standard 6-1: There must be enough full time faculty who are committed to the programme to provide adequate coverage of the programme areas / courses with continuity and stability. The interest of all faculty members must be sufficient to teach all courses, plan, modify and update courses. The majority must hold a Ph.D. degree in the discipline.

All the full time faculty members appointed have relevant experience in the field and hold a Ph.D. degree. The faculty members participate in teaching, planning, updating and modifying the courses as well as other policies and academic matters. Currently, three full time and two contractual faculty members are involved. The posts have been advertised and selection board is awaited.

Standard 6-2: All faculty members must remain current in the discipline and sufficient time must be provided for scholarly activities and professional development. Also, effective programmes for faculty development must be in place.

Being a research institute the faculty remains updated in the discipline to progress in their respective career and participate in overall productivity of the Center. They not only conduct various training sessions at institute, they also participate in different conferences and workshops at national and international level.

Standard 6-3: All faculty members should be motivated and have job satisfaction to excel in their profession.

Faculty is provided with individual space to progress and flourish in their respective areas of interest. To keep motivated, it is imperative to have selection boards for contractual employees to give them a fair chance to become regular staff members.

CRITERION-7

INSTITUTIONAL FACILITIES

Criterion-7 Institutional Facilities

Standard 7-1: The Institution must have the infrastructure to support new trends in learning such as E-learning.

a) Departmental library and Internet Facility

The library of the Center has the books that are related to the theoretical and practical knowledge in the field of Proteomics. New books are added to the existing collection at regular intervals. The library also harbors the books of few related disciplines besides the specific field of proteomics and biochemistry. For literature, faculty and students benefit from open access facilty offered by HEC. The Center has the Internet facility provided by the University of Karachi.

b) Main Library

The faculty and students has access to the main library of University of Karachi in case of non-availability of certain books and literature.

c) Offices

The Center has office rooms for administrative work as well as for faculty and students.

d) Class Rooms

Class rooms are available for regular classes of M. Phil and Ph. D. course work.

Standard 7-2: The library must possess on up-to-date technical collection relevant to the programme and must be adequately staffed with professional personnel.

The library has up to date books related to the programs offered at the Center.

Standard 7-3: Class rooms must be adequately equipped and offices must be adequate to enable faculty to carry out their responsibility.

Classrooms

Class rooms are equipped with accessories needed to deliver lecture through presentations.

Faculty Offices

Faculty offices has basic furniture availability, internet and intercom connections.

CRITERION-8

INSTITUTIONAL SUPPORT

Criterion-8 Institutional Support

Standard 8-1: 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 teacher and scholars.

The Center is provided with minimum support to attract and retain quality faculty and lacks such sufficient financial resources by the university. NCP lacks recurring budget and most of the work is conducted through research grants obtained by faculty. However, all the facilities available at the Center is accessible for the faculty to carry on and maintain their competence.

Standard 8-2: There must be an adequate number of high quality graduate students, research assistants and Ph.D. Students.

Degree Programme	**Years**							
	2011	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	
M.S/M. Phil.	06	03	03	04	03	03	03	
Ph. D.				04		04		
Research/ Teaching Assistants	0	0	03	03	02	02	02	

Student/Faculty Ratio (for the last three years)
4:1

Standard 8-3: Financial resources must be provided to acquire and maintain library holding, laboratories and computing facilities.

University of Karachi has approved a contingency of eighty thousand rupees per month as a financial resource, expecting to carry out all the requirements of laboratories, computing and library facilities. However, this amount is not released timely and is meager for all institutional requirements. NCp needs a dedicated recurring budget to resolve issues.

Faculty CVs

S. No	Faculty	Designation
1	Prof. Dr. Shamshad Zarina	Professor & Director
2	Dr. Zehra Manzoor	Assistant Professor
3	Dr. Faraz Moin	Assistant Professor
4	Dr. Kanwal Haneef	Senior Research Assistant (Contractual)
5	Dr. Amber Ilyas	Senior Research Assistant (Contractual)

CURRICULUM VITAE

Dr. Shamshad Zarina

Director,
National Center for Proteomics,
University of Karachi,
Karachi, Pakistan.
Email: szarina@uok.edu.pk; szarina@gmail.com;
Phone no: (92-21) 34656511
Cell no: 0321-2211-160
CNIC #: 42101-3931677-2

CURRENT POSITION:

Director,
National Center for Proteomics,
University of Karachi
Karachi

LAST POSITION:

Professor
Department of Biochemistry
University of Karachi
Karachi

EDUCATION:

Ph.D. 1991,
Protein Chemistry Laboratory
H.E.J. Research Institute of Chemistry
University of Karachi.
Supervisor: Prof. Zafar H. Zaidi (Late)

M.Sc. 1983 (First class second position)
Department of Biochemistry,
University of Karachi.

B.Sc.(Hons) 1982, (With distinction)
Department of Biochemistry,
University of Karachi.

Ph.D. RESEARCH:

Protein changes in senile cataract formation

PROFESSIONAL EXPERIENCE:

Professor and Director, National Center for Proteomics, University of Karachi, Karachi, Nov. 2008 till date

Professor, Department of Biochemistry, University of Karachi
Karachi, 2005-2008

Associate Professor, Department of Biochemistry, University of Karachi
Karachi, 2001-2005

Assistant Professor, Department of Biochemistry, University of Karachi
Karachi, 1994-2000

Post-Doctoral Fellow**,** Department of Biochemistry and Molecular Biology, Medical College of Georgia, Augusta, GA, USA, 1998-99

Post-Doctoral Fellow, Department of Crystallography, London University, London and SERC Daresbury Laboratory, Warrington, Cheshire, UK. 1993

Post-Doctoral Fellow**,** HEJ Research Institute of Chemistry, University of Karachi. 1991-94

FUNDED PROJECTS:

a) RESEARCH PROJECTS (As PI):

Paraoxonase: biological activity, clinical implications and role as a biomarker for oxidative stress and diabetes. Funded by Higher Education Commission, Islamabad, Pakistan. Amount: PKR. 4.729 million (Ongoing)

Proteomic Profiling studies on oral carcinoma in Pakistan. Funded by Higher Education Commission, Islamabad, Pakistan. Amount: PKR. 4.267 million (Ongoing)

Studies on non-enzymatic glycation in Pakistani subjects suffering from Diabetes and Cataract: A proteomic approach. Funded by Higher Education Commission, Islamabad, Pakistan. Amount: PKR. 1.8 million (Completed)

Automatic Synchronization and Distribution of Biological Databases and Software over Low-Bandwidth Networks among Developing Countries. Funded by Higher Education Commission, Islamabad, Pakistan. Amount: PKR. 5.372 million (Completed)

Studies on Taxon specific crystallins from reptilian lenses. (2006-2007), Funded by University of Karachi. Amount: PKR. 50000/= (Completed)

Analysis of Glutathione Antioxidant system and Paraoxonase activity in human lens samples (2004-2005), Funded by University of Karachi. Amount: PKR. 50000/= (Completed)

Lipid Peroxidation and Superoxide Dismutase analysis in human lens samples (2003-2004), Funded by University of Karachi. Amount: PKR. 50000/= (Completed)

Anti-oxidant Analysis during cataract formation in human subjects (2002-2003), Funded by University of Karachi, Amount: PKR. 40000/= (Completed)

Chaperone Function in human senile and diabetic lenses (2002-2003), Funded by University of Karachi. Amount: PKR. 40000/= (Completed)

Biochemical Studies on human cataract formation (2001-2002), Funded by University of Karachi, Amount: PKR. 40000/= (Completed)

b) RESEARCH PROJECTS (As Co-PI)

Proteomic profiles of kidney cell line exposed to heavy metals. Funded by Higher Education Commission, Islamabad, Pakistan. Amount: PKR. 5.5million awarded Nov, 2015 (Ongoing)

Proteomic modifications induced by Bisphosphonates in Human Breast Cancer Cell Lines. Funded by Higher Education Commission, Islamabad, Pakistan. Amount: PKR. 4.525million (Ongoing)

Venomics of ***Bungarus Sindanus Sindanus*** (sindhi krait) snake, endemic to sindh: contributing towards envenomation management PKR. 0.5 million (Completed)

Acquirement of Start-up Facility for Computational Studies of Tyrosinase Inhibitors funded by Higher Education Commission, Islamabad, Pakistan. Amount: PKR. 0.5 million (Completed)

c) DEVELOPMENT PROJECT:

Establishment of “National Center for Proteomics” at University of Karachi, Karachi. (2006-ongoing). Funded by Higher Education Commission, Islamabad, Pakistan, Amount: PKR. 169.5 million

WORKSHOPS AND SYMPOSIA ORGANIZED:

Workshop on "SDS-PAGE", Organized by National Center for Proteomics, University of Karachi, September 11, 2017

Workshop on "Conventional and Advance Chromatographic Methods for Protein Purification", Organized by National Center for Proteomics, University of Karachi, August 22-24, 2017

Workshop on "Two dimensional electrophoresis", Organized by National Center for Proteomics, University of Karachi, December 29, 2016

Workshop on "Human Saliva Banking and protein analysis for disease detection", Organized by National Center for Proteomics, University of Karachi, August 3rd, 2016

Workshop on "Conventional and Advance Chromatographic Methods for Protein Purification", Organized by National Center for Proteomics, University of Karachi, April 05, 2016

Workshop on "Two dimensional electrophoresis", Organized by National Center for Proteomics, University of Karachi, November, 3-4, 2015

Workshop on "qPCR Real Time Quantification of Gene Expression" at National Center for Proteomics, University of Karachi, Oct. 14-15, 2014

Workshop on "Proteomics in a Nutshell", Organized by National Center for Proteomics, University of Karachi, September 17-20, 2013

Workshop on "Conventional and Advance Chromatographic Methods for Protein Purification", Organized by National Center for Proteomics, University of Karachi, September 03-05, 2013

Symposium on 'Omics Research: Roadmap for future' National Center for Proteomics, University of Karachi, February, 2012.

Workshop on 'Exploring Gene Expression', National Center for Proteomics, University of Karachi, February, 2012.

Workshop on 'Exploring Proteins using in-silico approach'', National Center for Proteomics, University of Karachi, February, 2012

Workshop on 'Bioinformatics tools in Proteomics', National Center for Proteomics, University of Karachi, December, 2011

Workshop on 'Bioinformatics tools in Proteomics', National Center for Proteomics, University of Karachi, December, 2011

Workshop on 'Research tools in Genomics and Proteomics', National Center for Proteomics, University of Karachi and Dow University of Health Sciences, Karachi, December, 2011

Workshop on 'Bioinformatics and Proteomics', National Center for Proteomics, University of Karachi, December, 2010

10 Biennial conference of Pakistan Society of Biochemistry and Molecular Biology on "Bimolecular sciences in development", University of Karachi, December, 2010

Lecture series by Dr. Azeem Hasan at National Center for Proteomics, University of Karachi, June, 2010

Workshop on "Research Tools in Proteomics" organized by National Center for Proteomics, and PCMD, University of Karachi. 16-18th November 2009

Workshop on "Proteomics in health and disease" jointly organized by National Center for Proteomics, University of Karachi, HEC and COMSTECH, Islamabad, August, 2009.

Roadmap to Proteomics, Department of Biochemistry, University of Karachi, Karachi, 2007

Symposium on Biochemistry and Molecular Biology, Department of Biochemistry, University of Karachi, Karachi, March 2005

Workshop on PCR Application and Research and Diagnostics, Department of Biochemistry, University of Karachi, Karachi, 2003

One day symposium on Biochemistry in post-genomic era, Department of Biochemistry, University of Karachi, Karachi, 2004

Information handling in biological research, Department of Biochemistry, University of Karachi and March, 2002

First, Second, Third, and Fourth International Symposia on Protein Chemistry, HEJ Research Institute of Chemistry, University of Karachi, Karachi, 1988, 1989, 1993, and 1995

First, Second, Third, and Fourth Protein Sequencing Workshops, HEJ Research Institute of Chemistry, University of Karachi, Karachi, 1988, 1989, 1993, and 1995

ORAL PRESENTATIONS IN CONFERENCES/MEETINGS/WORKSHOPS/SYMPOSIA:

Invited speaker, International conference on Trends and Prospects in Molecular Biosciences, organized by Institute of Biochemistry and Biotechnology, University of Punjab, October, 23-24, 2017

Invited speaker, Annual Research Talk, organized by Department of Physiology, University of Karachi, October 10-11, 2017

Keynote speaker, International Conference on Emerging trends in Plant Proteomics, organized by Department of Plant Sciences, Quaid-i-Azam University, Islamabad, October, 2-4, 2017

Invited speaker, Second AQ Khan Winter School on Modern Tools and Techniques in health and disease, organized by KIBGE, University of Karachi, December 21-23, 2016

Invited speaker, 13th Biennial Conference on Recent advances and challenges in Molecular Biology, Biochemistry and Biotechnology, organized by PSBMB, COMSATA, Abbotabad, August 25-27, 2016

Invited speaker, Webinar organized by Eastern Mediterranean Health Genomics and Biotechnology Networks (EMGEN), Pasteur Institute, Iran, 31st May, 2016

Invited speaker, First International Conference of Life Sciences, 28-30th Organized by BRC and KIBGE, university of Karachi, December, 2015

Workshop on "Two dimensional electrophoresis", Organized by National Center for Proteomics, University of Karachi, on November, 3-4, 2015

Invited speaker, Seminar on Research proposal writing and time management, ORIC, University of Karachi, Karachi, 15th September, 2015

Invited speaker, Course on Research Communication Skills Development, ORIC, University of Karachi, Karachi, 2014

Invited speaker, Seminar on Pharmaceutical Biotechnology, Baqai Institute of Pharmaceutical Sciences, Baqai University, Karachi, 2014

Invited speaker, 11th Biennial Conference in Advances in Biochemistry and Molecular Biology, University of Punjab, Lahore, 2013

Workshop on "Proteomics in a Nutshell", Organized by National Center for Proteomics, University of Karachi, on September 17-20, 2013

Seminar on “New Horizons of Biotechnology”, The Biotechnologist Society, September, 2013, Karachi

Plenary speaker in workshop on Bioinformatics in Molecular Medicine, Dow University of Health Sciences, May, 2012

Key note speaker, Jinnah University for Women, Karachi, March, 2012

Symposium on ‘Omics Research: Roadmap for future’ National Center for Proteomics, University of Karachi, February, 2012

Invited speaker 3rd International Symposium cum training course on Molecular Medicine and Drug Research, PCMD, University of Karachi, January, 2011

Workshop on ‘Bioinformatics tools in Proteomics’, National Center for Proteomics, University of Karachi, December, 2011

Workshop on ‘Research tools in Genomics and Proteomics’, National Center for Proteomics, University of Karachi and Dow University of Health Sciences, Karachi, December, 2011

Workshop on 'Bioinformatics and Proteomics', National Center for Proteomics, University of Karachi, December, 2010

Workshop on "Bioinformatics resource for drug research" organized by PCMD, University of Karachi, December, 2010

Symposium entitled "Working with proteins in Post-Genomic Era'.
Organized by School of Biological Sciences, University of the Punjab, Lahore, January 6-7th. 2010

Guest speaker at Dow International Medical University, Karachi, June, 2010

Workshop on "Bioinformatics" organized by School of Biological Sciences, Aga Khan University, Karachi, December, 2009

Workshop on Separation Sciences and the Omics, School of Biological Sciences, University of Punjab, Lahore, 2009

Workshop on "Research Tools in Proteomics" organized by National Center for Proteomics, and PCMD, University of Karachi. 16-18th November 2009

Workshop on "Proteomics in health and disease" jointly organized by National Center for Proteomics, University of Karachi, HEC and COMSTECH, Islamabad, August, 2009

Key note speaker at CME Workshop on "New trends in Labs investigations & Diagnosis: Genomics and Proteomics, Department of Biochemistry, Liaquat National Hospital and Medical College, Karachi, 2009

Guest speaker at seminar series, Department of Biological and Biomedical Sciences, Aga Khan University, Karachi, 2009

9th Biennial Conference in Advances in Biochemistry and Molecular Biology, University of Arid Agriculture, Rawalpindi, 2008

Guest speaker at Department of Bioinformatics, University of Gottingen, Germany, May 2008

Guest speaker at ZBH Center for Bioinformatics, University of Hamburg, Germany, May 2008

Workshop on "Computational Chemistry and it's applications", Panjwani Center for Molecular Medicine and Drug research, Karachi, June, 2006

4th International Symposium of Genetic Engineering and Biotechnology, Karachi, December, 2005

"Pre 18th FAOBMB Symposium Satellite/workshop on Bioinformatics"
Workshop and Symposium, National Center of Excellence in Molecular Biology, University of Punjab, Lahore, November, 2005

Workshop on "Trends in teaching Biochemistry as Basic Science for Medicine and Dentistry, Department of Biochemistry, Liaquat College of Medicine and Dentistry and Department of Biochemistry, University of Karachi, 2005

Workshop on Bioinformatics, Panjwani Center for Molecular Medicine and Drug research, Karachi, October, 2004

International workshop on Bioinformatics, Islamabad, April, 2003

7th International conference of Pakistan Society of Biochemistry and Molecular Biology, Lahore, April, 2003

Workshop on 'Information handling in biological research' Department of Biochemistry, University of Karachi, March, 2002.

Third National Biochemistry Conference, Punjab University, Lahore, 1995

Second Biochemistry Symposium University of Karachi, Hyderabad, 1994.

Nuffield Laboratory of Ophthalmology, University of Oxford, Oxford, UK. 1993

Daresbury Laboratory, Warrington, U.K. 1993.

Second National Biochemistry Conference, Hyderabad, 1993.

First National Biochemistry Symposium, Karachi, 1991.

Jinnah Post Graduate Medical Center Symposium, 1983 and 1988.

Silver Jubilee Symposium, Department of Biochemistry, University of Karachi, Dec. 1988.

First, Second, Third, and Fourth Protein Sequencing Workshops, HEJ Research Institute of Chemistry, University of Karachi, Karachi, 1988, 1989, 1993, and 1995.

Poster Presentations:

AOHUPO Congress, Dublin, Ireland. September 2017

4th International Symposium of Genetic Engineering and Biotechnology, Karachi, December, 2005

8th Biennial National Conference on Trend in Biochemistry and Molecular Biology, Department of Biochemistry, University of Karachi, Karachi, and Pakistan Society of Biochemistry and Molecular Biology, 2005

International Conference on Bioinformatics, February, 2002, Bangkok, Thailand

Third Asian Cataract Research Conference, Hong Kong, China, 2000.

Second Congress of Biochemistry, Tehran, Iran, 1993.

First, Second, Third, and Fourth and International Symposium on Protein Chemistry, Karachi, 1988, 1989, 1993, and 1995.

c) International Workshops Attended

Attended workshop and tutorial session in International Conference on Bioinformatics, February, 2002, Bangkok, Thailand

Attended Protein Science workshop on Protein sequencing methods organized by Protein and Peptide Group, London, UK, 1993

CURRICULUM DEVELOPMENT

a) New courses designed:

S. No.	Course Title	Degree	Department/Institute
1	Bioinformatics and Genomics	M.Sc.	Department of Biochemistry, University of Karachi
2	Structural Bioinformatics	M.Sc.	Department of Biochemistry, University of Karachi
3	Techniques in Protein Chemistry & Proteomics-I & II	M.Phil	National Center for Proteomics, University of Karachi
4	Exploring Proteomics	M.Phil	National Center for Proteomics, University of Karachi
5	Clinical Proteomics	M.Phil	National Center for Proteomics, University of Karachi
6	Biosafety and Biosecurity	M.Phil	National Center for Proteomics, University of Karachi
7	Scientific communication and dissemination skills	M.Phil	National Center for Proteomics, University of Karachi
8	Bioinformatics –I & II	M.Phil	National Center for Proteomics, University of Karachi
9	Research Seminars	Ph.D.	National Center for Proteomics, University of Karachi
10	Seminars on Current Advances in Proteomics	Ph.D.	National Center for Proteomics, University of Karachi
11	Thesis and Manuscript Writing Skills	Ph.D.	National Center for Proteomics, University of Karachi
12	Development of Research Proposal for Funding Agencies	Ph.D.	National Center for Proteomics, University of Karachi
13	Mass Spectrometry in Proteomics	Ph.D.	National Center for Proteomics, University of Karachi
14	Molecular Mechanism in Signal Transduction	Ph.D.	National Center for Proteomics, University of Karachi

b) Revision of courses:

Member, Board of Studies which is responsible for curriculum revision and submission of new curricula at under-graduate and graduate level

Computer Applications in Biotechnology, M.Sc. (Final), Department of Biotechnology, University of Karachi, Karachi

VISITING FACULTY:

Dr. A.Q. Khan Institute of Biotechnology and Genetic Engineering (KIBGE), University of Karachi
Department of Biochemistry, University of Karachi, till 2008-2010
National University of Computer and Emerging Sciences, FASTA, Karachi, 2004
Aga Khan Medical University Hospital, Karachi, 2004
Teaching Assistant for online course on Bioinformatics organized by National University of Singapore, 2003-2008

FIELDS OF INTEREST:

Protein Structure function relationship, Proteomics, Bioinformatics.

MEMBERSHIPS:

AOHUPO Council member, 2017 till date
Member, Institutional Bioethics Committee, University of Karachi, 2016 till date
Member, Plagiarism Committee, University of Karachi, 2016-2017
Member, Prospectus Committee, University of Karachi, 2014-2016
Secretary, BOG, National Center for Proteomics, University of Karachi, Karachi
Member, Senate, University of Karachi, Karachi, 2005-till date
Member, Academic Council, University of Karachi, Karachi, 2005-till date
Member, Faculty of Science, University of Karachi, Karachi, 2005-till date
Member, Board of Studies, National Center for Proteomics, University of Karachi, Karachi
Member, Board of Studies, Department of Biochemistry, University of Karachi, Karachi (2001-2008)
Member, Grants Review Board, Age Khan University, Karachi, 2007-2011
Member curriculum committee on Bioinformatics, HEC
Member, Board of Studies, Baqai Institute of Information Technology, Karachi
Member, Faculty of Science, University of Karachi, Karachi, 2002 – 2003
Elected member, Executive Council, Pakistan Society of Biochemistry and Molecular Biology, 2015 till date
Elected Vice President, Pakistan Society of Biochemistry and Molecular Biology, 2013-2015

Project Coordinator, National Center for Proteomics, University of Karachi, Karachi, 2004-2008
Member, PC-1 committee, University of Karachi, Karachi 2005-06

Founder member and Treasurer, Pakistan Proteomics Society, Karachi
Elected member, Executive Council, Pakistan Society of Biochemistry and Molecular Biology, 2004-2006
Elected Associate Secretary, Pakistan Society of Biochemistry and Molecular Biology, 2002-2004
Karachi University Coordinator for Higher Education Commission, Islamabad
Secretary, Zafar Zaidi Memorial Trust
APBionet
HUPO
Pakistan Society of Biochemistry and Molecular Biology (Life member)
Pharmacological Society of Pakistan (Life member)
Chemical Society of Pakistan (Life member)
Pakistan Food Professional Association (Life member)
Pakistan Proteomics Society (Life member)
International Society for Computational Biology (2004)

HONORS AND AWARDS:

Research and Productivity Award, Ministry of Science and Technology, Islamabad, 2012
Research and Productivity Award, Ministry of Science and Technology, Islamabad, 2011
Research and Productivity Award, Ministry of Science and Technology, Islamabad, 2010
Research and Productivity Award, Ministry of Science and Technology, Islamabad, 2006
Research and Productivity Award, Ministry of Science and Technology, Islamabad, 2003
Approved Supervisor, Higher Education Commission, Islamabad
Best presentation award in Third Asian Cataract research Conference, Hong Kong, China, 2000
Rhoto Travel Fellowship Award, Hong Kong, China, 2000
British Council Fellowship, 1993

RESEARCH STUDENTS:

Ph.D. as Supervisor (Awarded):

S. No.	Name	Year	Title of thesis
1	Zehra Hashim	2009	Antioxidant status, lipid peroxidation and advanced glycation end products in human cataract lenses from senile and diabetic subjects
2	Uzma Naseeb	2013	Plasma Proteomics in renal diseases: Consequences of retained, modified or missing polypeptides.
3	Summer Iqbal	2013	Antiviral activity of Fluoroquinolones against RNA and DNA viruses
4	Ambreen Atta	2015	Studies on Taxon specific crystallins from lenses of *Uromastyx hardwiskii*
5	Amber Ilyas	2015	Proteomic analysis of anti-cancerous drug induced modifications in hepatocellular carcinoma cell lines

6	Uzma Urooj Malik	2017	Identification of Differentially Expressed Proteins in Oral Squamous Cell Carcinoma (OSCC) through Proteomic Analysis

Ph.D. as Co-Supervisor (Awarded):

S. No.	Name	Year	Title of thesis
1	Shazia Dawood	2016	Identification of Novel Inhibitors of Tryptophan 2, 3 Dioxygenase (TDO) and Indole Amine 2,3 Dioxygenase (IDO) Using Experimental and Computational Approaches

M.Phil (Awarded):

S. No.	Name	Year	Title of thesis
1	Ammara Salim	2012	Oral Carcinoma: Studies on biomarkers using *in-silico* and proteomics approach

Ph.D. Students (Current):

1. Ms. Amena Baig (thesis submitted)
2. Mr. Muhammad Faraz Anwar
3. Mr. Zohaib Yaseen
4. Ms. Tabinda Salman

M.Phil Students (Current):

1. Ms. Iffat Saeed (thesis submitted)
2. Mr. Muhammad Usman
3. Ms. Fariha Tanveer

PUBLICATIONS

1. Lateef M, Azhar A, Siddiqui BS, Zarina S, Uddin N, Anwar MF, Siddiqui K, Azhar KF, Iqbal L, Mehmood R, Perveen S. New anthrarobin acyl derivatives as butyrylcholinesterase inhibitors: synthesis, *in vitro* and *in silico* studies. Heliyon. 2017 Jul 10;3(7):e00350. doi: 10.1016/j.heliyon.2017.e00350.

2. Naseeb U, Zarina S, Jägerbrink T, Shafqat J, Jörnvall H, Axelsson J. Differential hemoglobin A sequestration between hemodialysis modalities. *Biomol Concepts.* 8(2):125-129 (2017) doi: 10.1515/bmc-2017-0006. [Epub ahead of print]

3. Waheed, H., Friedman, H., Moin, S.F., Zarina, S., Ahmed, A. The Primary Structure of βI-Chain of Hemoglobin from Snake Sindhi Krait (Bungarus sindanus sindanus). *Protein Journal*, 35:193-201 (2016) **IF: 1.039**

4. Atta, A., Hashim, Z., Zarina, S. Structure Function Relationship of Lactate Dehydrogenase/ ε–Crystallin from Lenses of Indian Spiny-Tailed Lizard (*Uromastyx hardwickii)* Pakistan Journal of Zoology, (2016), (accepted)) **IF: 0.404**

5. Atta, A., Hashim, Z., Zarina, S. Lens proteomics: exploring adaptive conflict in *Uromastyx hardwickii* lens proteins. *J. Anim. Plant Sci*., 26:261-268, 2016. **IF: 0.448**

6. Malik, U.U., Zarina, S., Pennington, S.R. Oral squamous cell carcinoma: Key clinical questions, biomarker discovery, and the role of proteomics, *Archives of Oral biol.,* 63:53-65, 2016. **IF: 1.735**

7. Baig, A., Zohaib, M., Ata-ur-Rehman, Zarina, S. Q192R Paraoxonase1 Polymorphism is a risk factor for Cataract in Pakistani population, *Pakistan Journal of Pharmaceutical Sciences,* 29:765-771 (2016) **IF: 1.103**

8. Zohaib, M., Ansari, S.H., Hashim, Z., Shamsi, T.S., Zarina, S. Serum Paraoxonase activity and Malondialdehyde serum levels remain unaffected in response to Hydroxyurea therapy in β-thalassemia patients. *J. Clinic. Pharmacol.,* 56(7):869-74. (2016) **IF: 2.475**

9. Naseeb, N. Axelsson, J., Jägerbrink, T., Shafqat, J., Zarina S., Jörnvall, H Complementary LC-MS/MS Proteomic Analysis of Uremic Plasma Proteins. *JCPSP*, 25 (8): 606-609, 2015. **IF: 0.554**

10. Ilyas, A., Hashim, Z. Zarina, S. Effects of 5'-azacytidine and alendronate on a hepatocellular carcinoma cell line: a proteomics perspective. *Molecular and Cellular Biochemistry* 405:53-61, 2015. **IF: 2.388**

11. Atta, A., Ilyas, A., Hashim , Z., Ahmed, A., Zarina, S. Lactate Dehydrogenase Like Crystallin: A Potentially Protective Shield for Indian Spiny-Tailed Lizard (Uromastyx hardwickii) Lens Against Environmental Stress? *Protein Journal*, 33:128-134, 2014. **IF: 1.039**

12. Malik, U.U, Siddiqui, IA., Hashim, Z. and Zarina, S. Measurement of Serum Paraoxonase Activity and MDA levels in

patients suffering with Oral Squamous Cell Carcinoma. *Clin Chim Acta* 430:38-42, 2014. **IF: 2.764**

13. Dawood, S., Zarina, S. and Bano, S. Docking studies of antidepressants against single Crystal structure of tryptophan 2, 3-dioxygenase using molegro virtual docker software. *Pakistan Journal of Pharmaceutical Sciences* 27(5 Spec no):1529-39, 2014. **IF: 1.103**

14. Ilyas, A., Hashim, Z. Naeem, N., Haneef, K. and Zarina, S. The Effect of Alendronate on Proteome of Hepatocellular Carcinoma Cell Lines. *International Journal of proteomics* 2014:9, 2014.

15. Siddiqui, S., Khan, I., Zarina, S. and Ali, S. Use of the SYBR Green Dye for Measuring Helicase Activity, *Enzyme and Microbial Technology*, 52(3):196-8, 2013. **IF: 2.96**

16. Hashim Z. and Zarina, S. Osmotic stress induced oxidative damage: Possible mechanism of cataract formation in diabetes. *Journal of Diabetes and its complications,* 26(4) 275-9, 2012. **IF: 1.925**

17. Saleem, A., Azam, SA, Zarina, S. Docking and Molecular Dynamics Simulation Studies on Glycation Induced Conformational Changes of Human Paraoxonase 1. *Eur. Biophysics J.* 41(2) 241-8, 2012. **IF: 2.474**

18. Hashim, Z and Zarina, S. Advanced Glycation End Products in diabetic and non-diabetic human subjects suffering from cataract. *AGE* 33(3) 377-84, 2011. **IF: 3.44**

19. Ul-Haq Z, Khan W, Zarina S, Sattar R, Moin ST. Template-based structure prediction and molecular dynamics simulation study of two mammalian Aspartyl-tRNA synthetases. *J Mol Graphics & Modeling* 28: 401-412 2010. **IF: 2.022**

20. Hashim Z, Ilyas A, Saleem A, Salim A, Zarina S. Expression and activity of paraoxonase 1 in human cataractous lens tissue *Free Radic Biol Med.* 46(8): 1089-95 2009, **IF: 5.71**

21. Naseeb U, Shafqat J, Jägerbrink T, Zarina S, Alvestrand A, Jörnvall H, Axelsson J. Proteome patterns in uremic plasma. *Blood Purification* 26(6) 561-568 2008, **IF: 1.92**

22. Hashim, Z and Zarina, S. Assessment of Paraoxonase activity and Lipid peroxidation levels in diabetic and senile subjects suffering from Cataract. *Clin. Biochem* 40: 705-709 2007, **IF: 2.229**

23. Hashim, Z and Zarina, S. Antioxidant markers in human senile and diabetic cataractous lenses. JCPSP 16(10): 637-640 2006, **IF: 0.55**

24. Zarina, S. and Zaidi, Z.H. Homology modeling of Rho-crystallin from Bullfrog (*Rana catesbeiana*) lens *J. Molecular Graphics and Modelling* 22(4): 285-291, 2004, **IF: 2.022**

25. Thampi, P., Zarina, S. and Abraham, E.C. □-crystallin Chaperone Function in Diabetic Rat and Human Lenses. *Molecular and Cellular Biochemistry* 229(1):113-118, 2002, **IF: 2.388**

26. Zarina, S., Zhao, H-R., Abraham, E.C. Advanced Glycation end products in human senile and diabetic cataract lenses. *Molecular and Cellular Biochemistry* 210: 29-34, 2000, **IF: 2.388**

27. Zarina, S., Slingsby, C., Jaenicke, J., Zaidi, Z.H., Driessen, H. and Srinivasan, N Three dimensional model and quaternary structure of the human eye lens protein γS-crystallin based on β and γ-crystallin X-ray coordinates and ultracentrifugation *Protein Science* 3:1840-1846, 1994, **IF: 2.861**

28. Zarina, S., Abbasi, A. and Zaidi, Z.H. Cataractous lens and its environment. *Pure and Applied Chemistry* 66(1): 111-115, 1994, **IF: 3.386**

29. Zarina, S., Abbasi, A. and Zaidi, Z.H. Primary structure of □s-crystallin from human lens. *Biochem. J*. 287(2):375-381, 1992, **IF: 4.779**

30. Zarina S, Zaidi ZH, Wania JH. Free amino acids composition of aqueous humor from Pakistani subjects with senile cataract. J Pak Med Assoc. 1987 37:67-70, **IF: 0.231**

Zehra Manzoor, Ph.D.
Assistant Professor
National Center for Proteomics,
University of Karachi,
Karachi-75270, Pakistan.
Email: zehra.manzoor@uok.edu.pk

Summary: Biochemist with Skills in *Protein chemistry and molecular biology*.

Excellent team worker with strong organizational and management skills.

Education:

Ph.D. in Biochemistry 2002-2009
Department of Biochemistry,
University of Karachi.

Thesis: "Anti-oxidant status, Lipid Peroxidation and levels of Advanced glycation end products in Human cataract lenses from senile and diabetic subjects."

M.Sc. in Biochemistry 1998-1999
Department of Biochemistry,
University of Karachi,
Karachi Pakistan. (1st Division)

Thesis: "Effect of high sugar level on Dopamine metabolism of rat (albino wistar) cerebral cortex"**.**

Expertise:

Purification and Characterization Techniques includes Gel filtration chromatography, Reverse phase high performance liquid chromatography (RP-HPLC), Enzyme assays, Western blotting, ELISA, SDS-PAGE, 2D-PAGE, DiGE, in gel digestion, protein identification by LC-MS/MS Using CID, PQD and ETD, MALDI-TOF and MALDI TOF/TOF MS.

Cell and Molecular Biology expertise in RNA/DNA extraction, Primer designing, PCR, Agarose gel electrophoresis, Cell Culture, Gel Documentation.

Professional Experience:

Assistant Professor, Jan 2015 – till date.
National Center for Proteomics,
University of Karachi,

Assistant Professor, PC-1 Jan 2013 – Dec 2014.
National Center for Proteomics,
University of Karachi,

Senior Research Assistant Aug 2009 – Dec.2012.
National Center for Proteomics,
University of Karachi,

Postdoctoral Training Aug 2010 – Dec 2010
Honorary Senior Research Assistant
Aberdeen Proteome Facility,
University of Aberdeen,
Aberdeen, UK.

Following methods and techniques were covered during training:

- Manual and robotic enzymatic digestion of both aqueous samples and gel derived bands or spots.
- Identification of proteins by LC-MS/MS following tryptic digestion of 1D and 2D gel bands and spots by their Peptide Fragmentation Fingerprinting (PFF).
- Identification of proteins by MALDI-TOF and MALDI-TOF/TOF MS by their Peptide Mass Fingerprinting (PMF).

FUNDED PROJECTS:

a) RESEARCH PROJECTS (As PI):

i. Proteomic modifications induced by Bisphosphonates in Human Breast Cancer Cell Lines. Funded by Higher Education Commission, Islamabad, Pakistan.
Amount: PKR. 4.525 million (Ongoing)

ii. Comparative proteomics analysis of oxidative stress associated proteins in human (normal and cancer) liver cell lines. Funded by Higher

Education Commission, Islamabad, Pakistan. Amount: PKR. 3.155 million (Ongoing)

b) RESEARCH PROJECTS (As Co-PI)

i. Paraoxonase: biological activity, clinical implications and role as a biomarker for oxidative stress and diabetes. Funded by Higher Education Commission, Islamabad, Pakistan. Amount: PKR. 4.729 million (Ongoing)

Projects Completed:

i. Analysis of Glutathione Antioxidant system and Paraoxonase activity in human lens samples. Funded by University of Karachi. 2004-2005.

ii. Lipid Peroxidation and Superoxide Dismutase analysis in human lens samples. Funded by University of Karachi. 2003-2004.

iii. Anti-oxidant Analysis during cataract formation in human subjects. Funded by University of Karachi. 2002-2003.

Awards & Honors

- Received Research Productivity Award (RPA) – 2012.
- Member of Advisory Review Board, Academic Research International.
- Awarded Indigenous Ph.D Fellowship (full funded) by HEC, Islamabad Pakistan in the year September 2004 to April 2009.
- Awarded 3rd Prize in Poster Presentation in 8th Biennial National Conference on "Emerging Trends in Biochemistry and Molecular Biology" held in Karachi University from March 07-09, 2005.

Seminars/ Workshops Organized

1. Workshop on "Research Tools in Proteomics"; National Center for Proteomics, Karachi. November 16-18, 2009,
2. Lecture series by Dr. Azeem Hasan Director, Mass Spectroscopy facility, Louisiana State University, USA at National Center for Proteomics, University of Karachi. June, 2010.
3. Lecture Sessions at National Center for Proteomics, University of Karachi, on "Targeting the Arthopod Disease Vector in Post-Genomic Era" by Dr. Shahid Karim, Department of Biological Sciences, The University of Southern Mississippi, USA. August 05, 2010

4. Workshop on "Research Tools in Genomics and Proteomics". December 20-22, 2011,
5. Workshop on "Bioinformatics Tools in Proteomics". December 28-29, 2011,
6. Workshop on "Exploring Protein using in Silico Approaches". February 21, 2012,
7. Symposium on "Omics Research: Road Map for Future". February 22nd, 2012,
8. Workshop on "Exploring Gene Expression". February 23rd, 2012.
9. Workshop on "Proteomics in a Nutshell" September 17-20, 2013.
10. Workshop on "qPCR Real Time Quantification of Gene Expression" October 14-15, 2014.
11. Workshop on "Two dimensional electrophoresis", Organized by National Center for Proteomics, University of Karachi, on November 3-4, 2015.
12. Workshop on "Conventional and Advanced Chromatography Methods in Protein Purification II. Organized by National Center for Proteomics, University of Karachi, on November, 5-7, 2016
13. Workshop on "Two dimensional gel electrophoresis", Organized by National Center for Proteomics, University of Karachi, on December 27-28, 2016
14. "1-Day Hands-on training workshop on SDS-PAGE", Organized by National Center for Proteomics, University of Karachi, on September 11, 2017

Conferences/ Presentations/Seminars/Workshops Attended

1. Workshop on "Information Handling In Biological Research" Research

   Organized by Department of Biochemistry, University of Karachi and Pakistan Scientific & Technological Information Centre (PASTIC). March 4-6, 2002,
2. 7th International Symposium on "Protein Structure Function Relationship". Karachi, Pakistan. January 20-24, 2003,
3. 8th Biennial National Conference of Pakistan Society for Biochemistry and Molecular Biology "Emerging Trends In Biochemistry and Molecular Biology" Department of Biochemistry, University of Karachi. March 7-9, 2005,

4. 9th Biennial PSBMB Conference on "Advances In Biochemistry and Molecular Biology". Department of Biochemistry, PMAS Arid Agricultural University, Rawalpindi. December 17-20, 2008.

5. HEC-Thematic Workshop in Frontier Technologies on "Enhanced production of Recombinant Biomolecules of Commercial Importance". KIBGE, University of Karachi. July 6-10, 2009.

6. Workshop on "Research Tools in Proteomics", National Center for Proteomics, University of Karachi. November 16-18, 2009.

7. Workshop on "Ion Trap Biotech Operations course" at King's College London, UK. November 16-19, 2010.

8. Workshop on "Self Assessment Report" organized by Quality Enhancement Cell, University of Karachi. September 3, 2012.
9. Proteomics Workshop, Center for Mass Spectrometry and Proteomics, University of Minnesota, Minneapolis, USA. August 13 – 15, 2013,

Publications

(12 publications: Total Impact factor = 23.857)

1. Atta, A, Ilyas, A, **Hashim, Z** and Zarina, S. Structure Function Relationship of Lactate Dehydrogenase/ ε–Crystallin from Lenses of Indian Spiny-Tailed Lizard (*Uromastyx hardwickii).*Pakistan J. Zool. 2016 ; 48: 1147-1153.

2. Zohaib, M, Ansari, S.H, **Hashim, Z,** Shamsi, T.S and Zarina, S. Serum Paraoxonase activity and Malondialdehyde serum levels remain unaffected in response to Hydroxyurea therapy in b-thalassemia patients. J. Clinic. Pharmacol. 2016; 56: 869-874.

3. Atta, A, **Hashim, Z** and Zarina, S. Lens proteomics: Exploring adaptive conflict in *Uromastyx hardwickii* lens proteins'. The JAPS. 2016; 26:261-268.

4. Ilyas, A, **Hashim, Z** and Zarina, S. Effects of 5`-azacytidine and alendronate on a Hepatocellular carcinoma cell line: A Proteomics perspective. Molecular and Cellular Biochemistry. 2015; 405:53–61.

5. Atta, A, Ilyas, A, **Hashim, Z**, Ahmed A and Zarina, S. Lactate Dehydrogenase Like Crystallin: A Potentially Protective Shield for Indian Spiny-Tailed Lizard (Uromastyx hardwickii) Lens Against Environmental Stress? Protein J. 2015. DOI 10.1007/s10930-014-9543-4.

6. Ilyas, A, **Hashim, Z.,** Naeem, N., Haneef, K. and Zarina, S. The Effect of Alendronate on Proteome of Hepatocellular Carcinoma Cell Lines. International Journal of proteomics 2014:9 pages.

7. Malik, U.U, Siddiqui, IA., **Hashim, Z**. and Zarina, S. Measurement of Serum Paraoxonase Activity and MDA levels in patients suffering with Oral Squamous Cell Carcinoma. Clin Chem acta 2014; 430: 38-42.

8. **Hashim, Z**, Zarina, S. Osmotic stress induced oxidative damage: Possible mechanism of cataract formation in diabetes. Journal of Diabetes and Its Complications. 2012; 26: 275-279.

9. **Hashim Z,** Zarina S. Advanced Glycation End Products in diabetic and non-diabetic human subjects suffering from cataract. AGE. 2011; 33: 377-384.

10. **Hashim Z**, Ilyas A, Saleem A, Salim A, Zarina S. Expression and activity of paraoxonase 1 in human cataractous lens tissue. Free Radic. Biol. Med. 2009; 46: 1089-1095.

11. **Hashim Z**, Zarina S. Assessment of Paraoxonase activity and lipid peroxidation levels in diabetic and senile subjects suffering from cataract. Clin. Biochem 2007; 40: 705-709.

12. **Hashim Z**, Zarina S. Antioxidant Markers in human senile and diabetic cataractous lenses. J.Coll. Physicians Surg.Pak. 2006; 16: 637-640.

SYED FARAZ MOIN

CONTACT INFORMATION

	Office	**Residence/Permanent**
Address:	Office room 112, National Center for Proteomics, University of Karachi, 75270-Karachi, PAKISTAN.	896/9 Dastagir Society F.B. Area Karachi-75950, PAKISTAN.
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Fax :	+9221-34650726	-
Email :	faraz.moin@uok.edu.pk	farazmoin@hotmail.com farazmoin2004@yahoo.co.uk

PERSONAL DATA

Father's Name: Syed Moin-uddin

Date of birth: September 22, 1980

Present position: Assistant Professor at National Center for Proteomics, University of Karachi.

SCIENTIFIC TRAINING

Research Training Karolinska Institute, Stockholm, SWEDEN	Jan.2014-Mar.2014	Project: "Mass spectrometric analysis of proteins, quantitation and PTM analysis"
Postdoc Kulliyyah of Science, International Islamic University of Malaysia, Kuantan, MALAYSIA	Dec.2011-Jun.2012	Project: "Screening and isolation of ABTS-oxidases (laccases) producing fungi from tree"
Research Scholarship Institute of Analytical Chemistry and Radiochemistry Leopold-Franzens University Innsbruck, AUSTRIA	Apr.2009-Mar.2010	Project: "Mass spectrometric studies of phospholipase A_2 enzyme from the venom of *Bungarus sindanus snidanus* (Sindhi krait) snake"
Research Fellow H.E.J. Research Institute of Chemistry, ICCBS, University of Karachi, PAKISTAN	2004-2011	Project: "Structure-function relationship of proteins and peptides from Sindhi krait (*Bungarus sindanus sindanus*) snake venom."
M.Sc Thesis, Department of Biochemistry, University of Karachi, PAKISTAN	Jan.2003-Dec.2003	Project: "Serum lipid profile of patients with glaucoma in comparision with healthy individuals"

RESEARCH SKILLS

Molecular Biology and Protein Chemistry: PCR, Western blotting, Enzyme inhibition assays, Protein estimation by Bradford, Lowry methods and BCA. Chromatography (HPLC, IEX, GF), Electrophoresis (SDS, Native, Disc, Gradient and Acid-Urea Triton PAGE, Tricine PAGE, 2D Gel), Enzyme assays (Proteases, Amylase, Phospholipases), Zymography, Spectroscopic techniques (UV, Visible Spectroscopy), Peptide mass fingerprinting, MALDI-TOF MS, Fungal culture (solid and liquid state), nLC MS/MS.
Computer Skills: MS Word, MS Excel, Power point, Swiss PDB viewer, BLAST, online proteomics and sequence analysis.

RESEARCH INTERESTS

Protein-protein interactions, protein structure-function relationship, protein expression and purification, structural biology and biotechnology.

TEACHING

Courses offered for MPhil and Ph. D students. One full course and two shared courses (3+1 credit hrs).

Other courses for teaching include **Biochemistry**, **Protein Chemistry** and **Techniques in Biochemistry**.

EDUCATION:

Ph.D. Protein Biochemistry *2011* HEJ Research Institute of Chemistry, ICCBS, University of Karachi, Pakistan.	*Thesis Title:* Structure-function relationship of proteins and peptides from Sindhi krait (***Bungarus sindanus sindanus***) snake venom.
M.Sc *2003* Department of Biochemistry, University of Karachi, Pakistan.	*Major:* Biochemistry
B.Sc (Hon.) *2002* Department of Biochemistry, University of Karachi, Pakistan.	*Majors:* Biochemistry, Microbiology, Chemistry
GRE (ETS) 2006 Biochemistry, Cell and Molecular biology	Secured over all 54%tile rank
HSC (Higher Secodary Certificate) 1997-1999 Government Degree College Gulshan-e-Iqbal	'A' Grade (Pre-medical)
SSC (Secondary School Certificate) 1995-1996 Alshams Secondary School Dastagir Society	'A' Grade (Science group)

SCIENTIFIC ACTIVITIES

Projects

Venomics of ***Bungarus sindanus sindanus*** (Sindhi krait) snake, endemic to Sindh: Contributing towards envenomation management.	0.5 million HEC	Completed
Proteomic profiles of Kidney Cell Line Exposed to Heavy Metals	5.55 million HEC	Ongoing
2D gel electrophoresis and HPLC separation profile of *Echis carinatus sochureki* snake venom: Decomplexation analysis	0.1 million DFS grant, UoK	Completed

Students under Supervision

1. Ms Sadia Erum — M. Phil/Ph. D student
2. Mr. Hafiz Zaid Majeed Khan — M. Phil student

Students under Co-Supervision

1. Mr. M. Uzair Razzaq — M. Phil/Ph. D student
2. Mr. M. Atif Nizam — M. Phil/Ph. D student

PUBLICATIONS

Moin, S. F., Rainer, M., Waheed, H., Stasyk, T., Huber, L. A., Lottspeich, F., Bonn, G. K., (2011), "Purification and Characterization of Phospholipase A2 and Identification of Kappa Bungarotoxin from *Bungarus sindanus sindanus* (Sindhi Krait) venom" *Curr Ana Chem, 7(3),* 176-183.

Moin, S. F., Alfarra, H. Y., Omar, M. N., (2012)"Azo Dyes Decolourization by ABTS-oxidases (Laccases) from a Fungus from Tropical Tree" *Biosci Biotech Res Asia, 9(2),* 641-646.

Omar, M. N., Khan, N. T., N. H. M. Hasali, **Moin, S. F**., Alfarra, H. Y., (2012) "Microbial Transformation of Artemisinin – Anti-malaria Drug"*Adv Biores, 3(2),* 27-31.

Moin, S. F., Omar, M. N., (2014) "Laccase Enzyme;Purification, Structure to Catalysis and Tailoring" *Protein Peptide Lett, 21(8),* 707-713.

Zohaib Khurshid Sultan, Shariq Najeed, Maria Mali, **Syed Faraz Moin**, Syed Qasim Raza, Sana Zohaib, Farshid Sefat, Muhammad Sohail Zafar, (2016) "Histatin Peptides: Pharmacological Functions and its Applications in Dentistry" *Saudi Pharmaceutical Journal, 25,* 25-31. http://dx.doi.org/10.1016/j.jsps.2016.04.027.

Waheed, H., Friedman, H., **Moin, S. F**., Zarina, S., Ahmed, A., (2016) "The Primary Structure of βI-Chain of Hemoglobin from Snake Sindhi Krait (Bungarus sindanus *sindanus*)" *The Protein Journal, 35,* 193-201.

Rabia Sannam Khan, Zohaib Khurshid, Shazia Akhbar and **Syed Faraz Moin**, (2016) "Advances of Salivary Proteomics in Oral Squamous Cell Carcinoma (OSCC) Detection: An Update" ***Proteomes, 4, 41***; doi:10.3390/proteomes4040041.

Waheed, H. **Moin, S. F**., Choudhary, M. I., (2017) "Snake venom: From Deadly Toxins to Life-saving Therapeutics" *Curr Med. Chem*, accepted manuscript.

Khurshid, Z., **Moin, S. F**., Khan, R. S., Salim Agwan, M. A., Alwadaani, A. H., Zafar, M. S., (2017) "Human Salivary Protein Extraction from RNAPro-SAL, Pure-SAL and Passive Drooling Method" *Euro J Dentistry, 11(3),* 385-389.

Kanwal Haneef, Ph.D.

Kanwal.haneef@gmail.com

RESEARCH INTERESTS:

Stem Cell Biology, Tissue Engineering, Regenerative Medicine

EDUCATION:

Doctorate (Ph.D.) 2012 Molecular Medicine
Panjwani Center for Molecular Medicine and Drug Research (PCMD), ICCBS, University of Karachi, Pakistan.

Thesis Title: "Role of cytokines and growth factor in the stimulation of stem cells for the regeneration of cardiac tissue"

Masters of Science 2004 Microbiology
Department of Microbiology, University of Karachi, Pakistan

Bachelors of Science 2002 Microbiology
University of Karachi, Pakistan Biochemistry, Chemistry,

SCIENTIFIC TRAINING

Post-Doctorate March. 2016- Sep. 2016 **Project:** Role of ECM Scaffold on induced pluripotent cells (IPSCs) derived cardiomyocytes maturation
The Australian Institute for Bioengineering and Nanotechnology (AIBN), University of Queensland, Australia

Research Scholar Oct. 2009 to May. 2010 **Project:** In vitro electrostimulation of cell Seeded collagen scaffolds for cell conditioning and differentiation
Cardiovascular Research Lab, European Hospital Georges Pompidou, Descartes University, Paris, France

TEACHING AND RESEARCH EXPERIENCE

Senior Research Assistant National Center for Proteomics, University of Karachi October. 2016- till date	Area of interest: stem cells proteomics. Teaching experience: M.Phil courses
Senior Research Assistant National Center for Proteomics, June. 2015- Feb. 2016 University of Karachi	Area of interest: stem cells proteomics Teaching experience: M.Phil courses
Assistant Professor (PC1) Dec. 2014- May. 2015 National Center for Proteomics, University of Karachi	Area of interest: stem cells proteomics Teaching experience: M.Phil courses
Assistant Professor (IPFP) June. 2013- May. 2014 National Center for Proteomics, University of Karachi	Area of interest: stem cells proteomics Teaching experience: M.Phil courses
Senior Research Associate Sep. 2012- May. 2012 Panjwani Center for Molecular Medicine and Drug Research (PCMD), ICCBS, University of Karachi, Pakistan	Area of interest: Stem Cell Biology

HONORS AND AWARDS:

Australian Ambassador Award (2018) Australian Government Department of Education and Training

American Heart Association Paul Dudley White International Best Abstract award (2017) entitled "Three Dimensional Collagen Scaffold Combined with Zebularine Treated Rat Bone Marrow Mesenchymal Stem Cells Improved Cardiac Differentiation *in vitro"* in American Heart Association Conference, USA

Australian Government Department of Education and Training Postdoctoral Research Scholarship (2016) from March 2016 –September 2016

1st Prize on poster presentation (2011) entitled "Hypoxic preconditioning of Mesenchymal Stem Cells; Strategy for enhancing the cardiac cellular therapy" in 3 rd International Workshop-cum-Training Course on Molecular Medicine and Drug Research. Dr. Panjwani Center for Molecular Medicine & Drug Research, International center for Chemical & Biological Center, University of Karachi

Sandwich Ph.D. Scholarship (2009) of the Embassy of France in Pakistan" from 1st Oct 2009 to 30thJune 2010.

Best Poster Prize (2009) (one of the eight best posters) entitled "Characterization of Mesenchymal Stem Cells and Cardiomyocytes and their behavior in co-culture in 2nd International Workshop-cum-Training Course on Molecular Medicine and Drug Research. Dr. Panjwani Center for Molecular Medicine & Drug Research, International center for Chemical & Biological Center, University of Karachi.

SCIENTIFIC SKILLS:

Cell Culture, Primaries/ Cell line growth and maintenance, Bone Marrow isolation and Cardiomyocytes isolation, Microscopy, Viral and non viral Transfection .Work on different types of 3D mātrices, Flow cytometery, Biochemical assays, Immunocytochemistry, Polymerase Chain Reaction (PCR), Western blots/ Gel electrophoresis (Agarose SDS-Page), Extraction, purification and quantization of RNA and proteins.

PUBLICATIONS:

Habib R., **Haneef K.**, Naeem N., Khan I and Salim A (2015). Hypoxic stress and IL-7 gene overexpression enhance the fusion potential of rat bone marrow mesenchymal stem cells with bovine renal epithelial cells.. Molecular and Cellular Biochemistry. 403(1-2):125-37 (IF: 2.393)

Ali A., Akhter MA., **Haneef K.**, Khan I., Naeem N., Habib R., Kabir N and Salim A (2015) Dinitrophenol modulates gene expression levels of angiogenic, cell survival and cardiomyogenic factors in bone marrow derived mesenchymal stem cells. Gene. 555(2):448-57 (IF: 2.13)

Ilyas A., Hashim Z., Naeem N., **Haneef K** and Zarina S (2014) The Effect of Alendronate on Proteome of Hepatocellular Carcinoma Cell Lines. International Journal of Proteomics Volume 2014, Article ID 532953, 9 pages http://dx.doi.org/10.1155/2014/532953 (IF: N/A)

Haneef K., Naeem N., Khan I., Iqbal H., Kabir N., Jamall S., Zahid M and Salim, A (2014) Conditioned medium enhances the fusion capability of rat bone marrow mesenchymal stem cells and cardiomyocytes. Molecular biology reports. 41(5):3099-3112 (IF: 2.02)

Naeem N., **Haneef K**.., Jamall S., Kabir N and Salim A. (2013) DNA methylation inhibitors, 5-

azacytidine and zebularine potentiate the transdifferentiation of rat bone marrow mesenchymal stem cells into cardiomyocytes. Cardiovascular Therapeutics. 31(4):201-9 (IF: 2.36)

Khan I., Ahmed N., Akhter MA., Ali A., **Haneef K.**, Naeem N and Salim A (2013) Effect of Rap1 GTPase Activation and Hypoxia on the Gene Expression Pattern of Cell Adhesion Molecules in Bone Marrow Derived Mesenchymal Stem Cells. Pakistan Journal of Biochemical and Molecular Biology. 46(1):16-21. (IF: N/A)

Haneef K., Lila N., Benadda S., Legrand F., Carpentier A., and Chachques JC. (2012) Development of bioartificial myocardium by electrostimulation of 3D collagen scaffolds seeded with stem cells. Heart International. 7(2):e14. doi: 10.4081/hi.2012.e14) (IF: N/A)

Haneef K.., Naeem N., Iqbal H., Jamall S., Kabir N and Salim, A. (2010) Gene expression pattern in rat bone marrow mesenchymal stem cells in response to hypoxia. Pakistan Journal of Biochemical and Molecular Biology. 43(2): 90-93. (IF: N/A)

Haneef K., Anwar Ali., Irfan Khan., Akhter MA., Naeem N., Jamall S., Kabir N., Habib R., Iqbal H., Salim A. Interleukin-7-Engineered Rat Bone Marrow Mesenchymal Stem Cells Show Increased Fusion Potential in vitro and Improved Cardiac Function in Rat Model of Myocardial Infarction (Manuscript in preparation)

SCIENTIFIC ACTIVITIES:

Presentations/Abstracts of Conferences attended

Kanwal Haneef, Nadia Naeem, Rakshinda Habib, Siddiqua Jamall, Nurul Kabir and Asmat Salim. Fusion of SCF Engineered Mesenchymal Stem Cells with Cardiomyocytes: Strategy to enhance cell-based therapy of myocardial infarction.11th Biennial Conference of Pakistan Society for Biochemistry and Molecular Biology (PSBMB) Bimolecular Sciences in Development (November 25-28, 2013). The University of the Punjab, Lahore, Pakistan.

Kanwal Haneef, Nadia Naeem, Hana'a Iqbal, Siddiqua Jamall, Nurul Kabir and Asmat Salim. Hypoxic Preconditioned Mesenchymal Stem Cells Induces Elevated Expression of Cardioprotective Cytokines and Growth Factors. World Conference on Regenerative Medicine, (October 23–25, 2013) at Leipzig Germany (e- poster presentation).

Kanwal Haneef, Anwar Ali, Muhammad Aleem Akhter, Irfan Khan, Nadia Naeem, Siddiqua Jamall, Nurul Kabir, Rakshinda Habib, and Asmat Salim. IL-7 Engineered Mesenchymal Stem Cells Increased Fusion Potential in *Vitro* and Improved Cardiac Function *in Vivo.* 4th International Workshop-cum-Training Course on Molecular Medicine and Drug Research. (MMDR-4) (January 7-10, 2013) International Center for Chemical and Biological Sciences, University of Karachi, Pakistan.

Kanwal Haneef, Nadia Naeem, Hana'a Iqbal, Siddiqua Jamall, Nurul Kabir and Asmat Salim. Hypoxic preconditioning of Mesenchymal Stem Cells; Strategy for enhancing the cardiac cellular therapy. 3rd International Workshop-cum-Training Course on Molecular Medicine and Drug Research. (MMDR-3) (January 3- 6, 2011) International Center for Chemical and Biological Sciences, University of Karachi, Pakistan.

Kanwal Haneef, Nadia Naeem, Hana'a Iqbal, Siddiqua Jamall, Nurul Kabir and Asmat Salim.

Transcriptional profiling of rat bone marrow mesenchymal stem cells in response to oxygen deprivation in culture. 10th Biennial Conference of Pakistan Society for Biochemistry and

Molecular Biology (PSBMB) Bimolecular Sciences in Development. (December 1-5, 2010).Dr. A.Q Khan Institute of Biotechnology & Genetic Engineering (KIBGE), University of Karachi, Pakistan.

Kanwal Haneef, Nadia Naeem, Siddiqua Jamall, Nurul Kabir and Asmat Salim. Characterization of Mesenchymal Stem Cells and Cardiomyocytes and their behavior in co-culture. 2nd International Workshop-cum-Training Course on Molecular Medicine and Drug Research (MMDR-2), (January 12-15, 2009) Dr. Panjwani Center for Molecular Medicine & Drug Research, International center for Chemical & Biological Sciences, University of Karachi, Pakistan.

Kanwal Haneef, Nadia Naeem, M.Amir Javed, Afsheen Raza, Nazia Ahmed, Shahida Shujaat and Asmat Salim Study of Differentiation Potential of Bone Marrow Mesenchymal Stem Cells into Cardiac Cells. 1st International Workshop-cum-Training Course on Molecular Medicine and Drug Research (MMDR-1), (January 16-30, 2007, Karachi-Islamabad) Dr. Panjwani Center for Molecular Medicine & Drug Research, International center for Chemical & Biological Sciences, University of Karachi, Pakistan.

Workshops organized:

- Workshop on 2D Gel Electrophoresis during 29-30 December, 2016 at National Center for Proteomics, Karachi Pakistan
- Workshop on qPCR Real Time Quantification of Gene Expression, held during 14-15 October, 2014 at National Center for Proteomics, Karachi Pakistan
- Workshop on Proteomics in a Nutshell, held during 17-20 September, 2013 at National Center for Proteomics, Karachi Pakistan
- Workshop on Conventional and Advance Chromatographic Methods for Protein Purification, held during 03-05 September, 2013 at National Center for Proteomics, Karachi Pakistan

REFERENCES:

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Karachi-75270, Pakistan.
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Education:

2014	**Ph.D Biochemistry (NCP)** Research title: **"**Proteomic analysis of anti-cancerous drug induced modification in hepatocellular carcinoma". National Center for Proteomics, University of Karachi.
2003-2004	**M.Sc. Biotechnology**, University of Karachi. **(1st Division)** Research topic: "Isolation & Characterization of proteases from Bacillus specie NH-25". Mathematics certificate course.
2001-2002	B.Sc. Botany, biochemistry, Chemistry, University of Karachi. **(1st Division)**
1999-2000	HSC. Board of intermediate Education, Karachi. **(1st Division)**
1997-1998	SSC. Board of Secondary Education, Karachi. **(1st Division)**

Research Experience:

- Senior Research Assistant at National Center for Proteomics, University of Karachi, 2014-till date.
- M.Phil/Ph.D student at National Center for Proteomics, University of Karachi, 2008-2014.
- 1 year training from Juma core facility research lab, Aga Khan University Hospital, Karachi.
- Research Assistant at National Center for Proteomics, University of Karachi, 2006-2008.
- Research Assistant at Pakistan Agricultural Research Center (PARC), 2006.

Scientific Skills:

Protein Purification and Characterization Techniques.

Gel filtration chromatography, Reverse phase high performance liquid chromatography (RP-HPLC), FPLC, Electrophoresis, Western blotting, ELISA, 2D-PAGE.

Cell and Molecular Biology Techniques.

PCR, qPCR, animal cell and tissue Culture

Achievements:

- Awarded Indigenous Ph.D Fellowship (full funded) by HEC, Islamabad Pakistan.
- Awarded 1st Prize in Poster Presentation in Symposium on "Omics Research: Road Map for Future" February 22nd, 2012.

Seminars/ Workshops Facilitated/Organized:

- First national Pakistan proteomic society workshop “Road map to proteome research” Life science-HEC workshop. Organized by Department of Biochemistry, University of Karachi. Delivered a lecture on western blotting. February 3-5,2007
- November 16-18, 2009, Workshop on “Research Tools in Proteomics”; National Center for Proteomics, Karachi.
- December 20-22, 2011, Workshop on "Research Tools in Genomics and Proteomics".
- February 21, 2012, Pre-Symposium Workshop on "Exploring Protein using in Silico Approaches".
- February 22, 2012, Symposium on "Omics Research: Road Map for Future".
- February 23 – 24, 2012, Post-Symposium Workshop on "Exploring Gene Expression".
- Workshop on "Conventional and Advance Chromatographic Methods for Protein Purification", Organized by National Center for Proteomics, University of Karachi, on September 03-05, 2013.
- Workshop on "Proteomics in a Nutshell", Organized by National Center for Proteomics, University of Karachi, on September 17-20, 2013.
    - Workshop on "qPCR Real Time Quantification of Gene Expressionl", Organized by National Center for Proteomics, University of Karachi, on October 14-15, 2014.

- Workshop on "Two dimensional electrophoresis", Organized by National Center for Proteomics, University of Karachi, on November 3-4, 2015.
- First International Conference on Life sciences “Emerging Trends in Biological Sciences and Genomics”, held in University of Karachi, on December28-30, 2015. (Oral presentation).
- Workshop on "Conventional and Advance Chromatographic Methods for Protein Purification II", Organized by National Center for Proteomics, University of Karachi, on April 05-07, 2016 (Member of Organizing committee).
- Workshop on “Basic to advanced tools in cell culture” July 22, 2016. Delivered a lecture on cell culture. Organized by NCP
- Workshop on "Two dimensional gel electrophoresis", Organized by National Center for Proteomics, University of Karachi, on December 27-28, 2016
- “1-Day Hands-on training workshop on SDS-PAGE”, Organized by National Center for Proteomics, University of Karachi, on September 11, 2017.

Conferences/ Presentations/Seminars/ Workshops Attended:

- World health updates: An international Medical, Dental and nursing Conference Karachi. January 26-28,2007
- Workshop on “fundamentals of Tissue Engineering’ held as a part of 12th National Health Sciences Research Symposium, Injury in the developing world form prevention to care. At Aga Khan University, Karachi, Pakistan. August 28-30, 2008.
- Pakistan Biological safety association 1st International Seminar on “Laboratory Biosafety” , Karachi, Pakistan held at Aga Khan University, Karachi, Pakistan. March 21st, 2009.
- Pakistan Biological safety association 2nd International Seminar on “Laboratory Biosafety” , Karachi, Pakistan held at Aga Khan University, Karachi, Pakistan.
- August 05, 2010 Lecture Sessions at National Center for Proteomics, University of Karachi, on "Targeting the Arthopod Disease Vector in Post-Genomic Era" by Dr. Shahid Karim, Department of Biological Sciences, The University of Southern Mississippi, USA.
- Seminar on (Next Generation Sequencing” on December 14, 2017.

Computer Literacy:

Primer3, Oligo, Prism, PDQuest, Quantity One, CompuSyn, Database searching (Pubmed, nBLAST, PBLAST, Mascot.

Publications:

1. Atta, A, **Ilyas, A**, Hashim, Z and Zarina, S. Structure Function Relationship of Lactate Dehydrogenase/ ε–Crystallin from Lenses of Indian Spiny-Tailed Lizard (*Uromastyx hardwickii).*Pakistan J. Zool. 2016 ; 48: 1147-1153.
2. **Ilyas, A**, Hashim, Z and Zarina, S. Effects of 5`-azacytidine and alendronate on a Hepatocellular carcinoma cell line: A Proteomics perspective. Molecular and Cellular Biochemistry. 2015; 405:53–61.
3. Atta, A, **Ilyas, A**, Hashim, Z, Ahmed, A and Zarina, S. Lactate Dehydrogenase Like Crystallin: A Potentially Protective Shield for Indian Spiny-Tailed Lizard (Uromastyx hardwickii) Lens Against Environmental Stress? Protein J DOI 10.1007/s10930-014-9543-4.
4. **Ilyas, A,** Hashim, Z, Naeem, N, Haneef, K and Zarina, S. The Effect of Alendronate on Proteome of Hepatocellular Carcinoma Cell Lines. International Journal of proteomics 2014:9 pages
5. Hashim, Z, **Ilyas A,** Saleem A, Salim A, Zarina S. Expression and activity of paraoxonase 1 in human cataractous lens tissue. Free Radic. Biol. Med. 2009; 46: 1089-1095.
6. Sahar, N, Ahmed, M, Parveen Z, **Ilyas A** and Bhutto A. Screening of mycotoxins in wheat, fruits and vegetables grown in Sindh, Pakistan. Pak. J. Bot. 2009; 41: 337-341.

Survey’s Results

Course No.	Course Title	Teacher/Instructor	No of Students
NCP-702	Techniques in Protein Chemistry & Proteomics I	Dr. Zehra Manzoor	03
NCP-705	Bioinformatics I	Prof. Dr. Shamshad Zarina	03 NCP 26 KIBGE
NCP-710	Biological Safety and Risk Management	Dr. Zehra Manzoor, Dr. Kanwal Haneef, Dr. Faraz Moin, Dr. Amber Ilyas	03