

**PERSONAL  
INFORMATION**



# Muhammad Ikram

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Sex: Male | Date of birth: 04/03/1984 | Nationality: Pakistani

## EDUCATION

**March 2013 - Feb 2018**

**Institution**

**Dissertation Title**

**Doctor of Philosophy (Ph.D.) in Medical Science**

Pusan National University, Busan (Republic of Korea)

Co-targeting of Tiam1/Rac1 and Notch ameliorates chemoresistance against doxorubicin in a biomimetic 3D lymphoma model

**March 2011 - Feb 2013**

**Institution**

**Dissertation Title**

**Master of Science (M.S.) in Medicine**

Pusan National University, Busan (Republic of Korea)

Modulation of the adhesion of thymic epithelial cells with thymocyte by gain- and loss-of-function of mouse epidermal growth factor-like protein 8

**Dec 2003 - Oct 2009**

**Institution**

**Dissertation Title**

**Doctor of Pharmacy (PharmD)**

University of Malakand, Chakdara (Pakistan)

Use of rational drug therapy for the treatment of myocardial Infarction

## WORK EXPERIENCE

**May 2018- till date**

**Assistant Professor**

Department of Pharmacy, COMSATS University Islamabad, Abbottabad Campus

**April 2021- Sept.2021**

**Adjunct Faculty**

Department of Biomedical Sciences,

Department of Biomedical Sciences, Pak-Austria Fachhochschule: Institute of Applied Sciences & Technology

**March 2011 -Feb 2018**

**Teaching Assistant**

School of Medicine, Pusan National University, (Republic of Korea)

**Dec 2010 - Dec 2011**

**Lecturer (National Internship Program)**

University of Malakand, Chakdara (Pakistan)

**Dec 2009 – Jan. 2011**

**Pharmacist (Dispensing)**

International Medical Corps (IMC), Pakistan

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## EXPERTISE AND RESEARCH INTERESTS

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**Biomedical engineering** (Designing biocompatible scaffold system for tissue regeneration and drug resistance studies using bioactive materials). Development of Hydrogel, micro-nanofiber, bacterial cellulose scaffold, and 3D printing.

**Immunology** (T cell development, T cell activation, Lymphoma & Liver malignancy & metastasis, and Chemoresistance)

**Thymus and Skin regeneration and Liver cirrhosis recovery studies** Artificial Thymus, Spleen, and Skin regeneration.

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## PUBLICATIONS & RESEARCH

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### Patents Applications

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No. Title, authors Publisher

1. Yoon sik, kwak Jong-young, Jin song-wan, Jeong young hun, Kim chang gun, Choi da jeong, Kang hae yeong, Fazli subhan, ***Muhammad Ikram***, **Biomimetic support for three dimensional cell culturing, method for manufacturing same, and use thereof**, Application number: US20170204365, publication date: July. 20, 2017. (US patent).
  2. Yoon Sik, Lim Ye Seon, ***Ikram Muhamad***, Kwak Jongyoung, Jeong Young Hun, Jin Songwan, Lee Kangoh, Lee Seun Soo, **Mold for manufacturing hydrogel scaffold for culturing three-dimensional cells and method for manufacturing hydrogel scaffold using thereof**. Application No., 1020180009311 Application date., 2018 Jan25., **Patent No. KR101876701B1** Publication date 2018 July 09. South Korea.
  3. Yoon sik, kwak Jong-young, Jin song-wan, Jeong young hun, Kim chang gun, Choi da jeong, Kang hae yeong, Fazli subhan, ***Muhammad Ikram***, **Biomimetic support for three dimensional cell culturing, method for manufacturing same, and use thereof**, WIPO patent application wo/2016/010377, Application number: kr2015/007394, publication date: January 21, 2016, world intellectual property organization (WIPO)
  4. Yoon sik, kwak jung young, Jeong Young Hun, Jin Song-Wan, ***Muhammad Ikram***, kang hea young, "Cell scaffold for three-dimensional cell culture comprising agarose, decellularized extracellular matrix and collagen" South Korea Patent, application No. 1020160098657, **Patent No. KR101721514B1**, application date, 2016.08.02, registration date: 2017.03.30.
  5. Yoon sik, Fazli subhan, ***Muhammad Ikram***, Dajeon choi, kang hea young, choi dajeong, kwak jung young, chang jeong young, jin sungwan. **Biomimetic three dimensional cell culture method using agarose, collagen and alginate composite hydrogel scaffold**, Application No., 1020140089858 Application date., 2014.07.16., Publication date 2014.10.14. South Korea.
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### Book Chapters

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No. Title, Authors Publisher

1. Chapter "Biomarkers in Cancer Survival and Drug Resistance" in a book entitled" Cancer **Biomarkers in Diagnosis and Therapeutics**". ***Ikram, M.,*** Uddin, Z. (2022). In: Shehzad, A. (eds) Springer, Singapore. [https://doi.org/10.1007/978-981-16-5759-7\\_7](https://doi.org/10.1007/978-981-16-5759-7_7)
2. Chapter "Cell Signalling in Cancers" by Khoula sharif Mughal, Shah, Imran Amir Zada, and ***Muhammad Ikram***, Shehzad, A. (Ed.). (2025). Cell Signaling: Interplay, Mechanisms, and Therapeutic Implications (1st ed.). CRC Press. <https://doi.org/10.1201/9781003594901>

3. Chapter “**Inflammatory Signalling and Immune Response**” by Naseem Zehra, Zia Uddin, Muhammad Naeem Afridi, and **Muhammad Ikram**, Shehzad, A. (Ed.). (2025). Cell Signaling: Interplay, Mechanisms, and Therapeutic Implications (1st ed.). CRC Press. <https://doi.org/10.1201/9781003594901>

### Research Articles

No.	Title, Authors Publisher
1.	Toxicological profiling and diuretic potential of arbutin via aldosterone synthase gene inhibition. Maria Nazeer, Nabi Shah, Saif Ullah, <b>Muhammad Ikram</b> , Muhammad Imran Amirzada, Abdulmohsin J Alamoudi, Meshal Alshamrani, Abdul Jabbar Shah, Life Sci. 2025 Apr 23:373:123661. doi: 10.1016/j.lfs.2025.123661.
2.	Acute Toxicity and Antihyperlipidemic Effects of Syringaldehyde with Downregulation of SREBP-2 Gene Expression in Rats. Misbah Imtiaz, Nabi Shah, <b>Muhammad Ikram</b> , Zia Uddin, Qurat-ul-Ain, Abdulhakeem S. Alamri, Majid Alhomrani, Abdul Jabbar Shah. ACS Omega 2025, 10, 8619.
3.	Gentisic acid protects Sprague-Dawley rats from myocardial infarction through reversing electrocardiographical, biochemical and histopathological abnormalities. Aimen Sajid, <b>Muhammad Ikram</b> , Nabi Shah, Abdul Jabbar Shah, Biochem Biophys Res Commun. 2025 Feb 16:749:151349.
4.	Syringic acid improves cyclophosphamide-induced immunosuppression in a mouse model, Khoula Sharif Mughal, <b>Muhammad Ikram</b> , Zia Uddin, Amna Rashid, Umer Rashid, Momina Khan, Naseem Zehra, Umair Sharif Mughal, Nabi Shah, Imran Amirzada, Biochemical and biophysical research communications, 2024 Nov 19:734:150777.
5.	LC-ESI-MS/MS-based molecular networking, antioxidant, anti-glioma activity and molecular docking studies of Clematis graveolens, Zubair Ahmed, <b>Muhammad Ikram</b> , Ishaq Khan, Kashif Bashir, Abdul Jabbar Shah, Zahid Hussain, Taous Khan, Plant Methods. 2024 Jul 25;20(1):111.
6.	Bacterial cellulose-turmeric powder composites as potential therapeutic wound dressings, Shaukat Khan, Heejeong Chan, Soyeon Won, <b>Muhammad Ikram</b> , Saif Ullah, Mazhar Ul-Islam, Sung Soo Han, Industrial Crops and Products, (2024) 211, 118237, 0926-6690.
7.	Preliminary phytochemical analysis, and in vitro biological activities of <i>Otostegia limbata</i> leaves ethanolic extract against oral pathogens. Khursheed Ur Rahman*, Ghulam Mujtaba Shah, Muhammad Ajmal Shah, <b>Muhammad Ikram</b> , Muhammad Fiaz, Jan Alam, Muhammad Sajid, Journal of Population Therapeutics and Clinical Pharmacology, 2024 37(2), 2689–2701.
8.	Integrative Investigation and Prioritization of Candidate Genes PTGS-2 and VEGF: Unveiling their Interaction with Celecoxib for Targeted Therapeutic Applications. Momna Mansoor, Nabi Shah, Muhammad Imran Amirzada, Zia Uddin, <b>Muhammad Ikram</b> , Abdul Jabbar Shah, Precision Medicine Communications, (2023), 3(02), 87–103.
9.	Diversity of Rust Fungi Causing Plant Diseases in Abbottabad, Khyber Pakhtunkhwa (KP), Pakistan. Khursheed Ur Rahman, Muhammad Fiaz, Ghulam Mujtaba Shah, <b>Muhammad Ikram</b> , Jan Alam, Mariyam Shahid and Samia Abbasi, J Plant Sci Phytopathol. 2023; 7: 133-138.
10.	7-Hydroxy Frullanolide Ameliorates Isoproterenol-Induced Myocardial Injury through Modification of iNOS and Nrf2 Genes, Saif Ullah, Taseer Ahmad, <b>Muhammad Ikram</b> , Hafiz Majid Rasheed, Muhammad Ijaz Khan, Taous Khan, Tariq G Alsahli, Sami I Alzarea, Musaad Althobaiti, Abdul Jabbar Shah, Biomedicines. 2023 Sep 6;11(9):2470.

11.	Assessment of Human Interleukin-24 Expression in Thalassemic Patients and Investigation of Current Prescription Pattern in Thalassemia, Saeed, Babar, Mariam Busharat, Fardah Farooq, <b>Muhammad Ikram</b> , Zia Uddin, Nabi Shah, and Muhammad Imran Amirzada. <i>Currents in Pharmaceutical Research</i> (June 28, 2023): 05-15.
12.	Extraction of Fish Collagen Peptides from Fish Waste through Fermentation using Lactobacillus Bacteria, Salman Khan, Isfahan Tauseef, <b>Muhammad Ikram</b> , Sobiah Rauf, Rida Fatima Saeed, Shahida Sadiqi, Nazir Ahmad Lone, Liaqat Ali, Fazli Subhan, <i>Life and Science</i> . 2023; 4(4): 365-371.
13.	LC-MS/MS-Based Metabolomic Profiling of Constituents from <i>Glochidion velutinum</i> and Its Activity against Cancer Cell Lines, Syed Luqman Shah, Kashif Bashir, Hafiz Majid Rasheed, Jamil Ur Rahman, <b>Muhammad Ikram</b> , Abdul Jabbar Shah, Kamlah Ali Majrashi, Sulaiman Mohammed Alnasser, Farid Mena, Taous Khan, <i>Molecules</i> . 2022 Dec 17;27(24):9012.
14.	Evidence-Based Prioritization and Scoring of Genomic Loci Interacting with Pioglitazone Therapeutic Response in Diabetic Patients, Anum, Imran Amirzada, M., Uddin, Z., <b>Muhammad Ikram</b> , Shah, A. J., & Shah, N. <i>Precision Medicine Communications</i> , 2022. 2(02), 91–108.
15.	Dynamic Foam Characteristics during Cultivation of <i>Arthrospira platensis</i> , Ameer Ali Kubar, Amjad Ali, Santosh Kumar, Shuhao Huo, Muhammad Wajid Ullah, Khulood Fahad Saud Alabbosh, <b>Muhammad Ikram</b> , Jun Cheng, <i>Bioengineering (Basel)</i> . 2022 Jun 16;9(6):257.
16.	Targeted Inhibition of Protein Tyrosine Phosphatase 1B by Viscosol Ameliorates Type 2 Diabetes Pathophysiology and Histology in Diabetic Mouse Model, Aamir Sohail, Hajra Fayyaz, Hamza Muneer, Idrees Raza, <b>Muhammad Ikram</b> , Zia Uddin, Sarah Gul, Hailah M Almohaimeed, Ifat Alsharif, Fatima S Alaryani, Imran Ullah, <i>Biomed Res Int</i> . 2022 Aug 22:2022:2323078.
17.	Design, synthesis, in-vitro, in-vivo and ex-vivo pharmacology of thiazolidine-2,4-dione derivatives as selective and reversible monoamine oxidase-B inhibitors, Ridha Jadoon, Muhammad Aamir Javed, Muhammad Saeed Jan, <b>Muhammad Ikram</b> , Mater H Mahnashi, Abdul Sadiq, Muhammad Shahid, Umer Rashid, <i>Bioorg Med Chem Lett</i> . 2022 Nov 15:76:128994.
18.	Diclofenac derivatives as concomitant inhibitors of cholinesterase, monoamine oxidase, cyclooxygenase-2 and 5-lipoxygenase for the treatment of Alzheimer's disease: synthesis, pharmacology, toxicity and docking studies, Muhammad Aamir Javed, Saba Bibi, Muhammad Saeed Jan, <b>Muhammad Ikram</b> , Asma Zaidi, Umar Farooq, Abdul Sadiq, Umer Rashid, <i>RSC Adv</i> . 2022 Aug 11;12(35):22503-22517.
19.	Cardioprotective Potential of Aqueous Extract of <i>Fumaria indica</i> on Isoproterenol-Induced Myocardial Infarction in SD Rats, Aimen Sajid, Taseer Ahmad <b>Muhammad Ikram</b> , Taous Khan, Abdul Jabbar Shah, Mater H Mahnashi, Abdulaziz Hassan Alhasaniah, Ahmed Abdullah Al Awadh, Ibrahim Abdullah Almazni, Mohammed Merae Alshahrani, <i>Oxid Med Cell Longev</i> . 2022 May 31:2022:2112956.
20.	6-Methoxyflavone and Donepezil Behavioral Plus Neurochemical Correlates in Reversing Chronic Ethanol and Withdrawal Induced Cognitive Impairment, Mehreen Arif, Khalid Rauf, Naeem Ur Rehman, Ahmed Tokhi, <b>Muhammad Ikram</b> , Robert D Sewell, <i>Drug Des Devel Ther</i> . 2022 May 28:16:1573-1593.
21.	Rational design, synthesis, antiproliferative activity against MCF-7, MDA-MB-231 cells, estrogen receptors binding affinity, and computational study of indenopyrimidine-2,5-dione analogs for the treatment of breast cancer, Iqra

	Ejaz, Muhammad Aamir Javed, Muhammad Saeed Jan, <b>Muhammad Ikram</b> , Abdul Sadiq, Sajjad Ahmad, Umer Rashid, Bioorg Med Chem Lett. 2022 May 15:64:128668.
22.	Structural Modification, In Vitro, In Vivo, Ex Vivo, and In Silico Exploration of Pyrimidine and Pyrrolidine Cores for Targeting Enzymes Associated with Neuroinflammation and Cholinergic Deficit in Alzheimer's Disease, Muhammad Aamir Javed, Nighat Ashraf, Muhammad Saeed Jan, Mater H Mahnashi, Yahya S Alqahtani, Bandar A Alyami, Ali O Alqarni, Yahya I Asiri, <b>Muhammad Ikram</b> , Abdul Sadiq, Umer Rashid, ACS Chem Neurosci. 2021 Nov 3;12(21):4123-4143.
23.	Chemical profiling and anti-breast cancer potential of hexane fraction of Sphaeranthus indicus flowers, Hafiz Majid Rasheed, Fazli Wahid, <b>Muhammad Ikram</b> , Muhammad Qaisar, Abdul Jabbar Shah, Taous Khan; Tropical Journal of Pharmaceutical Research, 20, 9, 1931-1939.
24.	Fabrication of Bacterial Cellulose-Curcumin Nanocomposite as a Novel Dressing for Partial Thickness Skin Burn. Wasim Sajjad, Feng He, Muhammad Wajid Ullah, <b>Muhammad Ikram</b> , Shahid Masood Shah, Romana Khan, Taous Khan, Ayesha Khalid, Guang Yang, Fazli Wahid. Front Bioeng Biotechnol. 2020 Sep 15:8:553037.
25.	Synthesis, pharmacological evaluation and Molecular modelling studies of pregnenolone derivatives as inhibitors of human dihydrofolate reductase, Muhammad Bilal Tufail, Muhammad Aamir Javed, <b>Muhammad Ikram</b> , Mater H Mahnashi, Bandar A Alyami, Yahya S Alqahtani, Abdul Sadiq, Umer Rashid, Steroids. 2021 Apr: 168:108801.
26.	Co-targeting of Tiam1/Rac1 and Notch ameliorates chemoresistance against doxorubicin in a biomimetic 3D lymphoma model, <b>Muhammad Ikram</b> , Yeseon Lim, Sun-Yong Baek, Songwan Jin, Young Hun Jeong, Jong-Young Kwak, Sik Yoon, Oncotarget. 2017 Dec 8;9(2):2058-2075.
27.	Tyrosinase inhibition and anti-melanin generation effect of cinnamamide analogues, Sultan Ullah, Chaeun Park, <b>Muhammad Ikram</b> , Dongwan Kang, Sanggwon Lee, Jungho Yang, Yujin Park, Sik Yoon, Pusoon Chun, Hyung Ryong Moon, Bioorg Chem. 2019 Jun:87:43-55.
28.	Fabrication and Characterization of Chitosan-Vitamin C-Lactic Acid Composite Membrane for Potential Skin Tissue Engineering, Ahmed Madni, Romana Khan, <b>Muhammad Ikram</b> , Syeda Sohaila Naz, Taous Khan, and Fazli Wahid. International Journal of Polymer Science Volume 2019, Article ID 4362395.
29.	Synthesis of cinnamic amide derivatives and their anti-melanogenic effect in $\alpha$ -MSH-stimulated B16F10 melanoma cells, Sultan Ullah, Dongwan Kang, Sanggwon Lee, <b>Muhammad Ikram</b> , Chaeun Park, Yujin Park, Sik Yoon, Pusoon Chun Hyung Ryong Moon, Eur J Med Chem. 2019 Jan 1:161:78-92.
30.	Design, synthesis and anti-melanogenic effect of cinnamamide derivatives, Sultan Ullah, Yujin Park, <b>Muhammad Ikram</b> , Sanggwon Lee, Chaeun Park, Dongwan Kang, Jungho Yang, Jinia Akter, Sik Yoon, Pusoon Chun, Hyung Ryong Moon, Bioorg Med Chem. 2018 Nov 15;26(21):5672-5681.
31.	Preparation and structural characterization of surface modified microporous bacterial cellulose scaffolds: A potential material for skin regeneration applications in vitro and in vivo. Shaukat Khan, Mazhar Ul-Islam, <b>Muhammad Ikram</b> , Salman Ul Islam, Muhammad Wajid Ullah, Muhammad Israr, Jae Hyun Jang, Sik Yoon, Joong Kon Park, Int J Biol Macromol. 2018 Oct 1:117:1200-1210.
32.	Fish Scale Collagen Peptides Protect against CoCl <sub>2</sub> /TNF- $\alpha$ -Induced Cytotoxicity and Inflammation via Inhibition

	of ROS, MAPK, and NF- $\kappa$ B Pathways in HaCaT Cells, Fazli Subhan, Hae Yeong Kang, Yeseon Lim, <b>Muhammad Ikram</b> , Sun-Yong Baek, Songwan Jin, Young Hun Jeong, Jong Young Kwak, Sik Yoon, Oxid Med Cell Longev. 2017:2017:9703609. doi: 10.1155/2017/9703609. Epub 2017 Jun 22.
33.	Three-dimensionally microporous and highly biocompatible bacterial cellulose–gelatin composite scaffolds for tissue engineering applications, Shaukat Khan, Mazhar Ul-Islam, <b>Muhammad Ikram</b> , Muhammad Wajid Ullah, Muhammad Israr, Fazli Subhan, Yeji Kim, Jae Hyun Jang, Sik Yoon and Joong Kon Park, RSC Adv, 2016,6, 110840-110849.
34.	Alginate–marine collagen–agarose composite hydrogels as matrices for biomimetic 3D cell spheroid formation, Suil Shin, <b>Muhammad Ikram</b> , Fazli Subhan, Hae Yeong Kang, Yeseon Lim, Rira Lee, Songwan Jin, Young Hun Jeong, Jong-Young Kwak, Yong-Jin Naa Sik Yoon, RSC Adv, 2016,6, 46952-46965.
35.	Colon-targeted delivery of budesonide using dual pH- and time-dependent polymeric nanoparticles for colitis therapy. Muhammad Naeem, Moonjeong Choi, Jiafu Cao, Yujeong Lee, <b>Muhammad Ikram</b> , Sik Yoon, Jaewon Lee, Hyung Ryong Moon, Min-Soo Kim, Yunjin Jung, Jin-Wook Yoo, Drug Des Devel Ther. 2015 Jul 21:9:3789-99. doi: 10.2147/DDDT.S88672. eCollection 2015.
36.	Bioactive fish collagen/polycaprolactone composite nanofibrous scaffolds fabricated by electrospinning for 3D cell culture, Da Jeong Choi, Seung Mi Choi, Hae Yeong Kang, Hye-Jin Min, Rira Lee, <b>Muhammad Ikram</b> , Fazli Subhan, Song Wan Jin, Young Hun Jeong, Jong-Young Kwak, Sik Yoon, J Biotechnol. 2015 Jul 10:205:47-58. doi: 10.1016/j.jbiotec.2015.01.017. Epub 2015 Jan 21.
37.	Marine Collagen: An Emerging Player in Biomedical applications, Fazli Subhan, <b>Muhammad Ikram</b> , Adeeb Shehzad, Abdul Ghafoor, J Food Sci Technol. 2015 Aug;52(8):4703-7. doi: 10.1007/s13197-014-1652-8. Epub 2014 Dec 23.
38.	Engineered regenerated bacterial cellulose scaffolds for application in in vitro tissue regeneration, Shaukat Khan, Mazhar Ul-Islam, Muhammad Wajid Ullah, <b>Muhammad Ikram</b> , Fazli Subhan, Yeji Kim, Jae Hyun Jang, Sik Yoon, Joong Kon Park, RSC Adv, 2015,5, 84565-84573.
39.	Molecular characterization and expression analysis of mouse epidermal growth factor-like domain 8. Ik-Jin Song*, <b>Muhammad Ikram*</b> , Fazli Subhan, Da-Jeong Choi, Ja-Rang Lee, Heui-Soo Kim, Sun-Yong Baek, Young-Tak Lim, Sik Yoon. Int J Mol Med, 2015 June 18 (DOI: 10.3892/ijmm.2015.2252).
40.	Epidermal growth factor-like domain 8 inhibits the survival and proliferation of mouse thymocytes, Fazli Subhan, Tae-Deuk Yoon, Hee Jung Choi, <b>Ikram Muhammad</b> , Jieun Lee, Changwan Hong, Sae-Ock Oh, Sun-Yong Baek, Bong-Seon Kim, Sik Yoon, Int J Mol Med.2013 Oct;32(4):952-8. doi: 10.3892/ijmm.2013.1448. Epub 2013 Jul 18.
41.	Regulatory role of mouse epidermal growth factor-like protein 8 in thymic epithelial cells, Hak-Jong Choi, Tae-Deuk Yoon, <b>Ikram Muhammad</b> , Myong-Ho Jeong, Jieun Lee, Sun-Yong Baek, Bong-Seon Kim, Sik Yoon, Biochem Biophys Res Commun.2012 Aug 24;425(2):250-5. doi: 10.1016/j.bbrc.2012.07.076. Epub 2012 Jul 22.

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[Conferences/ Presentations/ Workshops](#)

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[Representative Oral Talk](#)

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**No. Title, Authors, Publisher, and Date**

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1. Invited Speaker at ANSO-PAS Conference on "Understanding and mitigating the threat of emerging pathogens: Opportunities and challenges" December 21-22, 2024, Islamabad, Pakistan on "Honokiol as a Potential Immune Modulator: Combatting Radiation-Induced Immunosuppression in the Context of Emerging Pathogen Threats". Cell culturing on 3D bio-printed scaffolds by Dr. Muhammad Ikram, "Training course on 3D Bioprinting-Hands on practice from Bioink to Tissue Construct ", Pak-Austria Fachhochschule: Institute of Applied Sciences and technology. 2-6, October 2023, Pakistan.
2. "Immunomodulatory effects of Syringic acid against cyclophosphamide-induced immunosuppression in Balb/c mice". ANSO-PAS-MAAP Conference on "Pathogen transmission beyond borders: Understanding the complexities of cross-species infectious diseases" October 16-18, 2023, at the Pakistan Academy of Sciences, Islamabad.
3. Co-targeting of Tiam1/Rac1 and Notch ameliorates chemoresistance against doxorubicin in a biomimetic 3D lymphoma model" Korean Association of Anatomist, Annual anatomy conferences 18-20, October 2017. BEXCO, Korea.
4. Hydrogel based 3D culture model of T cell lymphoma. Self- Damage Defence immune network Convergence Research Workshop. Immune network Pioneer Research centre, 4th workshop 2013-12-20.
5. Invitro 3D mouse T cell lymphoma model for cellular studies and Drug screening. Self- Damage Defence immune-network Convergence Research Workshop. Immune network Pioneer Research centre, 6th workshop 2014-06-20.

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**Representative Posters Presentations**

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**No. Title, authors Publisher**

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1. Immunomodulatory effects of Syringic acid against cyclophosphamide-induced immunosuppression in Balb/c mice: Khoula Sharif Mughal, Amna Rashid, Momina Khan, Naseem Zehra, Zia Uddin, Imran Amirzada, **Muhammad Ikram\***, Pakistan ANSO-PAS-MAAP Conference on "Epidemic and Pandemic Preparedness", 5-7, December 2022, Pakistan
2. Biofunctional, AmCA Composite Hydrogels with Enhanced Transparency as Scaffolds for 3D Cell culture, **Muhammad Ikram**, *EMBO/EMBL SYMPOSIUM 12~15 October 2016*, EMBL Advance Training Centre. Heidelberg, Germany.
3. Bioactive, AmCA Composite Hydrogels with Enhanced Transparency as Scaffolds for 3D Cell culture, **Muhammad Ikram**, *The 57 annual meeting and international symposium of Korean society of life sciences: 22~23 Aug 2016*. Gyeongju Korea.
4. MF-1-1 enhances and thymopoietic activity of thymic epithelial cells. **Muhammad Ikram**, Hae Yeong Kang, Yeseon Lim, Fazli Subhan, Sun-Young baek, Sik Yoon, Korean Association of Anatomist, Annual anatomy conferences 19-21, October 2016. Korea.
5. Biomimetic 3D hydrogel for the study for the study of malignancy of human prostate cancer cells. Hae Yeong Kang, Yeseon Lim, Fazli Subhan, **Muhammad Ikram**, Sun-Young baek Sik Yoon, Korean Association of

Anatomist, Annual anatomy conferences 14-16, October 2016. South Korea.

6. Cytoprotective and anti-inflammatory effect of MF-1-1 in HaCaT Human keratinocytes: Fazli Subhan, **Muhammad Ikram**, Hae Yeong Kang, Yeseon Lim, Sun-Young baek, Sik Yoon, Korean Association of Anatomist, Annual anatomy conferences 14-16, October 2016. South Korea.
7. Fabrication of a thermally cross-linked nanocomposite hydrogel for 3D cell culture. **Muhammad Ikram**, Fazli Subhan, Hae Yeong Kang, Yeseon Lim, Seo Young Bang, Sun-Yong Baek, Sik Yoon, the 3rd International Conference & Exhibition for Nanotechnology (NANOPIA 2016) November 17~18, 2016 Changwon Exhibition Convention Centre (CECO), Gyeongsangnam-do, Korea.
8. Fabrication and characterization of nanofibrous scaffolds with enhanced cell adhesion for 3D cell culture. Fazli Subhan, Hae Yeong Kang, Yeseon Lim, **Muhammad Ikram**, Seo Young Bang, Sun-Yong Baek, Sik Yoon, the 3rd International Conference & Exhibition for Nanotechnology (NANOPIA 2016) November 17~18, 2016 Changwon Exhibition Convention Centre (CECO), Gyeongsangnam-do, Korea.
9. Three-dimensional culturing prostate cancer cells using fish collagen/ polycaprolactone Nanofiber scaffold as model to study epithelial to mesenchymal-transition *in vitro*. Rira Lee, Da Jeong Choi, Hae Yeong Kang, Fazli Subhan, **Muhammad Ikram**, Yeseon Lim, Sun-Yong Baek, Sik Yoon Korean Association of Anatomist, Annual anatomy conferences 14-16, October 2015. South Korea.
10. Characterization of human prostate Cancer lines in hydrogel based three dimensional in vitro model of prostate cancer. Hae Yeong Kang, Da Jeong Choi, Yeseon Lim, Fazli Subhan, **Muhammad Ikram**, Sun-Yong Baek, Sik Yoon Korean Association of Anatomist, Korea, Annual anatomy conferences 14-16, October 2015. South Korea.
11. Synthesis and Characterization of a Physically Cross-Linked Hydrogel Composite for 3D Cell Culture, **Muhammad Ikram**, Hae Yeong Kang, Suil Shin, Fazli Subhan, Yong-Jin Na, Sik Yoon. The 2nd International Conference & Exhibition for Nanopia November 12~13, 2015 CECO (Changwon Exhibition Convention Center) Changwon Gyeongsangnam-do, Korea.
12. Modulation of the interactions of thymic epithelial cells with thymocytes by gain- and loss-of-function of mouse epidermal growth factor-like protein 8, Hee Jung Choi, Jieun Lee, Tae-Deuk Yoon, **Muhammad Ikram**, Fazli Subhan, Hak-Jong Choi, Sae-Ock Oh, Sun-Yong Baek, Bong-Seon Kim, Sik Yoon, BK-21 plus south Korea Research program annual conference, Pusan National University, School of Medicine, Yangsan, South Korea, Nov 23, 2012.
13. Phytochemical Screening and anti-oxidant and Anti- cancer Potential of *Otostegia Limbata* extract on Breast Cancer Cells, Jamil Ur Rahman, **Muhammad Ikram**, Hafiz Majid Rasheed, Fazli Wahid, Taous Khan\*.1st National Conference on Current Updates in Pharmacy Profession and Research July 29-30, 2019.
14. Evaluation of Anti-Diabetic Potential and Secondary Metabolites Profiling of Cedrela Serrata Leaves Extract, Jamshaid Ur Rehman, Taous Khan, **Muhammad Ikram**, Khalid Rauf, Zia Uddin\*,1st National Conference on Current Updates in Pharmacy Profession and Research July 29-30, 2019.
15. Green synthesis of metal oxide nanomaterials using *brassica oleracea var. Capitata* (cabbage): biocompatibility,

- antibacterial and anticancer activities, Nabila Zafar, Ahmed Madni, ***Muhammad Ikram***, Taous Khan and Fazli Wahid\*, 1st National Conference on Current Updates in Pharmacy Profession and Research July 29-30, 2019.
16. Phytochemical Composition and Hepatoprotective Potential of *Hertia Intermedia* and *Sambucus Wightiana* in Ccl4 Induced Liver Injury in Rats, Sajid Ali, Nadeem Ullah Wazir, Hafiz Majid Rasheed, Kashif Bashir, Sana Ullah Kakar, Jamil Ur Rahman, Mudassir Ali, Zia Uddin, Fazli Wahid, Taous Khan, ***Muhammad Ikram***, 1st National Conference on Current Updates in Pharmacy Profession and Research July 29-30, 2019.
17. Bacterial Cellulose Based Composites Facial Masks for Potential Applications in Cosmetics, Usman Daud, Wasim Sajjad, Ayesha Khalid, ***Muhammad Ikram***, Taous Khan, and Fazli Wahid\*, 1st National Conference on Current Updates in Pharmacy Profession and Research July 29-30, 2019.

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### PROFESSIONAL EXPERIENCE

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No.	Organization	Position/Experience	Duration
1.	Pak-Austria Fachhochschule: Institute of Applied Sciences and Technology, Haripur, Pakistan	Trainer in Certificate Course on 3D Bioprinter "Hands on Practicing from Bioink Design to Tissue Construct	Oct. 2 <sup>nd</sup> , 2023- Oct 6 <sup>th</sup> , 2023,
2.	Committee on Scientific and Technological Cooperation of the OIC (COMSTECH)- Islamabad-Pakistan	International Course "Outbreak Investigation and Control of Infectious Diseases	Dec. 26 <sup>th</sup> , 2023- Dec. 28 <sup>th</sup> , 2023
3.	Hayat Abad medical complex hospital Peshawar Pakistan.	Pharmacist (Internee)	May 10 <sup>th</sup> , 2009- July 10 <sup>th</sup> , 2011
4.	Medicraft Pharmaceuticals Pvt. Ltd. Peshawar	Pharmacist (Internee)	April 16 <sup>th</sup> , 2008- May 26 <sup>th</sup> , 2008
5.	Pakistan Council of Scientific and Industrial Research (PCSIR) Peshawar Pakistan	Short course on medicinal plants and Herbal Medicine	Nov. 16 <sup>th</sup> , 2009- Nov. 20 <sup>th</sup> 2009
6.	International Medical Corps (IMC), Pakistan	Training on mental health, Gender base violence, and Waste disposal	April 5 <sup>th</sup> , 2010- April 10 <sup>th</sup> , 2010

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### TEACHING SERVICES

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#### Undergrad (BS)

- I. Anatomy and Histology (PHM117) (2018- till now)
- II. Microbiology & Immunology (PHM214) (2018- till now)
- III. Pharmacology and Therapeutics (2019)
- IV. Pharmacognosy (PHM306) (2019)

#### Graduate (MS and PhD)

- I. Chemotherapy (PHM635)
- II. Biochemical Pharmacology (PHM633)

- III. Biosynthesis of Natural Products (PHM653)
- IV. PHM686-Clinical Pharmacokinetic (PHM686)

### Graduate (MS and PhD)

- I. Molecular Pharmacology (PHM733)
  - II. Recent Trends in Pharmacological Sciences (PHM731)
  - III. Advances in Biopharmaceutics and Pharmacokinetics (PHM714)
- 

### UNDERGRADUATE PROJECT SUPERVISION

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1. Sakhawat Ali Khan, Sanwal Abbas, Shokat Ali, Sakhawat Ali, Zaviar, **Studies in the interaction of Pharmacotherapy of Lymphoma (2023)**
  2. Muhammad Jawad, Usman Khalid, Ali Nazir, Jibran Malik, Andleeb Khalid, **Study of Pharmacotherapy of Chronic Obstructive Pulmonary Disease (2022)**
  3. Ibad Khan, Nawaf Rabbi Nawaz, Noman, Ahmad Hussain, Muhammad Zeeshan, **Hypersecretory Condition of Stomach and their Pharmacotherapy (2021)**
  4. Sahibzada Momin, Shafaq Mumtaz, Shafiullah, Hamza Akhter, **Pharmacotherapy of Rheumatoid Arthritis (2022)**
  5. Adnan Khan, Syed Ali Shehroz, Aamna Shakeel, Mamoona Khalid, **Study of Pharmacotherapy of Acute Leukaemia (2020)**
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### RESEARCH THESIS SUPERVISION

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1. **Mehrin Arif**, Pharmacological evaluation of 7,8-dihydroxyflavone and 6-methoxyflavone on murine model of cognitive impairment (PhD completed)
2. **Syed Luqman Shah**, Metabolomic Profiling and Bioassay-Guided Isolation of Anticancer Constituents from *Glochidion velutinum* Leaves (PhD completed)
3. **Qasim Shah**, Evaluation of modulatory effect of selected purinergic receptors antagonists in cancer cells survival and apoptosis (PhD completed)
4. **Amna Rashid**, Insight into the Modulatory Effects of Honokiol and Rosmarinic Acid in Irradiated Immunosuppressed Mice Model
5. **Naseem Zehra**, Impact on HepG2 behaviour in a polymer -modified 3D liver model with Extracellular matrix hydrogel (PhD in Progress)
6. **Khoulia Sharif Mughal**, Engineering Pullulan/collagen/alginate hydrogels cultured with HepG2 cells as a 3D model of Hepatocellular carcinoma (PhD in Progress)
7. **Zubair Ahmed**, Metabolite Profiling and Bio-directed Isolation of Antiglioma Constituents from Clematis graveolens (PhD in Progress)
8. **Aiman Sajid**, Phytochemical Investigation on the Mechanism of Gentisic Acid in Myocardial Infarction Hypertensive Rat Models (PhD in Progress)
9. **Adil Javed**, Pharmacological investigation and mechanistic insights into antihypertensive effects of herbacetin and 2-methoxystypantrone in rat model (PhD in Progress)

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10. **Irfan Khan**, Pharmacological Insights into the Antihypertensive Effects and Underlying Cardiovascular Mechanisms of Lawsone and Lawsone Methyl Ether in Rat Model (PhD in Progress)
  11. **Sajid Ali**, Phytochemical Composition and Hepatoprotective Potential of *Sambucus wightiana* and *Hertia intermedia* in CCl<sub>4</sub> Induced Liver Injury in Rats (MS completed)
  12. **Jamil Ur Rahman**, Bio-assay Oriented Isolation and Characterization of Anti-Breast Cancer Secondary Metabolites from *Otostegia limbata* (MS completed)
  13. **Muhammad Awais**, Evaluation of Anticancer Drugs on Three-Dimensional Cell Cultured Microenvironment (MS completed)
  14. **Sanna Khan**, Fabrication of Three-Dimensional Scaffolds for In Vitro Tumor Studies (MS completed)
  15. **Hina Waheed**, Extraction and Evaluation of *Buxus-Wallichiana* Bail Leaves for Anti-Diabetic Activity in Mice Model (MS completed)
  16. **Naseem Zehra**, Immunomodulatory Activity of Sinapic Acid on Cyclophosphamide-Induced Immunosuppressive Mice (MS completed)
  17. **Khoula Sharif Mughal**, Immunomodulatory Effects of Syringic Acid Against Cyclophosphamide Induced Immunosuppression in Balb/c Mice (MS completed)
  18. **Saif Ullah**, Investigation on Cardioprotective Potential of 7-Hydroxyfrullanolide in Isoprenaline-Induced Ischemic Myocardial Rat Model (MS completed)
  19. **Rameen Matloob**, Fabrication of Three-dimensional scaffold for Cultivation of Multicellular Hepatoma Tumoroids (MS completed)
  20. **Aroosa Khan**, Metabolic Profiling and Evaluation of Immunomodulatory Effects of *Zanthoxylum armatum* in mice model (MS completed)
  21. **Syeda Faiza Shah**, Immunomodulatory Effects of Gentisic acid in X-rays Irradiated Immunosuppressed Mice Model (MS Registered)
  22. **Kainat Khan**, Evaluation of Immunomodulatory Activity of *Syzygium Cumini* Extract in Mice Model. (MS Registered)
  23. **Kausar Bibi** (MS Registered)
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### THESIS EVALUATION AS EXTERNAL REVIEWER

1. **Mukhtiar Ahmad**, Spasmolytic, spasmogenic and anti-diarrhoeal studies of *Pleurospermum Candollei* (dc) extracts, (M. Phil Dissertation), University of Swabi.
2. **Saima Nawaz**, The role of methanolic extract of *Calotropis Procera* linn to the mice brain against cisplatin induced neurodegeneration (M. Phil Dissertation), Khyber Medical University.
3. **Zafar Sadiq**, Association of cyp2c19 genotype with therapy response and adverse effects in major depressive disorders. (M. Phil Dissertation), Khyber Medical University.
4. **Nauman Ali**, Effects of methotrexate-loaded composite scaffold for targeting CTGF in osteoblast cells. (M. Phil Dissertation), Khyber Medical University.
5. **Khurshed Ur Rehman**, Pharmacognostic study and biological activities of selected ethnomedicinal plant

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- species for their potential use in dental problems. (Ph. D Dissertation), Hazara University Mansehra.
6. **Attaullah Shah**, Evaluation of hepatoprotective potential of selected Schiff bases against gentamicin induced hepatotoxicity. (M. Phil Dissertation), Abdul Wali Khan University Mardan.
  7. **Sehrish Jabeen**, Molecular docking, anti-inflammatory and analgesic studies of sulbentine analogues. (M. Phil Dissertation), Khyber Medical University.
  8. **Umer Nawaz Khan**, Development of heterogeneous nano catalysts for the production of biodiesel from novel plant seed oils. (Ph. D Dissertation), Hazara University Mansehra.
  9. **Milad Ahmed Said Khaili**, Evaluation of Bio Cellulose-Based 3D Printed Scaffold for Treatment of Burns in Animal Models. (M. Phil Dissertation), PAF-IAST.
  10. **Irfan**, Antidepressant Effects of Sy-2476 Caffeine Derivative in Corticosterone Induced Rats Model of Depression. (M. Phil Dissertation), Khyber Medical University.
  11. **Irum Saba**, Association of PTGS1 and PTGS2 Polymorphism with Aspirin Response in post Angioplasty Patients. (M. Phil Dissertation), Khyber Medical University.
  12. **Shawar Siddique**, Platelet Rich Plasma-containing Electro spun nanofibers coupled with low-level laser therapy induce osteoblasts differentiation. (M. Phil Dissertation), Khyber Medical University.
  13. **Sadaf Bibi**, Pheno-morphological Characterization and Nutrient Management of Kiwifruit in Mansehra Kpk, Pakistan. (Ph. D Dissertation), Hazara University Mansehra.
  14. **Aiman Shoaib**, Comparative Evaluation of Cisplatin and Mebendazole in Oral Squamous Cell Carcinoma Cell Lines. (M. Phil Dissertation), Khyber Medical University.
  15. **Abdul Ghaffar Khan**, Synthesis of Aldehyde Derivatives of Succinimide Evaluation of their Analgesic and Anti-Inflammatory Potential. (M. Phil Dissertation), University of Swabi.
  16. **Abid Hussain**, Screening of *Habenaria Plantaginea* lindl. for Antioxidant and Anti-alzheimer Potential (M. Phil Dissertation), Khyber Medical University.
  17. **Nooria Siddiqui**, Comparative Evaluation of Cisplatin and Loratadine in Oral Squamous Cell Carcinoma Cell lines, (M. Phil Dissertation), Khyber Medical University.
  18. **LABIBA**, Evaluation of Hepatoprotective and Nephroprotective Properties of Methanolic Extract of *Desmodium Elegans*. (M. Phil Dissertation), Abdul Wali Khan University Mardan.
  19. **Sarwat Jahan**, The Role of Emodin Against MPTP Induced Parkinson Disease Pathology Using *In Vivo* and *In-Silico* Approach, (Ph. D Dissertation), Khyber Medical University.

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#### **ADDITIONAL SERVICES/ACHIEVEMENTS: (INTERNATIONAL, INSTITUTIONAL, SOCIAL SERVICES)**

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- **Supervisory Committee Member – MS and PhD,**

Department of Pharmacy, COMSATS University Islamabad, Abbottabad Campus, Pakistan.

Department of Biological Science, National University of Medical Science, Rawalpindi, Pakistan.

Department of Botany, Hazara University Mansehra., Pakistan

Department of Biomedical Science, Pak-Austria Fachhochschule: Institute of Applied Sciences & Technology.

Institute of Pharmaceutical Sciences, Khyber Medical University, Peshawar Pakistan.

- Member of the Campus Proctorial Board, COMSATS University Islamabad, Abbottabad Campus, Pakistan.
- Member of Departmental Lab review committee.
- Member of Departmental Sports committee.
- Member of Departmental Animal house committee.
- Member the committee for the establishment of Pharmacy journal.
- Member the events arrangement committee.

Class Advisor, Department of Pharmacy, COMSATS University Islamabad, Abbottabad Campus, Pakistan.

- Member the committee for the accreditation of services of the department with Pharmacy Council of Pakistan.
- Organizing member of National Conference at Department of Pharmacy, COMSATS University Islamabad, Abbottabad Campus, Pakistan.

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## JOB-RELATED SKILLS

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- Primary cells extraction from mammalian tissues
- Cell culturing techniques (2D and 3D culture system)
- Western blot & Zymography for total protein, cytosolic, nuclear fraction, and enzyme detection.
- Immunohistochemistry and immunofluorescence of paraffin section and cryosections.
- PCR and RT-PCR techniques for DNA and gene analysis.
- Flow cytometric analysis (FACS canto-II) (Experience using flow Jo software).
- Fabrication of hydrogels, Development of bacterial cellulose scaffolds, Electro spinning of nanofiber scaffold for 3D culture, fabrication of PDMS mould and FTOC/ROTC culture techniques.
- *In vivo* experimental techniques: (Dissection of animals, Perfusion, and immersion tissue fixation Intravenous, intraocular, subcutaneous, intramuscular and kidney capsule injections) liver cirrhosis, thymic involution and Diabetes induction in experimental mice, Pregnancy evaluation, Fatal thymic isolation and culture, thymus isolation and culture in mice, Subcutaneous transplantation of hydrogel and nanofibers scaffold into mice.
- Biochemical and electrolytes analysis of serum spectrophotometric analysis of blood.
- RNA, DNA, protein isolation, Purification, and other basic molecular biology techniques (Genotyping for TG mice, Gene cloning for transgenic mice and Recombinant protein production).
- UV spectrophotometric application of drugs purity and compositions assays.
- Sterility tests for microbial testing parenteral preparation.
- Pharmaceutical Production and Quality control testing

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## AWARDS & MEMBERSHIP

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### Association membership

- Associate fellow (The Professional Standards Framework for teaching and supporting learning in HE (UK-PSF)
- Registered pharmacist (Rph) Pharmacy Council of Pakistan.

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- HEC Approved PhD Supervisor
  - Directorate of Science and Technology (DOST) approved Supervisor
  - Asian Federation of Biotechnology (AFOB) (Registration No. PK00033).
  - The Korean association of Immunologist.
  - Asia Pacific Association of Paediatric Allergy, Respirology & Immunology (APAPARI).
  - European federation of biotechnology.
  - Editor: International Journal of haematology and therapy.
  - Editorial member at Journal of Cancer Treatment and Research (JCTR)
  - Reviewer at various international Peer Review journals.
  - Representation of Department of Pharmacy at various online webinars and course
  - Course designed, focusing on PhD in Pharmacology (Advanced in mammalian Cell culture, Approved by the Board of Advanced Study and Research, COMSATS University Islamabad, Abbottabad Campus.
  - Appreciation letter by the Department of Pharmacy, COMSATS University Islamabad Abbottabad Campus, in recognition of outstanding performance, acknowledging remarkable contributions in 2022.
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### MASTER & PHD FELLOWSHIP AWARDS

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- Tuition Fee Scholarship from Pusan National University, Republic of Korea, Scholarship for living expenses (Monthly Stipend) from National Research Foundation Korea (NRF). (March 2011 till date).
  - The winner of best poster award (Annual meeting of Korean association of anatomist)
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### LIST OF GRANTS

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No.	Title of Project	Status	Amount(s)	Funding source(s)
1.	Fabrication of a three-dimensional tumor microenvironment for studying effect of propitious chemotherapeutics agents from natural plants origins	Completed	Rs. 485,000	Higher Education Commission-Pakistan
2.	Engineering of an All-in-one three-dimensional Platform for Cultivation of Multicellular Hepatoma tumoroids to evaluate Chemoresistance	Ongoing	Rs.11196000/-	Higher Education Commission-Pakistan
3.	Exploring the Immune-Boosting Role of Bio Functional Compound in Radiation-Induced Immunosuppression	Ongoing	Rs.300,000	COMSATS University Islamabad

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### COLLABORATION

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No.	Collaborator Name	Organization	Type

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1.	Prof. Dr. Yoon Sik	Pusan National University	Research
2.	Dr. Mazhar ul Islam (Professor)	Dhofar University Salalah of Oman	Research
3.	Dr. Shaukat Khan (Assistant Professor)	Dhofar University Salalah of Oman	Research
4.	Dr. Sultan Ullah (Postdoctoral Associate)	The Scripps Research Institute, USA	Research
5.	Dr. Muhammad Wahid Ullah (Associate Professor)	Jiangsu University Zhenjiang, China	Research
6.	Prof. Dr. Taous Khan	COMSATS University Islamabad	Research and Student Exchange
7.	Prof. Dr. Abdul Jabbar Shah	COMSATS University Islamabad	Research and student Exchange
8.	Prof. Dr. Khalid Rauf	COMSATS University Islamabad	Research and student Exchange
9.	Dr. Zia Uddin (Assistant Professor)	COMSATS University Islamabad	Research and student Exchange
10.	Dr. Fazal Wahid (Associate Professor)	Pak-Austria Fachhochschule: Institute of Applied Sciences and Technology	Research and student Exchange
11.	Dr. Naeem Afridi (Hod, biotechnology)	National University of Medical Sciences	Research and student Exchange
12.	Dr. Fazal Subhan (Assistant Professor)	National University of Medical Sciences	Research and student Exchange
13.	Dr. Nabi Shah (Associate Professor)	COMSATS University Islamabad	Research
14.	Dr. Imran Amir Zada (Associate Professor)	COMSATS University Islamabad	Research
15.	Dr. Umer Rasheed (Associate Professor)	COMSATS University Islamabad	Research and student Exchange

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## LANGUAGES SKILLS

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### 1. Mother Tongue

Pashto

### 2. Other Language(s)

**English and Urdu (Advanced)**

Arabic (basic)

Korean (basic)

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## REFERENCES

1. Professor Dr. Sik Yoon, M.D, PhD  
Immune Cell Molecular Biology Lab  
Department of Anatomy, School of Medicine,  
Pusan Nation National University  
Email: [sikyoon@pusan.ac.kr](mailto:sikyoon@pusan.ac.kr)
2. Prof. Dr. Taous Khan, PhD, PhD,  
Ex-Chairman, Department of Pharmacy,  
COMSATS University Islamabad,  
Abbottabad Campus  
Email: [taouskhan@cuiatd.edu.pk](mailto:taouskhan@cuiatd.edu.pk)