International Center for Chemical and Biological Sciences (ICCBS)
Established in 1966

Leadership in Research and Higher Education

H. E. J. Research Institute of Chemistry,
Dr. Panjwani Center for Molecular Medicine and Drug Research
(International Center for Chemical and Biological Sciences)
University of Karachi, Karachi-75270
www.iccs.edu

ICCBS - Genesis
ICCBS- ORGANOGRAM

ICCBS

Chemical Sciences (HEJRIC)

AURL  IAC  BTP  LEJNSIC  LEJNRC

Biological/Biomedical Sciences (PCMD)

Genome Center  CBSCR  Diagnostic Center  ICTRD  NFLARC  Virology Center

UNIQUE DISTINCTIONS

❖ Only OIC Center of Excellence in Chemical Sciences
❖ UNESCO Category II Center
❖ WHO Center for Pesticide Analysis
❖ COMSATS Center of Excellence (Founding member)
❖ Received the Islamic Development Bank Prize for Best Science Institution twice (2004 and 2010).
❖ TWAS Center of Excellence for training of scholars from Africa
HEJRIC - ISLAMIC DEVELOPMENT BANK
PRIZE FOR BEST SCIENCE INSTITUTION

2004

2010

UNESCO Category II Center-- Agreement Signing Ceremony in France
ICCBS – International and National Recognition

- Fellow of Royal Society (FRS) 2
- UNESCO Science Prize 1
- Fellow of the Chinese Academy of Sciences 1
- Nishan-e-Imtiaz 1
- Hilal-e-Imtiaz 5
- Sitara-e-Imtiaz 13
- Tamgha-e-Imtiaz/Pride of Performance 13
- D. Sc. 10
- Khwarizmi International Award 5
- ECO Award and Prize 3
- IDB Prize for Best Science Institution 2
- COMSTECCH Award 1

Prof. Dr. Atta-ur-Rahman receiving the UNESCO Science Prize (2004)

Friendship Award of the Peoples Republic of China
### ICCBS – Research Output

- Research articles in reputed science journals: Over 8,500
- Patents (National and international): 320 (Including 50 US Patents)
- Books published internationally: 350 (Over 200 by Prof. Dr. Atta-ur-Rahman FRS)
- Total Scientific Impact Factor: Over 18,000
- Total Ph. D. / M. Phil. produced: Over 1,200
- Total Citations: Over 150,000

### ICCBS – International Research and Development Grants

1. **International grants worth over $ 50 million were won:**
   - (a) Germany: DM 5.7 million
   - (b) USA: $ 8.0 million
   - (c) UK: £ 1.0 million
   - (d) Japan: $ 23.0 million
   - (e) Others: $ 3.0 million

2. **Research projects worth > $ 12.5 million from the WHO, OPCW, USAID, ONR, NSF (USA), IFS, PERIDOT, TUBITAK, and British Council have been completed or under progress.**
ICCBS – Impact on Industries and Commercial Sector

➢ Over 600 industries are annually supported for analytical services, export certifications, raw material testing, and product improvement.

➢ World class analytical and synthetic facility which is approached by the higher courts for critical analytical assignments.

➢ Contributed in making Pakistan’s Pharmaceutical Industries export-based.

ICCBS – Public Services

Serving as the:

➢ Sindh Forensic DNA and Serology Laboratory.
➢ Food Testing Laboratory of Sindh.
➢ Drug Testing Laboratory of Sindh.
➢ Halal Products Research and Testing Facility
ICCBS – Global Impact

❖ Over 200 visiting scientists annually from different countries.
❖ Only institution in the developing world in which advanced countries are sending students for training (20 German students annually, over 130 German students have already been trained).
❖ Co-supervision of International M. S./Ph. D. scholars.
❖ Training of over 1,000 young scholars from countries of South.
❖ Scholarships for Sub-Saharan African Women Scientists (Over 30 annually).
❖ Capacity building workshops every year (~ 10).
❖ Foreign Universities have established Research Centers named after ICCBS faculty (recognizing their contributions in global S&T capacity building).

ICCBS – GLOBAL LINKAGES

Canada, France, Sweden, etc.
ICCBS’s ALUMNI- AMBASSADORS OF PAKISTAN’S EXCELLENCE IN SCIENCE

❖ Over 1200, outstanding alumni of ICCBS are serving all over the globe.
❖ Chapters of ICCBS Alumni
  ❖ USA and Canada
  ❖ Sri Lanka
  ❖ Iran
  ❖ Sudan
  ❖ Nigeria
  ❖ Local Provincial Chapters
❖ Serving nationally and internationally in top institutions.

ICCBS- SOME GLOBAL ACADEMIC PARTNERS
ICCBS- MAJOR INDUSTRIAL AND DEVELOPMENT PARTNERS

REGIONAL COOPERATION

- Joint PAS (Pakistan Academy of Sciences) and INSA (Indian National Science Academy) programs.

- Pak-India-China cooperation in the field of chemical and biological crystallography.

- SAARC, and TWAS-based activities, including exchange of scientists, and young researchers.
**ICCBS - SCHOLARSHIPS**

Joint NAM S&T Centre-ICCBS Karachi (Pakistan) Fellowship  
[www.namstct.org](http://www.namstct.org)

TWAS Fellowship Program  

COMSTECH Visiting Scientists Program  
[http://www.comstech.org/Programs](http://www.comstech.org/Programs)

Others (UNESCO, IFS, ISESCO, COMSATS, IDB, etc)

❖ Over 1,200 Ph. D. Students, including 200 foreign students  
❖ 150 Post-doctoral Scholars, and 80 Research Officers  
❖ Over 200 Ph. D. annually  
❖ Over 1,000 research papers in top international journals, including top tier journals, and over 100 international patents  
❖ Technology incubator with 500 companies and start-ups, and ten industrial support units.  
❖ 30% of the budget by self generation (Royalties, and services)

**ICCBS - VISION 2025**
ICCBS - IN BRIEF

❖ Demonstrate the possibility to build world-class science institutions in Pakistan.

❖ Serving nation in various ways.

❖ Role model for others to follow.

❖ An institution with global vision.

HUSEIN Ebrahim Jamal Research Institute of Chemistry
BIOTECHNOLOGY TECHNOLOGY PARK (BTP)
Sino-Pakistan Hybrid Rice Research Center

L.E.J. NANOTECHNOLOGY CENTER (LEJNRC)
• ANIMAL HOUSE

• NATIONAL FACILITY FOR LABORATORY ANIMAL RESEARCH (NFLAR)

ESTABLISHMENT OF NATIONAL FACILITY OF LABORATORY ANIMAL RESEARCH AND CARE AT PCMD

(Computer Generated Model)
LATIF EBRAHIM JAMAL NATIONAL SCIENCE INFORMATION CENTER

ICCBS
INDUSTRIAL SUPPORT INFRASTRUCTURE
CENTER FOR BIOEQUIVALENCE STUDIES AND CLINICAL RESEARCH (PCMD)
120 Bed facility for clinical trials and bioequivalence studies

INDUSTRIAL ANALYTICAL CENTER (HEJRIC)
An ISO 9001, 17025, Halal Testing, and WHO Recognized Facility
TECHNOLOGY INCUBATION CENTERS

ICCBS
RESEARCH FACILITIES
NMR PARK AT THE ICCBS

13 Superconducting NMR instruments
Sate-of-the-art Facility

X-RAY SPECTROSCOPY FACILITY
MASS SPECTROMETERY FACILITIES AT ICCBS

MALDI-TOF (Ultra-flex-III)

MASS SPECTROMETER (ELECTRON BOMBARDMENT SYSTEM)

Bruker Amazon (HPLC Ion Trap)

Mexis II (HPLC QTOF)
CELL CULTURE FACILITY

IMAGING FACILITY

FLORESCENCE MICROSCOPES
CELL PHYSIOLOGY LABORATORY

PATCH CLAMP

MOLECULAR AND GENOME BIOLOGY LAB

MiSeq Sequencer
Solid State Genome Sequencer
NextSeq Sequencer
ABI – 7500 Real time PCR
ABI – Verity Thermal Cycler
Hitachi – 3500 Genome Analyzer
COMPUTATIONAL RESEARCH FACILITY

ICCBS - LIBRARY
ICCBS – TISSUE CULTURE PLANT FACILITY

PILOT PLANT
NITROGEN LIQUIFICATION PLANT

ICCBS
INSTITUTIONAL ACCOMMODATION,
AND OTHER FACILITIES
INTERNATIONAL GUEST HOUSES

EFFICIENCY APARTMENTS
STONE LAYING CEREMONY OF GIRLS HOSTEL

COMPUTER GENERATED MODEL OF GIRLS HOSTEL

Golden Jubilee Hall
ICCBS – FOREIGN FACULTY AND STUDENTS

INTERNATIONAL CENTER FOR CHEMICAL AND BIOLOGICAL SCIENCES

COLLABORATIONS WITH COMSATS MEMBER COUNTRIES (2018-2019)

Providing Capacity Building For COMSATS Member Countries.
Technician level and research trainings to personnel from Egypt, Sri Lanka, Kazakhstan, Nigeria, Iran, and Turkey.

Collaborating with COMSATS Centers of Excellence.
Trainings of TUBITAK Scholars in mass spectrometry. Post-doctoral trainings of four young scholars of ICCBS at TUBITAK. Joint research activities, including joint research laboratory with KAZNU.

ICCBS signed MoUs with TIB, China; Al-Quds University, Palestine; and KAZNU, Kazakhstan.

COMSATS travel support to scientists from COMSATS Centers of Excellence in STEP-5, ISNPS, and other international conferences organized by the ICCBS.

Establishment of first “Joint Laboratory for Innovation in Natural Products Research and Development” by Kazakhstan and Pakistan at ICCBS.
Collaboration between ICCBS and Tianjin Institute of Industrial Biotechnology, China

The Director ICCBs visited TIB, China on January 8, 2019. During his visit to Tianjin Institute of Industrial Biotechnology, many collaborative projects between ICCBS and TIB have been planned. During meetings, ICCBS and TIB signed the MoU on Cooperation of Science and Technology.

Collaboration between ICCBS and Tianjin Institute of Industrial Biotechnology, China

Prof. Huifeng Jiang from TIB delivered a lecture in the “2nd International Symposium on Natural Products for the Future (ISNPF-2)” and “14th International Symposium on Natural Product Chemistry (ISNPC-14)” organized by the ICCBS during 2018.
Collaboration between ICCBS and TUBITAK (The Scientific and Technological Research Council of Turkey)

1. Cooperation on Mass spectrometry based proteo-metabolomics project at the TUBITAK labs. Dr. Arslan Ali (Assistant Professor, ICCBS) visited the TUBITAK for training of TUBITAK scholars in mass spectrometry.

2. Four post-doctoral fellows from ICCBS are working at Molecular Oncology research group Genetic Engineering and Biotechnology Institute, MAM, TUBITAK

Dr. Bushra Taj, Project Title: “Identification of novel therapeutic cell penetrating peptides as potential non-catalytic regulators of Lyn tyrosine kinase in Lung cancer”

Dr. Rana Zeeshan Haider, Project Title: Development of 3D Lung Cancer Spheroid Model for Drug Screening”.

Dr. Hana’a Iqbal, Project Title: A cellular therapy-based modified tissue engineering strategy for bone repair”.

Dr. Beenish Mirza working on Biosimilar studies

Collaboration between ICCBS and Al-Farabi Kazakh National University, Almaty, Kazakhstan

More than 50 young scholars from Kazakhstan had visited the international center to pursue their training programs during the last 20 years. ICCBS and Al-Farabi Kazakh National University have made remarkable collaborative work especially in the field of natural product chemistry.
Collaboration between ICCBS and Al-Farabi Kazakh National University, Almaty, Kazakhstan

The first ‘Joint Laboratory for Innovation in Natural Products Research and Development’, was jointly established by Kazakhstan and Pakistan in the Prof. Dr. Wolfgang Voelter Laboratories Complex of the ICCBS on Mach 05, 2019.

A delegation of Al-Farabi Kazakh National University, Kazakhstan including Prof. Dr. Tlekkabul Ramazanov, Vice-Rector of Science and Innovations, Prof. Dr. Zharylkassyn Abilov, visited the ICCBS.

• Joint project submission.
• Training of Kazakh research Scholars at the ICCBS
• Preclinical studies of hepatoprotective medicinal products
• developed by Kazakh scientists at the ICCBS.
Memorandum of Understanding (MoU) With COMSATS Member Institutions

Memorandum of Understanding (MoU) were signed between ICCBS and Al-Farabi Kazakh National, University, TIB, China, Al-Quds University for international collaborations in the field of natural product.

Bi-national Capacity Building Workshop on Phytochemical Research and Development

➢ Organized by the ICCBS, and AL-Farabi KazNU under the leadership of joint research center, Prof. M. Iqbal Chaudhary, Director, International Center for Chemical and Prof. Zharylkasyn Abilov (Department of Chemical Technology of Organic Substances, Natural Compounds and Polymers of Al-Farabi KazNU).

➢ Supported by IDB project entitled, “Developing the Capacities of Al-Farabi Kazakh National University, Kazakhstan in Phytochemical Development.

➢ Program included theme and invited lectures from many eminent scientists from Pakistan and Kazakhstan.

➢ Training of herbal product development starting from preparation of plant extracts, separation and purification, spectroscopic analysis, structure elucidation using modern spectroscopic techniques and biological activity evaluation of compounds.
MoU signed with NETDZLY, China and ICCBS

ICCBS signed MoU with National Economic and Technical Development Zone in Liuyang, Hunan Province, China (NETDZLY) on June 21, 2017. MoU aims to conduct Research and Development (R&D) in the field of drug, health food, including efficacy and safety evaluation, quality control, as well as registration in both of Pakistan and China.

9th Asian Network of Research on Anti-Diabetic Plants (ANRAP) International Seminar
January 25-27, 2019

ANRAP was established with the aim of coordinating research efforts in the field of antidiabetic plant materials with enormous floral resources of the Asian subcontinent.
9th Asian Network of Research on Anti-Diabetic Plants (ANRAP) International Seminar
January 25-27, 2019

ANRAP-9 organized by ICCBS provided an opportunity to bring world famous scientists in the multidisciplinary fields of metabolic disorders together and exchange ideas on developing a common strategy towards science-based development of plant-based medicine against diabetes, and other metabolic disorders.

1st Sri Lankan ANRAP Regional Seminar
National Institute of Fundamental Studies - Sri Lanka
January 17 – 19, 2018

Scientist from COMSATS countries including ICCBS participated 1ST SRI LANKAN ANRAP REGIONAL SEMINAR AT National Institute of Fundamental Studies - Sri Lanka.
ICCBS signed two agreements with the School of Pharmacy, Hunan University of Chinese Medicine, China (SPHUCM), and Hunan Provincial Key Laboratory of Phytohormones, Hunan Agricultural University, China (KLPHAU) during the three-day 9th ANRAP International Seminar held at the International Center during January 25 to 27, 2019.

The areas of cooperation include joint supervision of graduate students, including masters and PhD students and researchers in the areas of chemistry, biology, biotechnology, molecular medicine, pharmacology, and natural and life sciences.

Collaboration between ICCBS and Al-Qudus University, Palestine

MoU Signed between the ICCBS and Palestinian Al-Quds University

An Intent of Cooperation (IoC) was signed with Al-Quds University, Palestine and International Center for Chemical and Biological Sciences (ICCBS), University of Karachi (UoK), on to promote scientific and educational collaborative activities between the two institutions.

As per the agreement, both the organizations agree to promote exchange program which is based on their respective academic and educational needs, including joint educational and research activities, participation in conference and academic meetings, exchange of research scholars and staff, exchange of undergraduate and graduate students, exchange of academic information and materials and other academic exchange.
Collaboration between ICCBS (International Center for Chemical and Biological Sciences) and Al-Qudus University, Palestine

Assistant Professor and Director, Biotechnology Research Center, Palestine Polytechnic University, Dr. Rami Mandouh Arafeh was invited to deliver a lecture on “Induction, Elicitation and Determination of Total Secondary Metabolites from In-vitro Growing Cultures of Arbutus andrachne L”

Science and Technology Exchange Program 5
ICCBS and Mustafa (Pbuh) Foundation

Over 450 Scientists from OIC member countries attended the 5th Science and Technology Exchange Program (STEP-5), focusing on health care challenges in developing world.
ICCBS-COMSATS POSTDOCTORAL FELLOWSHIPS

• Postdoctoral Fellowship for young scholars
• No bench fee
• On-campus accommodation
• State-of-the-art instrumental facilities
• Over 100 bioassays and access to animal house facility
• Excellent libraries
• International, friendly and conducive working environment

Role of ICCBS in the Achievement of SDGS set for Pakistan

Through strong academic, research programs, leadership and international research collaboration, the ICCBS has prominent contributions in achieving the SDGs.

1. Providing Equitable Quality Education and Promoting Lifelong Learning Opportunities for All (SGD 4)

Through massive online programs (through VEPP), Off line courses (iMOOCS, lej4learning.com.pk), and regular training workshops in advance fields of science and technology along with skill development programs, the Center is providing students of all level with the knowledge, and skills to address the SDG (Education for sustainable development).

2. Gender Equality, and Women Empowerment:

Enrollment of female scholars is highly encouraged in ICCBS system at all level, by providing a conducive working environment to help in their learning experiences, and help them to excel in career.
Role of ICCBS in the Achievement of SDGS set for Pakistan

3. Health for All

The ICCBS’s massive traditional medicine validation, and natural drug discovery program providing necessary scientific basis for the rational use of natural products as drugs against prevailing and neglected tropical diseases.

Thank You