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School of Biological Sciences
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Our aim is to make School of Biological Sciences a leading research institute with a stellar reputation. We nurture our students with intellectual and personal development by providing them with supportive and independent research environment.
The School of Biological Sciences University of the Punjab, Lahore, was established in 2002 with the 'prime mandate' to impart quality education/research guidance of international standard to MPhil and PhD students in the broader domain of biological sciences. To achieve this goal, SBS has developed infrastructure which is at par with international standards and has emerged as a focal point for research activities in the realm of modern day biology. Human resource development is another cornerstone of the objectives of the SBS. The School is thus engaged in providing quality education and research environment not only to its own students but also to students from other Life Sciences Departments/Institutes of the University, as well as, of the country. The School has progressed to its present level of excellence due to the hard work of the faculty members having a track record of high standard international research and academic credentials.

The achievements of the School, as acknowledged at various forums, both in terms of quality and quantity of research, reflect the dedication of its faculty and students in achieving the objectives of the establishment of the School. As Chairman of BOGs of SBS and Vice-Chancellor of the University it is heartening to see this institute blossom.

Prof. Dr. Niaz Ahmad Akhtar
From the Founding Director General

Since its inception 15 years ago, School of Biological Sciences has established itself to be a successful institution for research education at PhD level. There is no doubt that most research themes of our PhD students reflect the contemporary trend in biological sciences. All the students admitted in SBS are awarded a scholarship.

The faculty of SBS has seized the opportunities, of well-equipped laboratories, offered by SBS and have established successful research groups. The future success of SBS depends on how active the faculty is in the laboratory, prepared to work with their research students for long hours, share with them the frustration of frequent failure in the hope of a few rewarding moments. This is the traditional way in which scientific techniques and culture is passed on from one generation to the other. The hope is that in SBS this tradition will be followed.

Muhammad Akhtar

FRS
Muhammad Akhtar, PhD, FRS,  
Founding Director General  
Research Interests:  
Biochemistry, Stereochemistry,  
Enzymology and Protein

Javed Iqbal, PhD  
Professor Emeritus  
Research Interests:  
Radiation Botany, Plant Morphogenesis,  
Biotechnology, Molecular markers of growth, Differentation & Disease

Abdul Rauf Shakoori, PhD  
Professor Emeritus  
Research Interests:  
Cell Biology, Molecular Biology,  
Gene Expression and  
Biochemical Toxicology, Environmental Biotechnology, Biopesticides

Muhammad Waheed Akhtar, PhD  
Professor Emeritus  
Research Interests:  
Proteomics, Biochemistry, Enzymes,  
Gene Expression, Genetic Biomarkers and Protein Biomarkers
Naeem Rashid, PhD
Professor / Acting Director General
Research Interests:
Thermophilic Microorganism and their Thermostable Products, Plant Microbe interaction

Sadaf Naz, PhD
Associate Professor
Research Interests:
Human Molecular Genetics, Genetic Disorders annotated with hearing

Qamar Bashir, PhD
Assistant Professor
Research Interests:
Biochemistry, Protein Chemistry, Enzymology, Molecular Biology and Structure Biology

Qurra-tul-Ann Afza Gardner, PhD
Assistant Professor
Research Interests:
Biological Mass Spectrometry, Insulin and Proinsulin Production, Enzymology, Amyloidosis and Fibrillation
**Naveed Shahzad, PhD**  
Assistant Professor  
Research Interests:  
Tumor Virology, Oncology, Microbiology,  
Cell and Molecular Biology  

**Uzma Qaisar, PhD**  
Assistant Professor  
Research Interests:  
Molecular Biology, Microbiology, Metal resistance mechanisms in prokaryotes and protozoans,  
Genetic profiling at transcriptional and translational level  

**Asima Tayyab, PhD**  
Assistant Professor  
Research Interests:  
Plant Molecular Biology, Cotton Fiber Transcriptional Dynamics, Bioinformatics,  
Plant Pathology, Bacteriology and Microbial Genetics  

**Naseer Ahmad, PhD**  
Assistant Professor  
Research Interests:  
Food Enzymology (synthesis and application of enzymes in food processing),  
Food Biotechnology, Probiotics and Prebiotics, Functional Foods, Nutraceuticals  

**Soumble Zulfiqar, PhD**  
Assistant Professor  
Research Interests:  
Molecular Biology, Microbiology, Metal resistance mechanisms in prokaryotes and protozoans,  
Genetic profiling at transcriptional and translational level
Dr. Saima Iftikhar  
*Senior Experimental Officer*

Dr. Munir Ahmad  
*Senior Experimental Officer*

Dr. Muhammad Ali  
*Senior Research Officer*

Rauf Ahmad  
*Chief Technician*

Qadeer Ahmad  
*Computer Lab Coordinator*
Muhammad Abid  
Deputy Director Accounts & Administration

Shakeel Ahmad Babar  
Senior Librarian

Gul Nayyab  
Procurement Officer

Muhammad Irfan  
Private Secretary to DG

Rana Muhammad Zahid Islam  
Senior Stenographer
Introduction

Establishment of the School of Biological Sciences at the University of the Punjab, Lahore, Pakistan was conceptualized in 2002. Coincidently around the same time Dr Muhammad Akhtar, then the only FRS of Pakistani origin, had retired from Southampton University, UK, after an illustrious career. Mr. Akhtar Saeed, then Education Minister, Government of the Punjab, took an unprecedented personal initiative to pursue Dr. Akhtar to come to Lahore and contribute to a national cause. Thus started the Punjab Government-Punjab University joint project for the establishment of the School of Biological Sciences, subsequently approved by the University of the Punjab Syndicate, as a part of the university, within the provisions of the University of the Punjab.

The principal objective of the School was to generate high quality work force in the wider range of biological sciences. Qualitative and quantitative achievements of high merit, made during the 15 years of existence of the School, bear testimony of the potential it has displayed.

The number of scholars graduating from the School of Biological Sciences during the 15 years has been 75 Ph.Ds and 77 M.Phils.

In addition to the School of Biological Sciences regular students, several visiting scholars from various national institutions/organizations also worked under the supervision of the school's faculty for different degrees and their experimental work.

The number of visiting scholars from various national academic and R&D institutions graduating for various degrees who have worked in School of Biological Sciences is 505.
All scholars graduating with PhD degrees, whether as regular scholars of the School or visiting scholars working under the supervision of the faculty of the School are professionally active in their post-doctorate employment capacities.

Publications and patents, regarded as a tangible measure of research activity, as done by those associated with the School were:

(I) 542 research papers published in impact factor journals;
(ii) 38 authored books, edited books, and book chapters;
(iii) 48 publications in scientific proceedings;
(iv) 138 research papers published in national journals;
(v) five patents obtained from the Pakistan/US Patents Authorities;
(vi) Research presentations and participation in conferences and seminars are significant contributors to the interaction among researchers for expanding their horizons of research frontiers and portfolios, in which domain the participation of those associated with the School of Biological Sciences included:
(vii) 86 invited lectures/plenary talks presented by the academic faculty at various international and national conferences, seminars, and institutions;
(viii) The school organizes two training courses on regular basis. One on “Recombinant DNA Technology” in spring and the other on “Recombinant Protein Production & Purification” in autumn every year.
FLOW DIAGRAM FOR MINIMUM QUALITY CRITERIA

Minimum 16 years of Education (130 credit hours) with CGPA 2.5 or above

M.Phil/M.S/Equivalent/18 Years of 1st Division Education GPA = > 3.0

Departmental Test with minimum Cumulative score of 50%

*30 Credit Hours Minimum 24 credit hours course work
+6 Credit hrs research

M.Phil/M.S/Equivalent degree/ 18 Years

No Admission to Ph.D. Program

No

GPA => 3.00 (For Semester)
1st Division (For Annual)

Yes

University Based Test with minimum cumulative score of 70%.

Minimum 18 Credit hours course work
Maximum load/semester 12 credit hours

Comprehensive Exam (Maximum Two attempts)

Dropout from Ph.D

No

Success

Yes

Ph.D. Candidacy

Ph.D. Research Proposal

Minimum one paper accepted in HEC approved Journal (from Thesis work)

Dissertation Approved (By two foreign relevant subject experts)

Open Defense of Dissertation & Viva Voce

Award of Ph.D. Degree

Submission of Dissertation copy to HEC for Ph.D. Country Directory
School of Biological Sciences

as part of Faculty of Life Sciences seeks to generate knowledge in the following core areas.

- Biochemistry
- Proteomics
- Enzymology
- Microbiology
- Plant Sciences
- Molecular Biology
- Cell Biology

Principal Research Areas

Admission Requirement

Minimum Quality Criteria for Admission/Completion

The School of Biological Sciences strictly follows the “Minimum Quality Criteria for M.Phil/ Ph.D Programs”, as outlined by the HEC.

I. M.Phil Program

I. Students are admitted to M.Phil and Ph.D program strictly on merit, as determined by the cumulative score in a written test and the score obtained in an interview conducted by a Selection Board comprising several technical experts, also giving consideration to past research experience and publications;

II. Ph.D Program

i. Minimum eligibility criteria for admission to Ph.D program is M.Phil/ MS degree, having qualified with GPA > 3.0 (Semester System), or 1st Division (Annual System);

ii. The School of Biological Sciences also requires candidates for admission to the Ph.D program to qualify the school's “Comprehensive Test” at the minimum score of 60%.

iii. The School of Biological Sciences additionally prefers that its Ph.D students

The School of Biological Sciences also requires candidates for admission to the Ph.D program to qualify the school’s “Comprehensive Test” at the minimum score of 60%.
qualify the International GRE with a minimum of 50 percentile points before they may be allotted research topic for writing the thesis synopsis;

iv. All M.Phil/Ph.D scholars are required to present a seminar in the “Journal Club”, at least once a year, on an assigned research paper published in a high quality journal, and their participatory attendance in all its meetings is mandatory;

v. Candidates are required to complete course work of 18 Credit Hours, qualify PhD Candidacy, write a PhD Research Proposal, publish or get acceptance of at least one research paper in HEC approved journal;

vi. On completing the above mandatory requirements, the candidate may proceed with writing, submitting, and defending the Ph.D thesis.

Courses of Study

I. M.Phil Degree

i. SBS 501 Biochemistry-I 2 Credit Hours

ii. SBS 502 Biochemistry-II 3 Credit Hours

iii. SBS 503 Cell Biology-I 3 Credit Hours

iv. SBS 504 Cell Biology-II 1 Credit Hour

v. SBS 505 Molecular Biology 3 Credit Hours

vi. SBS 506 General and Medical Genetics 3 Credit Hours

vii. SBS 507 Virology 1 Credit Hour

viii. SBS 508 Analytical and Mechanistic Enzymology 2 Credit Hours

ix. SBS 509 Protein Chemistry and Enzymology (Preparative Enzymology) 3 Credit Hours

x. SBS 510 Molecular Biology Lab-work 3 Credit Hours

xi. Thesis Research Work 6 Credit Hours

II. PhD Degree

Compulsory Courses

i. SBS 701 Frontiers in Molecular Biology (Journal Club) 2 Credit Hours
Infrastructure and Facilities Available

The School of Biological Sciences is housed in three separate blocks, well linked, each comprising a ground floor and a first floor, each floor having covered/constructed area of 8,200 sq ft, with total covered/constructed area of 48,996 sq ft of the six floors of the three blocks.

Optional Courses

i. SBS 702 Signal Transduction
   2 Credit Hours

ii. SBS 703 Cloning Module
    (Recombinant DNA Technology)
    2 Credit Hours

iii. SBS 704 DNA-Protein Module
    2 Credit Hours

iv. SBS 705 Protein Structure Module
    2 Credit Hours

v. SBS 706 Analytical Techniques
   3 Credit Hours

This meets the laboratory space requirement of 54,000 sq ft originally indicated by Dr. Muhammad Akhtar to be necessary for functioning of the School of Biological Sciences during the first BOGs meeting on June 22, 2002.
Block-I houses 11 general purpose research laboratories for working of PhD scholars. These laboratories are well equipped with the necessary equipment/instrumentation. To mention a few of these are: high/medium speed centrifuges, microfuges, refrigerated/non-refrigerated incubator-shakers, laminar-flow clean benches, freeze dryer/ultra-low temperature freezers, fume hoods, biolistic particle delivery system, PCR/real-time PCR, refrigerated/room temperature incubators/ovens, DNA sequencer, CD/UV/Vis spectrometers, miscellaneous electrophoresis power supplies, 2-D gel electrophoresis unit, concentrator, microplate reader-washer, sonicator, pHmeters, and microbalances.

Block-II also has 11 general purpose laboratories for research work of PhD students and faculty of the School of Biological Sciences. Beside several of the equipment housed in the general purpose laboratories in Block-I, the Block-II general purpose laboratories house fermentors, atomic absorption spectrophotometer, and liquid scintillation counter.

Besides the general purpose laboratories in Block-II, there are several specific-purpose designated laboratories, which are all well-equipped with state of the
art facilities. Included among these specific-purpose designated laboratories are mass spectrometry laboratory, chromatography laboratory, DNA laboratory, plant growth chamber, biotechnology laboratory (enzymes/solid-state fermentation for power alcohol-gasohol production), animal cell culture laboratory, and insectorium.

The School of Biological Sciences houses a fully-air conditioned sectional reference-automated library, which has accession of 2,400 latest books, and subscribes to four online, one international print journal and ten national print journals. PhD scholars and the faculty have access to two photocopying machines for free photocopying, and seven computers with 24-hour internet access are available.

The School of Biological Sciences has two auditoriums one with 100 and the other with 150 sitting capacity. Both have latest projection facilities.
Transportation
School of Biological Sciences provides students with a daily commute transportation facility from hostels to laboratories that ensures efficient use of student's time.

Financial Support (Stipend)
In addition to a monthly stipend students who have been admitted to M.Phil / Ph.D program, GRE fee (Pass Candidates only), is also paid by the school.

Accommodation:
School of Biological Sciences has built two hostels – Prof. M. Akhtar Hall for male students and another Hall for female students to fulfill the accommodation needs of our M.Phil. and Ph.D. students.

Co-Curricular Activities
Excursion/Study Tours provide students with the environment conducive for enhancing their skills as researcher.

National and international participation in congresses are arranged for students to broaden their vision for future research and endeavors.
students actively participate in various games.

**Alumni:**
Our graduates have made a real impact in science not only at national levels but also at international level. Our graduates are serving various organizations and universities in Pakistan and abroad.

**Journal Club:**
A journal club meeting is held every week. Eminent scientists from various biological sciences disciplines present their current research that helps our students broaden their research vision.

Journal Club also conducts workshops/seminars and organizes conferences.

**Sports:**
Healthy minds represent healthy society. School organizes various sports events where students can boost their physical fitness. The most popular sports event is our Annual Sports Gala. All the

**Facilities, supply and maintenance** are efficiently managed by trained staff, which include Rauf Ahmad (Chief Technician), Muhammad Abid (Deputy Director), Gul Nayyab (Procurement Officer), Shakeel Ahmad Babar (Senior Librarian), Muhammad Irfan (PS to the DG), Rana M Zahid Islam (Senior Stanographer), Qadeer Ahmad (Computer Lab Coordinator), Maqsood Ali (Inventory Keeper of Chemicals) and Muhammad Adil (Inventory Keeper of Enzymes).
First Batch of Students

---------Now Professionals

2003