

## **1. Research and publications**

The Department continues to maintain high standards of basic and applied research in different sub-disciplines of Pharmacology & Toxicology. Currently, staff members are involved in 11 funded research grants either as Principal or Co-Investigator. Two of these research grants are for graduate student projects. In addition, two more graduate student research grant applications are under processing.

As in the past, the Department also excelled in research productivity by publishing 8 full-length research papers in peer-reviewed indexed journals, many of which have been published in quartile-one category journals. In addition, academic staff of the Department participated in a large number of International Conferences and presented their research work. The Department also contributed significantly in the 24<sup>th</sup> Annual Health Sciences Center Poster Conference (March 12 -14, 2019) by presenting multiple posters. The members of the Department actively participate in reviewing research grant proposals for funded research and manuscripts submitted for publication to national and international journals. They also serve as members of editorials boards of scientific journals.

### **Research areas of faculty members:**

#### **Prof. Charles I. Ezeamuzie**

1. Immunopharmacology of Asthma, Allergy and Inflammation.
2. Pharmacology of drugs used for asthma, allergy and inflammation.
3. Signal transduction mechanisms in eosinophils, mast cells and other immune/pro-inflammatory cells.
4. The role IgE in allergic diseases.
5. Enhydrazinone esters as potential anti-allergic drugs.

#### **Prof. Mabayoje A. Oriowo**

1. Cardiovascular and autonomic pharmacology

#### **Prof. Milad S. Bitar**

1. Wound healing viewed in the context of oxidative stress, growth factors and cellular senescence: Implication for understanding and treatment of non-healing diabetic ulcers.
2. Molecular Mechanism of RKIP actions: Implication for understanding and treatment of tumor growth and non-healing diabetic ulcers.

3. MicroRNAs, SIRT1, Nrf2, and cellular senescence: Implication for understanding infertility during the course of diabetes.
4. Adenylyl cyclase-c-AMP-CREB-dependent pathway: Implication for understanding impaired insulin secretion and increased apoptosis in aged  $\beta$ -cells of type 2 diabetes.

**Prof. Mariam Yousif**

1. Signaling transduction pathways in isolated blood vessels and tissues from different animal models including type 1 diabetes, hypertension and aged animals.
2. Signaling pathways involved in mediating bronchodilator responses in isolated tracheal tissues and bronchioles from different animal models comparing conventional and novel drug therapies for asthma.

**Dr. Suleiman Al-Sabah**

1. Signalling and desensitization of G protein-coupled receptors (GPCRs).
2. Molecular pharmacology of the incretin hormones and their receptors, including their regulation and dysregulation in diabetes and obesity.
3. Hormonal changes following bariatric surgery.

**Dr. Aida Shihab-Eldeen**

1. Applied and clinical research on drug metabolism, adverse drug reactions and interactions, toxicology, drug induced hepatotoxicity and nephrotoxicity.
2. Primary areas of research interests include biomedical applications of high pressure liquid chromatography (HPLC), LC/MS, and immunoassay in therapeutic drug monitoring (TDM), clinical pharmacology toxicology and clinical pharmacokinetic studies.
3. Clinical pharmacology & TDM of new anticonvulsants and immunosuppressants.
4. Placental transfer of drugs.

**Dr. Shaima Karam**

1. To investigate the neuropharmacology of neuropathic pain, using *in vivo* electrophysiological and behavioral techniques such as von Frey and Hargreaves tests. These techniques will be used to measure allodynia and hyperalgesia in neuropathic models, such as nerve ligation model, and to

investigate the mechanisms of the drugs which play a role in alleviating neuropathic pain states.

**Dr. Munya Al-Fulaij**

1. Understanding the genetic basis of various receptor disorders and to identify their therapeutic targets through the use of molecular pharmacology and pharmacogenomic methods.
2. Understanding how polymorphisms affecting G protein-coupled receptors can influence drug sensitivity, toxicity, and dosing.

**Dr. Jaber Al-Jaber**

1. Clinical/forensic toxicology, forensic genetics, TDM, bioanalysis, pharmacokinetics, bioavailability/ bioequivalence studies, counterfeited drugs, measurements of biomarkers and any related bioanalytical research.

**Dr. Mubeen A. Ansari**

1. Investigate the changes in brain connectivity as a function of brain injury (traumatic and ischemic) as well as their role in age related neurodegenerative problems, i.e., Alzheimer's disease.
2. Investigate how daily exposures (i.e., food adulteration, drug, and occupational environment) can have adverse effects on different vital organs and its cure using natural compounds to improve the quality of life.

**Given below is the list of research publications in the year 2018/2019.**

1. AlKhairi, Cherian, Abu-Farha, Madhoun, Nizam, Melhem, Jamal, **Al-Sabah**, Ali, Tuomilehto, Al-Mulla, Abubaker, 2019. Increased Expression of Meteorin-Like Hormone in Type 2 Diabetes and Obesity and Its Association with Irisin. Cells 8, 1283.
2. Al-Zamel, N., **Al-Sabah**, S., Luqmani, Y., Adi, L., Chacko, S., Schneider, T.D., Krasel, C., 2019. A Dual GLP-1/GIP Receptor Agonist Does Not Antagonize Glucagon at Its Receptor but May Act as a Biased Agonist at the GLP-1 Receptor. IJMS 20, 3532.

3. Qabazard B, **Yousif MHM**, Phillips OA. Alleviation of impaired reactivity in the corpus cavernosum of STZ-diabetic rats by slow-release H<sub>2</sub>S donor GYY4137. *Int J Impot Res.* 2019; 31(2):111-118.
4. Akhtar S, Chandrasekhar B, **Yousif MH**, Renno W, Benter IF, El-Hashim AZ. Chronic administration of nano-sized PAMAM dendrimers in vivo inhibits EGFR-ERK1/2-ROCK signaling pathway and attenuates diabetes-induced vascular remodeling and dysfunction. *Nanomedicine.* 2019, 18:78-89.
5. **Bitar MS**, et al Hydrogen sulfide deficiency reduces muscle mass and functionality during diabetes: Implication for understanding sarcopenia and critical limb ischemia. *Oxidative Medicine and Longevity* (In Press).
6. **Bitar MS**. Diabetes impairs angiogenesis and induces cellular senescence by up-regulating thrombospondin-1-CD47-dependent signaling. *Int J Mol Sci* (In Press).
7. **Bitar MS**. Cellular and molecular mechanisms of impaired angiogenesis and delayed wound healing in type 2 diabetes: Amelioration using siRNA-Pluronic acid-based technology (In Press, 2018). *Wounds: Background, Principles and Recent Research and Clinical Techniques.* Publisher-Springer, Editor-Melvin A. Schiffman, M.D., J.D. (Books and Chapters)
8. Nizam, R, Al-Ozairi, E, **Bitar, MS**, Al-Mulla, F Caveolin-1 variant is associated with the metabolic syndrome in Kuwaiti children. *Frontier in Genetics* 9, 689, 2018
9. Al Madhoun A, Alkandari, S, Ali H, Carrio N, Atari, M, **Bitar, MS**, Al-Mulla, F Chemically define conditions mediates an efficient induction of mesodermal lineage from human umbilical cord – and bone marrow-mesenchymal stem cells. *Cellular Programming* 20, 9-16, 2018
10. **S Al-Sabah**, M Buenemann, C Krasel, Homo-and heterodimerization of the GIP receptor *Naunyn-Schmiedeberg's archives of Pharmacology*, 391, S69-S69, 2018

## 2. Community Services

The Department continues to offer high-quality Therapeutic Drug Monitoring/Clinical Toxicology

Service to all hospital in Kuwait, through our Toxicology Unit. In addition, one academic staff is

seconded to the Ministry of Interior, General Department of Criminal Evidences

Identification.

### 3. Physical Facilities

The teaching facilities available at the Faculty of Medicine and Health Sciences Centre are utilized by the members of the department for delivering lectures, seminars, PBLs, clinical skills, tutorials, small group teachings and practical, etc. In addition, the following physical facilities are used in the Department for teaching, research, diagnostic services and staff offices, etc.

<b>Room</b>	<b>Designation</b>	<b>Usage</b>
301	Teaching Assistant	Office
302	Chief Technician	Office
303	New Academic Staff	Office
304	Academic Staff	Laboratory
304 A	Academic Staff	Office
305	Academic Staff	Laboratory
305 A	Academic Staff	Office
306	Secretaries Office	Office
306 A	Departmental Meeting Room	Meeting Room
306 B	Chairman's office	Office
306 C	Secretaries Office	Office
307	General Facility	Laboratory
308	Washing/Dark Room	Laboratory
309	New Academic Staff	Laboratory
309 A	New Academic Staff Office	Office
310	Toxicology Laboratory	Laboratory
310 A	Academic Staff	Office
311	Toxicology Laboratory	Laboratory
312	Academic Staff	Laboratory

312 A	Academic Staff	Office
313	Academic Staff	Laboratory
313 A	Academic Staff	Office
314	Academic Staff	Office
315	New Academic Staff	Laboratory
316	Clinical Instructor	Office
317	Academic Staff	Laboratory
317 A	Academic Staff	Office
318	Academic Staff	Laboratory
318 A	Academic Staff	Office
319	Toxicology Staff Room	Staff Room
320	Academic Staff	Laboratory
320 A	Academic Staff	Office
321	Tissue Culture Laboratory	Laboratory
322	Academic Staff	Laboratory
322 A	Academic Staff	Office
323	Lab Autoclave	Laboratory
326	Service Room	Room
327	Academic Staff	Laboratory
327 A	Academic Staff	Office
328	Graduate Students Room (M.Sc. & Ph.D.)	Room