



# SOHAIL UNIVERSITY

<b>Title:</b>	Biomedical Research Center
<b>Version:</b>	1.0
<b>Approved by:</b>	Dean & Director, BRC
<b>Applicable To:</b>	Faculty, Researchers, Students, Technical Staff

Signature:

Prof. Dr. Rizwana S. Warraich  
Dean, Director  
Biomedical Research Center  
Sohail University

**Biomedical Research Center (BRC)**  
**Sohail University**

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## **Introduction**

Sohail University has established the Biomedical Research Center (BRC) as a centralized, multidisciplinary research facility to support high-quality research and training for faculty and students in 2019. The Center caters to both basic and applied research across a wide range of disciplines, including biochemistry, pharmacology, physiology, bioinformatics, molecular biology, medical technology, human nutrition, and basic medical sciences, thereby fostering interdisciplinary collaboration and scientific innovation.

## **Vision**

To establish BRC as a center of excellence in biomedical research and ethical scientific practice.

## **Mission**

The mission of the Biomedical Research Center is to advance scientific knowledge through innovative, multidisciplinary research in biomedical sciences, with the goal of improving human health. We are committed to fostering a collaborative environment that supports basic, applied, and translational research, while training the next generation of scientists and contributing to breakthroughs that transform patient care.

# **Infrastructure & Laboratory Design**

## **Laboratory Flooring:**

- Non-absorbent vinyl flooring across all labs
- Impermeable, chemical-resistant, and easy to disinfect
- Reduces microbial growth and cross-contamination
- Facilitates rapid cleanup of spills

## **Benchtops:**

- Epoxy resin benchtops are chemically resistant, heat-resistant, non-porous, and easy to clean, Durable for heavy lab usage and reduces contamination risk.

## **General Features:**

- Controlled ventilation and airflow
- Ergonomic workspaces and adequate lighting
- Designated clean and contaminated zones
- Safety signage, emergency exits, and spill kits
- 24/7 air conditioning for stable lab environment

## **Research Sections**

The Biomedical Research Center comprises the following specialized research units:

### **2.1 Cell Culture Section**

- Supports primary human cell culture
- Operates under **Biosafety Level-2 (BSL-2)** standards

### **2.2 Molecular Biology Section**

- Gene expression analysis
- Nucleic acid separation and detection

### **2.3 Biochemistry Section**

- Protein separation and detection
- Sample preparation and biochemical analysis

### **2.4 Cell Biology Section**

- Cellular imaging and functional studies
- Immunohistochemistry and immunofluorescence analysis

### **2.5 Bioinformatics Section**

The Bioinformatics Section supports data-driven biomedical research through advanced computational tools and infrastructure.

- Equipped with **HP Z4 G4 Advanced Workstations** for high-performance computing

- Supports genomics, transcriptomics, proteomics, and systems biology research

## **2.6 Animal Retention Facility**

- Environmentally controlled animal housing
- Temperature- and humidity-regulated conditions
- Operates under institutional and international animal ethics guidelines

## **2.7 Human Dietetics and Nutrition Section**

- Research in human nutrition, metabolism, and clinical dietetics
- Nutritional assessment and dietary intervention studies
- Ethical handling of human subject data with institutional approval

## **2.8 Molecular Diagnostics Section**

Detection of infectious diseases including COVID-19, Chikungunya, Dengue, Hepatitis B, Hepatitis C, Influenza and other infectious disease by using PCR to Supports public health and research initiatives.

## Faculty & Staff

Faculty	Qualification	Designation
Prof. Dr. RIZWANA WARRAICH	PhD, Post Doctorate	Dean, Director Biomedical Research Center
Prof. Dr. NASIM KARIM	PhD	Professor
Prof. Dr. SAMIA KHAN	PhD	Professor
Prof. Dr. UZMA AKHTAR	PhD	Professor
Prof. Dr. MASOOD AHMAD	PhD	Professor
Dr. ABDUL RASHEED KHAN	PhD	Professor
Prof. DR SHAISTA EMAD	PhD	Associate Professor
Dr. SIDRA RAFI	PhD	Assistant Professor
Dr. MUNAZZA	PhD	Assistant Professor
Dr. SAIRA	PhD	Assistant Professor
Dr. NIDA LATHIYA	PhD	Assistant Professor
Dr. SADAF AJMAL	PhD	Assistant Professor
Ms. GULNAZ KHAN	MPhil	Senior Lecturer
Ms. AISHA KAMAL	MPhil	Research Assistant
Ms. SABA	MSc	Research Assistant
Ms. ASMA	BS	Coordinator

## EQUIPMENTS

Equipment must be used only after training, must be logged, maintained regularly, and any faults reported immediately. The Biomedical Research Center is equipped with state-of-the-art instrumentation, including

NAME OF EQUIPMENT	DETAILS
REAL-TIME PCR SYSTEM	AGILENT TECHNOLOGIES, SINGAPORE
REAL-TIME PCR SYSTEM	BIORAD, USA
MULTIMODE-MICROPLATE READER	THERMO SCIENTIFIC, FINLAND
MICROPIPETTES (FINNPIPETTES F3)	THERMO SCIENTIFIC, FINLAND
GENERAL PURPOSE WATER BATH	THERMO SCIENTIFIC, USA
PH METER	EUTECH INSTRUMENTS, SINGAPORE
TISSUE EMBEDDING & COOLING SYSTEM	KEDEE, CHINA
ROTARY MICROTOME	KEDEE, CHINA
SLIDE DRYER	ELECTROTHERMAL, UK
TISSUE FLOATING BATH	LAUDA, GERMANY
ANALYTICAL BALANCE	SARTORIUS, GERMANY
PRECISION BALANCE	SARTORIUS, GERMANY
HOMOGENIZER	BIO BASIC, CANADA
HEAT BLOCK	BRAIN INNOVA, PAKISTAN
REFERIGERATED CENTRIFUGE MACHINE WITH MICROTUBES ROTOR	HERAEUS MEGAFUGE 8R THERMO SCIENTIFIC, GERMANY
REFERIGERATED CENTRIFUGE MACHINE WITH SWING BUCKET ROTOR	HERAEUS MEGAFUGE 8R THERMO SCIENTIFIC, GERMANY
MICROCENTRIFUGE FOR PCR ROOM	MYSPIN 6 THERMO SCIENTIFIC, GERMANY
MICROCENTRIFUGE 2 FOR GENERAL PURPOSE	D-LAB, CHINA
STIRRING HOTPLATE	THERMO SCIENTIFIC, USA
VORTEX MIXER 1 FOR PCR ROOM	BRAIN, INNOVA

VORTEX MIXER 2 FOR GENERAL PURPOSE	ONILAB, CHINA
GEL DOCUMENTATION SYSTEM	AZURE BIOSYSTEMS, USA
ULTRAPURE WATER PURIFICATION SYSTEM	BARNSTEAD THERMO SCIENTIFIC, SWEDEN
WESTERN BLOTTING APPARATUS	OWL, THERMOSCIENTIFIC, USA
VARI-MIX PLATFORM ROCKER	THERMO SCIENTIFIC, GERMANY
DNA ELECTROPHORESIS ASSEMBLY (MINI)	CLEAVER SCIENTIFIC, UK
PROTEIN ELECTROPHORESIS ASSEMBLY (MINI)	CLEAVER SCIENTIFIC, UK
DNA ELECTROPHORESIS ASSEMBLY (MAXI)	OWL, THERMOSCIENTIFIC, USA
PROTEIN ELECTROPHORESIS ASSEMBLY (MAXI)	OWL, THERMOSCIENTIFIC, USA
C-DIGIT BLOT SCANNER	LI-COR, USA
FUME HOOD	BRAIN INNOVA, PAKISTAN
CONVENTIONAL THERMAL CYCLER (T100)	BIORAD, US
SIMPLIAMP CONVENTIONAL THERMAL CYCLER	THERMOFISHER SCIENTIFIC, SINGAPORE
CLASS II BIOLOGICAL SAFETY CABINET	NUAIRE, USA
CELL CULTURE BEAD BATH	AQUALINE LAUDA, GERMANY
CO <sub>2</sub> INCUBATOR	THERMO SCIENTIFIC, GERMANY
FLUORESCENCE INVERTED MICROSCOPE	OPTIKA, ITALY
INVERTED MICROSCOPE	LEICA, GERMANY
FLAKE ICE MAKER	LABOTRONICS, CANADA
BIOCANE CRYOBIOLOGICAL STORAGE VESSEL	THERMO SCIENTIFIC, GERMANY
ULTRA LOW UPRIGHT FREEZER	THERMO FISHER SCIENTIFIC, USA
4 <sup>0</sup> C REFRIGERATOR & -20°C FREEZER	HAIER, PAKISTAN
PCR CABINETS	LABTRON, UK
TDS METER	EUTECH INSTRUMENTS, SINGAPORE
MEDIA FILTRATION ASSEMBLY FOR CELL CULTURE USE	BRAIN INNOVA, PAKISTAN
-40 ULTRA LOW FREEZER	MIDEA, PAKISTAN

CLASS II BIOLOGICAL SAFETY CABINET	ESCO
HP Z4 G4 TOWER WORKSTATION (COMPUTATIONAL SYSTEM)	HP

# **Facilities & Testing Services**

## **Molecular Biology Services**

- DNA & RNA extraction (manual and kit-based)
- cDNA synthesis
- Conventional PCR & RT-PCR
- Nucleic acid quantification (Nanodrop)
- Agarose gel electrophoresis
- Protein isolation and SDS-PAGE
- Bradford protein assay
- Western blotting

## **Immunoassay Services**

- ELISA

## **Histology & Microscopy Services**

- Animal handling and tissue harvesting
- Tissue processing
- H&E staining
- PAS staining
- ROS staining (DHE)
- Immunohistochemistry (IHC)
- Immunofluorescence (IF)
- Immunocytochemistry (ICC)

## **Cell Culture Services**

- Basic cell culture, passaging, and seeding
- MTT assay
- Primary fibroblast isolation
- PBMC isolation and stimulation
- Chondrocytes isolation and culture
- Mesenchymal stem cell isolation
- Adipose-derived stem cell isolation

## **Additional Support Services**

- 4°C refrigerator storage

- $-20^{\circ}\text{C}$ ,  $-40^{\circ}\text{C}$ , and  $-80^{\circ}\text{C}$  freezer storage
- Deionized water facility

### **Molecular Diagnostics Services**

Detection and analysis of COVID-19, Dengue, Influenza, Chikungunya, Hepatitis B, Hepatitis C, Influenza uses PCR-based assays and molecular diagnostic techniques and it supports research, clinical studies, and public health surveillance.

## **Workshops, Seminars & Training Programs (2024–2025)**

The Biomedical Research Center regularly conducts hands-on workshops, seminars, and training programs.

**Title:** Real time gene expression in metabolic tissue from mice

**Date:** April 24th, 2024

**Organization:** Anatcon

As part of the Biomedical Research Center's (BRC) ongoing commitment to providing high-quality training opportunities for undergraduate students, BRC also offer Summer and Fall Training Sessions every year that align with the theme of cutting-edge research and laboratory practices.

## **Conclusion**

The Biomedical Research Center at Sohail University is a state-of-the-art, ethically governed research facility designed to support excellence in biomedical education and research. With advanced infrastructure, skilled faculty, and strict regulatory compliance, the Center serves as a hub for innovation, training, and impactful scientific discovery aligned with national and international standards.