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COVER IMAGE by Professor Safa Shehab, Anatomy Department:
Confocal image showing cholera toxin labeled (CTb, red) and isolectin B4-labeled (IB4, green) neurons in the fifth lumbar dorsal root ganglion (DRG) of a rat injected with CTb and IB4 into sciatic nerve. CTb positive neurons are mainly of large size (responsible for transmission of mechanoreceptive and touch sensations) while IB4 positive neurons are mainly of small size (responsible for transmission of pain sensation). The image also shows whether these largely separate populations may also contain CGRP (blue).

Inside research images provided by the individual researchers

Annual Publication of the Office of The Assistant Dean for Research & Graduate Studies
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Dear Friends and Colleagues,

I am delighted to present the Research Publications and Research Profiles report for the College of Medicine and Health Sciences (CMHS) for 2014. This report is available as an electronic version on the UAEU website.

CMHS maintains its leadership among research faculties in the UAE and throughout the region. The success of the College is due to its talented faculty and the productive research relationships that it has formulated with other Colleges within UAEU, and with other Universities, industrial partners, and health care institutions across the UAE and the region. We are particularly proud of our recent cooperative relationships with foreign universities that enable the collaborative research documented here, as well as enabling our teaching mission through exchange of students and faculty.

As one of nine colleges of UAEU, the CMHS retains its number-one ranking among the other colleges of this research-intensive university. It also leads the entire UAEU in research productivity, though we recognize the development of new research institutions in Dubai, Abu Dhabi, and Sharjah, among others, and wish our colleagues at those institutions success as well. We are grateful for the involvement of both medical students and those on Master’s and PhD programs who have contributed not only to research publications, but also to the environment of scholarly inquiry that pervades the College. Trainees from CMHS are to be found across the UAE, and their training is leading to scholarly and cultural advancements to strengthen the Nation’s future.
I would specifically like to thank Prof. Keith Bagnall for his tireless effort to assemble and present this information. Prof. Bagnall’s career exemplifies our productive faculty and inspires our best trainees. We are grateful for his contribution to our continued success.

I also applaud each student, technician, faculty member, and support staff who have contributed to each scientific project and published report that are documented here. The success of the College is only possible with a productive and dedicated team.

Prof. Dennis Templeton, M.D., Ph.D.
Dean, College of Medicine & Health Sciences
Throughout the last 24 years, this annual report on Research Publications and Research Profiles have kept the extramural community aware of the contributions of the CMHS through research productivity, presentations at international conferences and other scholarly activities. This contribution from the CMHS has contributed to position the UAEU as the top biomedical research-intense institution in the UAE and the region.

The last couple of years have witnessed great opportunities for our researchers through availability of various generous funding opportunities. Despite the very competitive atmosphere, our college managed to secure a good number of external as well as internal grants. Securing such grants enabled our researchers to recruit and support excellent research graduate students and maintain their impressive productivity level.

At the office of research and Graduate studies we strive to provide such an environment for our researchers that preserves cooperation, productivity of international standards and enables creativity in research. This was achieved by allocating resources wisely, nurturing incoming faculty, and providing the necessary infrastructure and resources by acquiring state of the art equipment and technologies, in addition to running a store for general consumables for research. In the recent years, we have also embarked on developing and maintaining central research facilities such as the Electrophysiology center, the Electron and Confocal laser microscopy imaging unit, Analytical, and a Molecular and Cellular Biology facility, in addition to a small animal vivarium.
In the Past year, our Deputy vice chancellor for research & Graduate Studies together with the director of research and sponsored projects have actively worked on implementing the vision of his excellency the Chancellor Sheikh Hamdan bin Mubarak Al Nahyan which identified the UAEU as the flagship university of the UAE where high-quality research output is a priority. The ongoing support of the office of the DVCRGS Have provided invaluable funding sources and provided solutions for several problems including procurement research assistants hiring delays.

As always I would like to take this opportunity to thank all those who have contributed in many ways to this publication and our research achievements at the CMHS.

Dr. Mariam Al Shamsi
Assistant Dean for Research & Graduate Studies
Editor’s Preface

This is the 24th annual report on Research Publications and Research Profiles for the College of Medicine and Health Sciences, United Arab Emirates University. This volume is a continuation of a series of annual reports, dating back to the very first report in 1991.

As usual, every year we try to upgrade and maintain the quality of this report and this year is no exception. We have continued to include the Departmental Profiles and the Reports from Research Priority Groups. At the end of the booklet we have also listed the Journals in which publications have been made and their impact factor. We have also kept the design developed in our media center and which appears to be well accepted. This provides a uniform style and a consistent use of the visual elements making it easy to identify chapter, sections and text categories.

It is also a great pleasure to thank the production team who have put all this together. Ms. Ivanna Lizarriturri was the graphic designer, Mr. Rajagopalan was very efficient and patient and took care of editing the initial departmental contributions and communication between all parties, and Mr. Ashok Prasad provided some excellent photographs. The translation, as in previous years, was ably performed by Ms Al-Anood Al-Jaberi.

Many thanks to all involved, especially the faculty, for their contributions.

Professor Keith M. Bagnall, Editor.
Research Publications by Department

- Anatomy
- Biochemistry
- Family Medicine
- Institute of Public Health
- Internal Medicine
- Medical Education
- Medical Microbiology & Immunology
- Obstetrics & Gynaecology
- Pediatrics
- Pathology
- Pharmacology and Therapeutics
- Physiology
- Psychiatry and Behavioural Sciences
- Radiology
- Surgery
Research Profile

Academic staff in the Department of Anatomy pursues research interests in a number of directions. We show considerable strength in the fields of neurobiology, stem cells, cancer, diabetes mellitus, and structure/function relations.

Prof Ernest Adeghate’s major research interest is on the effect of pancreas transplantation on the metabolic parameters of animal models of diabetes mellitus (DM). He also examines the role of neuropeptides and neurotransmitters on insulin and glucagon release from the pancreas, especially in diabetic conditions and how these could be used in the management of DM. He is also interested in the morphological basis of diabetes complication.

Prof Eric PK Mensah-Brown This year I have together with my collaborators continued to investigate the role of cytokines and the cells that produce them in multiple sclerosis using rodent experimental autoimmune encephalomyelitis (EAE) as a model. For the first time, we have shown in the SJL/TCR mice that develops EAE spontaneously (see figure)
Prof Keith M. Bagnall’s research has focus in three areas. He is interested in the aetiology of adolescent idiopathic scoliosis and is trying to find indicators of future development of this disease as well as indicators of progress of the spinal curves if they develop. He is also interested in the repair of articular cartilage by the introduction of cultured chondrocytes or stem cells. A third interest involves identifying the attributes necessary to be a successful clinician and the development of tests to predict the future performance of medical students.

Prof Safa Shehab studies the reorganisation of the neuronal circuitry in the dorsal horn of the spinal cord after peripheral nerve injury. He is investigating the types of primary afferent fibres that are critical for development of neuropathic pain and identifying the ascending spinal projection pathways which are responsible for transmitting visceral pain to the brain. He is also investigating the mechanisms of deep brain stimulation which is now increasingly used to treat patients with movement disorders and variety of neurological diseases.

Prof Sherif M. Karam’s main research focuses on two main fundamental aspects of stem cell biology. 1) The proliferation and differentiation programs of gastric and mammary gland stem cells are investigated to define their role during carcinogenesis (stomach cancer and breast cancer). 2) The potential use of isolated gastric and dental stem cells in tissue engineering for regenerative medicine are investigated by manipulating their growth and differentiation on nanofibrous scaffolds.

Dr Starling Emerald’s laboratory is interested in understanding how subtle changes in expression of genes mediated by epigenetic regulatory interactions leads to metabolic diseases such as type 2 diabetes mellitus, obesity, cardiovascular diseases and hypertension. According to the International Diabetes Federation’s report the number of people (20-70yrs) with diabetes in the UAE is ~ 425000, a staggering 18.7% of the population. Unfortunately it is on the rise and projected to reach 21.7% by the year 2030. Although an adverse early-life environment has been linked to an increased risk for the development of metabolic diseases such as type 2 diabetes mellitus, obesity and hypertension the molecular mechanisms underlying these altered disease susceptibility is largely unknown. To understand the possible molecular mechanisms as well as to elucidate its relevance to human health we are using gene expression profiling, methylation profiling as well microRNA profiling analysis. From these studies we have identified a number of novel targets (genes, microRNAs and promoter sequences) including some key regulators. We believe that a detailed analysis of these targets may improve our understanding of how shuttle changes in epigenetic regulation predisposes towards metabolic syndrome which in turn may help in designing better intervention strategies which is required if we need to stop the increasing trend of metabolic diseases.
Articles in Peer-reviewed Journals


Books, Chapters, Reviews and Editorials


Published Abstracts, Letters and Correspondence


Proceedings, Conferences, Invited Lectures, Web Sites and Others


AlMenhali AA, AlShamisi SB, Branicki F, Karam SM. (2014). Role of Parathyroid Hormone-Like Hormone in Stem Cell Proliferation and Gastric Carcinogenesis. The 3nd Biotechnology World Congress, Dubai, UAE.

Karam SM. (2014). Normal and cancerous stomach stem cells. The 3nd Biotechnology World Congress, Dubai, UAE.

RESEARCH GRANTS

CMHS Research Grants

Prof E Adeghate (PI), The effect of betatrophin on the metabolic parameters of an animal model of diabetes mellitus. [2014-2016].

Dr S Emerald (Co-PI), Prof E Adeghate, E Mensah Brown, Genome wide analysis of early epigenetic targets regulated by histone modifications in type 2 diabetes and obesity. [2014-2017].

Dr S Emerald (PI), Prof E Adeghate, E Mensah Brown, Unravelling the role of PAS domain containing kinase (PASK), a novel member of the H3K4 methyl-transferase complex in pancreatic cancer. [2015-2018]

Dr S Emerald (PI), Prof S Shehab, A single inhibitory spinal neuron receives inputs from myelinated primary afferents of two adjacent nerves: Possible role in central sensitization of pain. [2015-2018].
Prof S Shehab (Co-PI)
Novel mechanisms for effective antidepressant drugs. [2014-2016]

Prof S Shehab (Co-PI)

Prof S Karam (Co-PI)
Formation, Characterization and In Vitro Evaluation of Alumina Nanoparticles-reinforced Polymer Composites for Biomedical Applications. [2013-2015]

UAEU Startup Grant
Dr S Emerald (PI)
Contribution of intrinsic and extrinsic factors in metabolic diseases. [2015-2018].

UAEU/SQU joint research projects
Dr S Emerald (PI), Profs E Adeghate, E Mensah Brown

UAEU-National Research Foundation
Prof E Adeghate (Co-PI)
The AV in diabetes mellitus. [2013-2015]

Prof S Karam (Co-PI)

Prof S Karam (Co-PI)

Prof S Karam (Co-PI)
Role of Estrogen in Gastric Epithelial Homeostasis. [2012-2015]

Prof S Karam (Co-PI)
Molecular and functional studies on the role of parathyroid hormone-like hormone (Pthlh) in the stomach. [2012-2015]

Standing left to right:
S Shehab, A Wanni, Prashanth Saseedharan, S Karam, AS Ponery, KM Bagnall, S Emerald

Seated left to right:
TV Basheer, C D’Souza, E Adeghate, S Al Shamsi, R AlKharrge EPK Mensah Brown, R AlKharrge, Marwa farid Ibrahim, Sunitha Pulikkot
Research Profile

The diverse research interests of the Department of Biochemistry include investigation of the mechanisms of transcriptional regulation, the molecular basis of diseases induced by retroviruses, the relationship of signal transduction pathways to disease, the effects of environmental agents on immune response, role of oxidative stress and mitochondrial dysfunction in diseases, molecular mechanisms of cellular defense, neurodegenerative diseases particularly Parkinson’s disease. Our main focus is on elucidation of mechanisms of gene regulation, epigenetic regulation and chromatin remodeling, molecular carcinogenesis, molecular basis of neurodegeneration disorders, molecular immunotoxicology, anticancer and antidiabetic effects of chemicals and drugs.

Prof. Sehamuddin Galadari is working, at present, as an advisor for research in the Jalila Foundation, Dubai and Dr Ahmed Al-Marzouqi as Director of Research & Funded Projects in the Office of the DVC (Research & Graduate Studies) at UAEU. Prof. Conlon left the college in April 2014. Two new faculty members have joined our department this year. Dr Suraiya Ansari from New York Neural Stem Cell Institute and Dr Saif Al Qassim, a National faculty member who completed his PhD in 2014 from Johns Hopkins School of Medicine, Baltimore, MD, USA.

Our graduate program in Biochemistry and Molecular Biology (M.Sc. and Ph.D.) at the College of Medicine and Health Sciences is a multi-disciplinary program which provides students with a
Molecular toxicology and cellular oxidative stress (Prof. H. Raza)

Research Interest
My research is mainly focused on mitochondrial dysfunction and oxidative stress caused by chemicals, drugs, diseases (mainly in diabetes and cancer) and toxicity. My studies include in vivo and in vitro models. In addition, I am also investigating the mechanisms of molecular/cellular defense against toxicity and/or diseases by studying the effects of known therapeutics, phytochemicals and dietary antioxidants on oxidative stress related complications.

Research Highlights
Our recent study has demonstrated that NSAIDs-induce oxidative stress and alter mitochondrial bioenergetics and redox homeostasis. Altered mitochondrial functions and glutathione-dependent redox homeostasis have been implicated in toxicities and diseases including cancer, diabetes, and cardiovascular disorders. We have identified molecular and metabolic targets of cytotoxicity in cancer and non-cancer cell lines. Our study has also shown that the restoration of antioxidant GSH pool by N-acetylcysteine (NAC) has protective effects on drug and bacterial endotoxin LPS-induced toxicities.

We are also investigating the mitochondrial functions, oxidative stress and drug metabolism in cardiac and other tissues from type 1 and type 2 diabetes using in vivo rat models. We have shown that tissues from type 2 diabetic / obese rats have increased oxidative stress and altered mitochondrial function. We are continuing to study further the mechanism of metabolic and oxidative stress in type 1 and type 2 diabetic rats and to elucidate the mechanism of drug actions in preventing the complications of diabetes. Our studies have resulted in a number of publications in peer reviewed journals.

Protein misfolding and neurodegenerative diseases (Prof. O.M.A. El-Agnaf)

Pathological studies in human neurodegenerative diseases such as Alzheimer's disease (AD), Parkinson's disease (PD), dementia with Lewy bodies (DLB), the prion dementias (e.g. mad cow disease and its equivalent, CJD, in humans), British dementia and Huntington's disease, have revealed abundant protein deposits (‘amyloid’) in the affected neurons. There is now substantial evidence from molecular genetics, transgenic animal and the biochemical studies to suggest that the conversion of these amyloid proteins from soluble monomers to aggregated, insoluble forms in the brain is a key event in the pathogenesis of these diseases.

Research Focus
Current research efforts in the laboratory cover the following topics: (1) Elucidating the mechanism of protein aggregation and deposition and their potential link to neurodegeneration and cell loss; (2) Developing novel techniques for detecting amyloid aggregates, particularly in their early stages; (3) Designing peptides and small molecule inhibitors of α-synuclein and β-amyloid aggregation and toxicity as potential novel therapeutics for Parkinson’s disease and Alzheimer’s disease respectively; (4) Discovering novel biological markers for Alzheimer’s and Parkinson’s disease; (5) Developing novel MRI- and PET-imaging compounds for Parkinson’s disease. These projects are supported by several international funding agencies and foundations, including the National Research Foundation UAE (Dubai), Hamdan Foundation for Medical Research (Dubai), UAE University (Al Ain), Parkinson’s disease Foundation (NY), and Michael J Fox Foundation for Parkinson’s Research (NY).

Research Highlights
Identification of compounds that inhibit or reverse the aggregation process of alpha-synuclein protein may represent a viable therapeutic strategy against Parkinson’s disease and related disorders. Ginseng is a well-known medicinal plant that has been used in East Asia for more than two thousand years to treat several conditions. It is now understood that the pharmacological properties of ginseng can be attributed to its biologically active components, the ginsenosides, which in turn have been shown to have neuroprotective properties. We therefore sought to determine for the first time, the potential of the most frequently used and studied ginsenosides, namely Rg1, Rg3 and Rb1, as anti-amyloidogenic agents. The effect of Rg1, Rg3 and Rb1 on α-synuclein aggregation and toxicity was determined by an array of biophysical, biochemical and cell-culture-based techniques. Among the screened ginsenosides,
only Rb1 was shown to be a potent inhibitor of α-synuclein fibrillation and toxicity. Additionally, Rb1 exhibited a strong ability to disaggregate preformed fibrils and to inhibit the seeded polymerization of α-syn. Interestingly, Rb1 was found to stabilize soluble non-toxic oligomers with no β-sheet content, that were susceptible to proteinase K digestion, and the binding of Rb1 to those oligomers may represent a potential mechanism of action. Thus, Rb1 could represent the starting point for designing new molecules that could be utilized as drugs for the treatment of Parkinson’s disease and related disorders.

A second area of focus in my laboratory is on the identification of novel biomarkers in breast cancer. In collaboration with colleagues in the Department of Medical Microbiology and Immunology and Tawam Hospital, we are carrying out a study to correlate expression of an intracellular protein involved in gene regulation in human breast cancer with the degree of susceptibility to chemotherapeutic drugs.

**Research Highlights**

It has been suggested that Methylation-Controlled J (MCJ) protein expression in breast cancer cell lines is directly correlated with sensitivity to chemotherapeutic drugs. Therefore, we investigated the potential correlation between the expression level of MCJ protein and clinical response to chemotherapy, in a small cohort of breast cancer patients. Our findings indicated that good clinical response and low RCB (Residual Cancer Burden) score directly correlated with high levels of MCJ expression. Regression analysis showed that MCJ expression, and no other variable, was an independent predictor of clinical response in this cohort, suggesting that the expression of MCJ protein might be a useful indicator to predict the response to chemotherapy.

**Sphingolipid signaling and its role in cancer therapy (Prof. Sehamuddin Galadari)**

Sphingolipids are bioactive molecules that regulate various aspects of cellular proliferation and survival. Modulations of sphingolipids are implicated in the mechanism of action of various anticancer chemotherapeutics. Ceramide and sphingosine are the central molecules of sphingolipid metabolism, that mediate anti-proliferative responses, such as cell growth inhibition, apoptosis induction, senescence modulation, endoplasmic reticulum stress responses and/or autophagy regulation. Prevention of human cancer development depends on the integrity of a complex network of defence mechanisms that help cells to respond to various stress conditions. A key player in this network is ceramide, which can selectively destroy wide variety of cancer cells via programmed cell death such as apoptosis, autophagy and or necrosis. By inducing efficient growth inhibition and cell death, ceramide eliminates cancer cells and prevents the development of human malignancies. These functions of ceramide determine the efficacy of several anti-cancer therapies, as they are capable of inducing ceramide generation.
However, the tumor suppressive activity of ceramide is hampered by malfunction of its many modulators such as, ceramidases, sphingomyelinases, and glucosyl ceramide synthase. These enzymes govern ceramide’s tumor suppressive activity by acting upstream and/or downstream of ceramide biosynthetic pathway.

Autophagy (Type II programmed cell death) was initially identified as a survival mechanism characterized by the degradation of long-lived proteins and cytoplasmic organelles through lysosomal machinery, the product of which are recycled to generate macromolecules, and ATP so as to maintain cellular homeostasis. However, several recent studies suggest that autophagy can also function as a cell death mechanism, and hence, interest in autophagy has been renewed amongst cancer biologists. Several studies have implicated the role of ceramide network in the induction of autophagic cell death.

Based on this information, Cell Signaling Laboratory is focusing on the molecular characterization of sphingolipids in cancer pathway, especially that of ceramide and sphingosine. The goal of our research is to elucidate how ceramide and its metabolite sphingosine communicate and signal in response to anti-cancer treatment. We use both biochemical and genetic approaches to study the whole family of related sphingolipids that are involved in the tumor suppression.

**Our laboratory focuses on the following research areas:**
1. Elucidating the tumor suppressive functions of ceramide
2. Characterizing the role of ceramide in autophagy
3. Development of cancer therapy through adjustment of sphingolipid metabolism in order to accumulate “tumor suppressor lipid” and to decrease “tumor promoting lipids” by using phytochemicals

**Molecular Basis of Pathogenesis (Dr. Farah Mustafa)**

Farah Mustafa’s main research interest lies in the area of molecular basis of diseases induced by retroviruses. These single stranded RNA viruses are well-known pathogens that cause debilitating diseases such as immunodeficiency syndromes and a variety of cancers in both man and animals. Her recent focus is on studying the viral etiology of human breast and other cancers. The mouse mammary tumor virus (MMTV) is a retrovirus that causes both breast cancer and leukemia in mice. However, it is increasingly being detected in human breast and other cancers. Controversy surrounds whether this virus has any role to play in human cancer(s). Her goal is to systematically study how this virus, if at all, may be involved in human breast and perhaps other hormonally-induced and other cancer and eventually what role could it be playing in their induction. Additionally, she is...
interested in the mechanism of MMTV-induced tumors in the host, and regulation of basic steps in MMTV replication and gene expression.

**Research Highlights**
- Investigating the presence of MMTV-like sequences in the UAE normal and cancer population
- Studies on molecular aspects of MMTV-induced oncogenesis including investigations into the ability of MMTV to code for miRNAs
- Characterization of cis-acting RNA sequence motifs that affect retroviral replication and pathogenesis

**Study the function of Parkinson’s disease associated genes (Dr. M. Emdadul Haque)**
The goal of my research is to investigate the function of Parkinson’s disease (PD) associated genes. The vast majority of the PD cases are sporadic. However, several familial forms of PD associated genes have been identified which include, α-synuclein (SNCA), Parkin, PINK1, DJ-1 and LRRK2. In addition to these genes, there are several other genes and regulatory elements that accelerate the risk of developing PD in certain individual. These genes are beginning to provide insight into important mechanisms underlying degeneration in PD. Therefore, recapitulation of these genes mutations in model systems have provided powerful tools for studying the underlying mechanisms of PD and will help to develop more appropriate/effective treatments for the disease.

**Research Highlights**
1. Study the regulation of Parkinson’s Disease linked gene, PINK1 by Novel Mitochondrial mAAA Protease, AFG3L2.
2. Understanding the Role of Glucocerebrosidase (GBA) in drosophila model of Parkinson’s disease and its interaction with α-synuclein.

**Mechanisms of Transcriptional Regulation in Chromatin (Dr Ahmed Al Marzouqi)**
The research in my laboratory is focused on understanding the mechanisms of action of the protein complexes that regulate gene expression by modifying the structure of chromatin. In eukaryotes, the compaction of DNA into the nucleus inhibits the access of factors to DNA which leads to the repression of many important cellular processes required for maintenance and growth of the cell. Many studies in the past few years have described conserved protein complexes whose function is to modulate the access of transcription factors to regulatory regions of genes relieving chromatin-mediated repression. The action of these complexes that are able to overcome the repressive effects of chromatin is an important step in the regulation of eukaryotic gene expression.

Specifically, the overall goals of my research are to understand how certain proteins can regulate gene expression by modifying the structure of chromatin or interacting with its components. We are interested in how different types of chromatin modifying proteins work in turning genes on or off. We are also interested in studying how chromatin misregulation contributes to cancer development and could be helpful in finding potential cures for it in the future.

**Below are two areas of research focus in my laboratory:**
A. Physical and Functional Interactions between the Various Chromatin-Modifying Complexes. The aims of this line of research are to gain insight into the mechanisms that underlie the interactions between the different types of chromatin modifying complexes (i.e. histone deacetylase (HDAC) complexes, and the SWI/SNF ATP-dependent chromatin remodeling complex). We are particularly interested in investigating how these complexes communicate with each other and work together to exert their combined effect towards gene regulation.

We have previously shown that acetylation of nucleosomal array templates by histone acetyltransferase (HAT) complexes stabilizes SWI/SNF binding to promoter nucleosomes after the dissociation of the activator. Many chromatin-modifying complexes, including SWI/SNF and SAGA, contain highly conserved bromodomains that bind to acetylated lysine residues in histone N-terminal tails in vitro. Later, using immobilized template assays, we have shown that the Swi2/Snf2 and Gcn5 bromodomains play important roles in the anchoring of the SWI/SNF and SAGA complexes to acetylated promoters, respec-
tively. More recently, we have demonstrated the requirement of the Swi2/Snf2 bromodomain for the functional activity of the complex on SAGA-acetylated nucleosomes. These studies illustrate a novel and significant role of the Swi2/Snf2 bromodomain in remodeling of acetylated promoter nucleosomes and in displacing SAGA from promoters.

B. Identification and Characterization of Novel ATP-Dependent Chromatin Remodeling Complexes. Phylogenetic analysis shows that chromatin-remodeling proteins share several common features including the presence of a distinct ATPase domain. Based on sequence homology to this domain of the Swi2/Snf2 subunit of the SW/SNF, we have recently identified new candidate remodeling proteins. With purified complexes in hand, a growing panel of in vitro and in vivo assays, a new wealth of knowledge regarding the mechanisms of actions of many chromatin-remodeling complexes, and the ease of genetic manipulations in yeast, we are now poised to carry out mechanistic biochemical and genetic investigations of their functions and their inter-relationships. In this part, our focus is to initially identify and biochemically characterize these potential novel chromatin remodelers, followed by studies on their mechanisms of action in gene regulation. The fact that similar and several chromatin remodeling complexes are present across the eukaryotic kingdom, from unicellular yeast to humans, supports the notion that they were maintained in evolution due to their important role in the regulation of gene expression. Identification, characterization, and investigations of action of novel chromatin remodeling complexes is very exciting and could lead to the identification of drugs targets and the development of potential drugs to cure human disease specifically cancer in the future.

**The Fun30 binds DNA and chromatin.** A, Fun30 binds to nucleosome arrays efficiently. Immobilized G5E4 (either DNA or reconstituted into nucleosomal arrays), generated as described under “Experimental Procedures,” was incubated with an equal amount of Fun30 (lanes 7–10) or the SWI/SNF complex (lanes 2–5, as control) based on anti-TAP Western blotting normalization. The amount of bound protein (SWI/SNF complex or Fun30) was determined by separating the supernatants (S) from the beads (B), washing the beads, and running them on a 12% SDS gel followed by Western blot analysis using the anti-TAP antibody for detection of the proteins.

**Gene Expression Regulation of Stem Cell Fate (Dr. Suraiya Ansari)**

A defining feature of stem cells is their ability to continuously maintain a stem cell population (self-renew) while generating differentiated progeny. Thus, stem cells are faced with a uniquely difficult task: to avoid cell cycle exit and differentiation, and to avoid uncontrolled proliferation and tumor formation. How stem cells walk this developmental tightrope is an extremely interesting question.

Embryonic stem cell (ESC) differentiation has the potential to be instrumental in cell based therapies, in vitro disease modeling and chemical screens. To fulfill those expectations, ESCs have to be differentiated at high efficiency to disease relevant cell types, either by the application of extracellular signals or direct programming by forced expression of transcription factors (induced pluripotent stem cells or iPSCs). They can be cultured continuously in their pluripotent state, and can also be induced to differentiate into cell types from all three germ layers (ectoderm, mesoderm and endoderm). Because of these unique properties, ES cells are of great interest to both basic and clinical research. They can be used as a model system to study the mechanism of pluripotency and fate-specification during early mammalian development, and they can also be used to derive various types of cells for disease modeling, drug discovery, and the development of cell-based therapies. Discovering how stem cells are maintained in a multipotent state and how their progeny differentiate into distinct cellular fates is a key step in the therapeutic use of stem cells to repair tissues after damage or disease.

**Research Highlights**

Because of their pluripotent and robust growth characteristics, embryonic stem cells have been used to model neurogenesis and to generate large quantities of functional neurons for both in vitro and in vivo studies. The current goal of my research is to understand how extracellular signals and transcription factors control cell fate and apply that knowledge to differentiate ESCs into disease relevant neuronal cell types. I use published protocols
to differentiate the ES cells toward neuronal fate. In these in vitro models, neural differentiation recapitulates key events that occur in early embryo development, including induction of multipotential neuroepithelial cells that form neural tube-like structures, patterning of region-specific neural progenitors, and generation of neurons and glia with particular transmitter or functional phenotypes. Our target is to identify transcriptional and post-transcriptional regulatory mechanisms that control the expression of genes involved in cell division at different stages of embryonic neurogenesis.

Another objective of my research is to study the mechanisms of ES cell differentiation into hepatocyte like cells. Several groups have recently described protocols that can induce the differentiation of cells with gene expression and functional profiles that closely resemble that of hepatocytes using both hESCs and hiPSCs. Most of the approaches that have been described have successfully exploited data generated from decades of research into the molecular mechanisms that control hepatocyte differentiation during embryogenesis. However no protocol has successfully generated hepatocytes that can fully replace the parenchymal cells of the mouse liver in the manner that primary human hepatocytes are capable of. It is therefore of prime importance to further the understanding of molecular mechanisms that control cell fate during development as well as hepatic metabolism. Role of transcriptional coregulators are still poorly characterized in the metabolic regulation of pluripotency and cell differentiation. In this direction, my research focus is on Mediator complex, a Multi-subunit transcriptional coactivator. We have identified a specific subunit of this complex in the expression of genes involved in energy metabolism. The role of energy metabolism in stem cell fate determination is only beginning to emerge. Understanding the transcriptional regulatory mechanisms in the metabolism and stem cell fate in the process of hepatogenesis will lead to identify molecular targets for the efficient generation of functional hepatocytes generated from human ESCs and iPSCs.

My research interests lie in unraveling the function of MICAL’s non-redox protein-protein interaction domains, at the molecular level, in the context of semaphorin-mediated signaling and actin modification. Although many genetic and cell-based studies have been performed to elucidate MICAL function, the role and means by which the MICAL protein-protein interaction domains are involved in modulating MICAL activities are unclear. These questions will be answered using a combination of structural, biophysical, and biochemical techniques.
Articles in Peer-reviewed Journals


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**RESEARCH GRANTS**

**CMHS Research Grants**

Prof H Raza [PI]
Altered metabolic stress in type 2 diabetic rat tissues.

Prof S Galadari [PI]
Elucidating the Molecular Mechanisms of Anti-leukemic Potential of Thymoquinone, the Main Active Constituent of Nigella sativa.

Haque ME [PI].
Testing the neuro-protective effect of Small Chinese Medicinal Compounds in animal model of Parkinson’s disease.

Ansari S [PI]

**Terry Fox Cancer Research Funds:**

Prof H Raza [PI]
Alterations in mitochondrial bioenergetics and glutathione metabolism by NSAIDs (non-steroidal anti-inflammatory drugs): implications in cancer prevention and treatment (Final year-closing).

Prof S Galadari [PI]
Targeting Autophagy: A Novel Sanguinarine Based Chemotherapy for Malignant Gliomas.

Dr A Al-Marzouqi [PI]
Functional Analysis of the Snf2-family Protein IRC5 in DNA Repair and Cancer.

**Sheikh Hamdan Medical Research Award**

Prof H Raza [PI]
Elucidation of the molecular mechanisms and metabolic changes in inflammation and diabetes: Antidiabetic and anti-inflammatory effects of non-steroidal anti-inflammatory drugs (NSAIDs). (Final year).

Dr Fernandez-Cabezudo M J [PI]
Neuro-immune modulation of inflammatory diseases: potential role in the amelioration of diabetes (Continuation).

Prof S Galadari [PI]
Novel ceramide-based chemotherapy for prostate carcinoma.

Drs Mustafa F (PI), S Al Marzooqi, A Albawardi.

**Sheikh Rashid Award for Scientific Excellence**

Dr S Alqassim [PI]
Modulation of MICAl-1 enzymatic activity.

Al Jalila Foundation

Prof S Galadari [PI]
Elucidating the molecular signaling mechanism(s) of autophagy mediated tumor suppression by curcumin in human malignant glioma.

**National Research Foundation/ UAE University Research Office**

Prof S Galadari
Investigating the role and mechanism of Par-4 cleavage in tumor suppression.

Dr Fernandez-Cabezudo M J [PI]
Neuro-immune modulation of inflammatory diseases: potential role in the amelioration of diabetes (Continuation).

Dr F Mustafa [PI], S Almarzooqi, A S Albawardi.
Characterization of Mouse Mammary Tumor Virus (MMTV) in Human Tumors in the UAE: Is MMTV a General Biological Carcinogen? [2013-2015].

Dr ME Haque [PI]
Role of Glucocerebrosidase (GBA) in drosophila model of Parkinson’s disease and its interaction with α-synuclein.

Dr A Al-Marzouqi [PI]
Molecular Mechanisms of Gene Regulation through Epigenetics: the Role of Chromatin Remodelers in Cancer.

Prof O EI -Agnaf [PI]
Prof O El-Agnaf [PI]

**Emirates Foundation, Abu Dhabi, UAE**
Dr A Al-Marzouqi [PI]
The Cooperation and/or Competition between the ATP-dependant Chromatin-Remodeling Protein SWI/SNF and the Histone Acetyltransferase SAGA in Binding to Nucleosomes.

**UAE University Start-Up Grant. UAEU, Al Ain, UAE**
Dr F Mustafa [PI], Prof TA Rizvi Investigations into the Mechanism of Replication, Gene Expression, and Oncogenesis Using the Mouse Mammary Tumor Virus Model System. [2013-2016]

Dr ME Haque [PI]
Study the molecular pathways of neurodegeneration and drug targets for treatment of neurodegenerative disorders.

**Alzheimer’s Drug Discovery Foundation (NY, USA)**
Prof O El-Agnaf [PI]
Testing a combination of CSF biomarkers for discriminating dementia with Lewy bodies from other neurodegenerative disorders and controls. 2013 – 2014. [Continuation]

Biochemistry

**Standing left to right:**
M Qureshi, M. Ardah,
F T Thayyullathil, ME Haque,
AQ Hago, S Al Qassim, H Raza,
S Galadari, A Al-Marzouqi

**Seated left to right:**
A John, J Chalissery, F Mustafa,
S Ansari, M Fernandez-Cabezudo,
W Al-Shamisi, TV Basheer
Research Profile

With a research focus on patient-physician communication, health education and learning portfolios, the Department of Family Medicine has been active in advancing the standards of patient care regionally. The Department of Family Medicine takes the lead in mixed methods studies and innovative action research projects that are tightly linked to improving quality within the project lifecycle. This year we continue our agenda in translational research and support the development of faculty members in collaborative projects with local healthcare service providers.

Faculty Profile

Engela Prinsloo is an Associate Professor who is an International member of the Editorial Board of the South African Family Practice Journal. She has reviewed 5 articles for journals including the former, the African Journal of Primary Healthcare & Family Medicine and Springer Plus online journals. She participated in teaching activities, research projects and a CME accredited research symposium to support and build capacity in the Al Ain Family Medicine Residency program. She is a member of the HAAD accredited Ambulatory Health Services Research committee and the Al Ain Family Medicine Residency Research committee.

Jawad Hashim is an Assistant Professor with research interests in health systems improvement, health promotion, and medical informatics. With expertise in statistical data analysis and multivariate modeling, he collaborates with research across disciplines. He was recently an invited speaker at the 2nd Annual Child Mental and Behavioral Health Conference 2015, in Abu Dhabi.
Usman Lashari is an Assistant Professor and co-ordinator for postgraduate residency program in Family Medicine in Al-Ain. He was part of Postgraduate Residency Program in general practice in London. He has worked as a community dermatologist in London before joining UAEU. He is an accredited clinical supervisor and trainer and clinical appraiser for London Deanery.

Moienudeen Khan joined UAE University in April 2013. He initially completed his postgraduate basic specialist training from Royal London Hospital working in different pediatric sub specialities for more than 3 years. Later on Moien did his postgraduate training in family medicine. Dr. Moien is passionate about treating diabetes in the community. To complement his special interest he did a Master’s degree in diabetes from the United Kingdom. He regularly participates in international conferences on diabetes care. To provide holistic care to his patients while working as a family physician he developed several interests in dermatology, occupational medicine, gynecology and family planning backed by advanced training and postgraduate degrees in these specialties in United Kingdom. Moien is an accredited clinical supervisor for postgraduate trainees in family medicine from Welsh and London Deanery. Moien also was the clinical lead at his practice for training Kings College medical students in the community. His research interests include diabetes care.

Faculty Research Profile

Engela Prinsloo is involved in ongoing research exploring the use of reflective portfolios, tutor support and feedback to students in a family medicine clerkship. The value of e-portfolios to teach and assess ethics, professionalism and the hidden curriculum is the current focus. This research is extended to pre-medical and pre-clinical teaching. Portfolio use in residency programs is also ongoing. Dr. Prinsloo supported residents to conduct, complete and publish a study on the use of the electronic medical record system (EMR) in the work environment.

Jawad Hashim has a research interest in improving patient care by providing physicians with clinical decision support at the point-of-care. Clinical decision support includes treatment guidelines as well as warning alerts such as for drug-drug interactions during prescribing in an electronic health record system. His research is directed at increasing ease of access to pertinent medical literature during patient care with the goal of evidence-based health care delivery. Areas for improving clinical decision support uncovered in his research include human-computer interface design issues specific to medical student learning. He is also exploring the role of paper-based clinical decision support as an alternative strategy to improve medical decision-making. Dr. Hashim provides statistical and research study design guidance within the College of Medicine as well as for local healthcare centers such as the Sheikh Khalifa Medical City.

Usman Lashari has joined UAEU in March 2012. He was part of Postgraduate Residency Program in general practice in London. He has worked as a community dermatologist in London before joining UAEU. He is an accredited clinical supervisor and trainer and clinical appraiser for London Deanery. His main areas of interest are Postgraduate Medical Education and Dermatology in Primary Care. He is a Fellow of American Academy of Dermatology.

Moienudeen Khan Basith joined UAEU in April 2013. He was the clinical lead for medical education and Diabetes while practicing in London. His main areas of interest are looking at management of Type 2 Diabetes and medical education. To continue his ongoing quest for diabetes research, Moien is keen in collaborating with other researchers in other departments and organizations.

Casey Clor is an Assistant Professor with research interests in geriatrics, preventive medicine and obesity. His recently completed projects include a survey of geriatric care guidelines in the region and the availability of geriatric care applications for smart phones and tablets.

Projects Profile

The current research focus of members in the department addresses pertinent health concerns of the UAE population including the relation between vitamin D deficiency and eczema. Impact of the changes in the health care industry with use of an electrical medical record system is explored and alternatives in
decision making tools for health care providers aiming to improve quality of care are addressed. Innovative methods to teach and assess ethics and professionalism are objectives of the ongoing portfolio research project. Studies initiated earlier on online health education are still in progress. We continue our agenda in translational research and support the development of faculty members in collaborative projects with local healthcare service providers.

On-going work

Interactive electronic portfolios to enhance students’ reflective practice and address ethics, professionalism and the hidden curriculum

A four cycle reflective ‘plan, act, revise,’ action research study involving faculty and students on reflective portfolios were conducted between 2009 and 2013. The conceptual framework which resulted from this study is now explored in ongoing research on the use of e-portfolios and e-teaching in the “Professionalism, ethics and medical Law” curriculum. The focus is on developing the ideal model for teaching professionalism and addressing the hidden curriculum.

Research and Academic Collaboration

Dr. Adriana Prinsloo is an International member of the Editorial Board of the South African Family Practice Journal and a reviewer of articles for the African Journal of Primary Healthcare & Family Medicine, South African Family Practice Journal, and Springer Plus online journals. During the past year she has reviewed 8 articles for publication in these journals.

Assistant Professor M Jawad Hashim is engaged in research on health education and health informatics. Dr. Hashim’s research interests include clinical decision support for physicians to provide evidence-based guidelines at the point-of-care. In addition, he has on-going collaborations with researchers in other departments as well as PhD students for multivariate modeling and statistical analyses.
Articles in Peer-reviewed Journals


Proceedings, Conferences, Invited Lectures, Web Sites and Others

Clor C. (2014). Geriatric apps for healthcare professionals- what is available for the Apple iPod/ iPhone (ios) and the Android devices? The 9th International Medical Education Conference (IMEC), UAE.


Research Profile

In 2013, staff and faculty at the Institute of Public Health continued to build on their track record in research. Research successes included receipt of a number of grants following competitive bids, securing continuation of research funding from grant-awarding bodies and an increase in the number of publications by faculty and staff.

Staff of our institute continued to build on our good track record of research activity and research output. We now have publications in a range of peer-reviewed journals, and our focus is on multi-disciplinary, community-based research. Many of the research projects in 2014 involve colleagues from different departments in the medical school, universities, and health agencies. The research areas have included epidemiological, qualitative, and other community-based studies relevant to the health concerns of the country. We have also built partnerships with international organizations and industry for the conduct of research, training, and staff and student exchange.

Some administrative changes in 2014 include the return of Prof. Tar-Ching Aw as director of the institute in August, and Dr. Tom Loney as new coordinator for the MPH and PhD programs. Our special thanks to Dr. Iain Blair for developing excellent standards for both the department and our post-graduate courses. It is primarily through his leadership that we now have the largest post-graduate program of any department in the medical school. Dr. Fatma Maskari continued to head our Zayed bin Sultan Al-Nahyan Centre for Health Sciences, spearheading efforts to obtain research funding. We congratulate Dr. Michal Grivna in his appointment as associate editor for the international journal – ‘Frontiers in Public Health Education and Promotion’, and Dr. Syed Shah for being selected to join the World Heart Federation Emerging Lead-

1 Interim Dean from January to August 2014
2 Departed on 31 October 2013
3 Acting Chair from January to August 2014
4 Joined on 2 January 2014
5 Joined on 17 August 2014
6 Joined on 24 August 2014
7 Joined on 16 April 2014
ers program. Dr. Tom Loney was elected Fellow of the Faculty of Occupational Medicine (Ireland) – one of the youngest recipients of this award.

Other highlights of 2014 included Dr. Yusra Obeid graduating as our first Institute of Public Health’s PhD candidate, and also one of the first for the medical school. Her research was on breast cancer in Emirati women. We strengthened our WHO Collaborating Centre status (designated at the end of 2013) through responding to WHO Eastern Mediterranean Regional Office (EMRO) for provision of expertise and technical assistance in occupational and environmental health. Institute staff developed a 4-week training program in occupational health for primary care practitioners, and we are now piloting the program in Qatar, with a view to encouraging other countries in the region to deliver similar training.

Thanks to all of our research and support staff who deserve much credit for ensuring that our research efforts remain highly successful.

Research interests of Faculty and staff

Prof Tar-Ching Aw: US Board-certified occupational physician with a special interest in occupational toxicology and public health. He is a member of the international advisory board for several peer-reviewed journals, including Occupational Medicine (Oxford) and Safety & Health at Work. Prof Aw has works closely with the WHO EMRO office in his role as designated director of the WHO Collaborating Centre for Occupational Health at UAE University. This is the only WHO center of its kind for the Middle East.

Prof Nico Nagelkerke: Senior biostatistician with a special interest in statistical methodology and infectious disease modeling. Prof. Nagelkerke departed from the Institute on 31 October 2013 but is still collaborating in research with partners at CMHS in his capacity as an Adjunct Professor.

Dr Fatma Al-Maskari: Public health physician and epidemiologist with an interest in non-communicable chronic diseases and prevention, lifestyle and health and evidence-based medicine. She is also Director of the Zayed Center of Health Sciences.

Dr Iain Blair: Public health consultant with a background in UK health protection. He has published articles on the surveillance and control of infectious diseases and has co-authored a textbook on health protection and several book chapters. His current research interests focus on the UAE health system, demography and the burden of disease.

Dr Michal Grivna: Public health consultant with a special interest in injury control, child, school, traffic and community safety, health promotion. His more recent research interests include injury surveillance/trauma registration and other public health issues such as tobacco addiction and HIV/AIDS prevention in the UAE. He was a founding member of the European Child Safety Alliance and the Centre for Childhood Injury Epidemiology and Prevention in the Czech Republic. Dr Grivna is a leading figure in the promotion and implementation of “WHO - Safe Community Programs”.

Dr Syed Shah: Chronic disease epidemiologist with research interests in the epidemiology of cardiovascular disease, work-related injuries and mental health. His recent international research project is on cardio-vascular risk factors in children in Pakistan, Malaysia, and the UAE.

Dr Mohamud Sheek-Hussein: Public health physician and epidemiologist with an interest in infectious diseases and public health services. Dr Sheek-Hussein is previously from the Preventive Medicine Department of the UAE Ministry of Health and lately of the Health Authority of Abu Dhabi (HAAD).

Dr Balazs Adam: Preventive medicine and public health physician specialized in occupational and environmental health. His primary research areas are workplace chemical exposures, especially effects of DNA damaging agents, characterization of risks related to occupational and environmental exposures, and health impact assessment of industrial developments, programmes and policies. He is a steering committee member of the Health Impact Assessment section of the European Public Health Association.

Dr Luai Ahmed: Epidemiologist with research interests in the epidemiology and prevention of non-communicable diseases. Dr Ahmed joined the Institute on 17 August 2014 from the University of Tromsø, Norway.
1. Senior MPH Students
Senior Master of Public Health students Dr Iain Blair, Dr Tom Loney, and Professor Tar-Ching Aw after completing the Advanced Epidemiological Methods Course in January 2015.

2. Global Speaker Collage
(or make it into a strip in the same way as 2011)
Am including collage as well as individual photos. They don’t really need captions unless you think there should be Individual photos included for rework if necessary.

3. Delphi Project in Abu Dhabi

4. LFOM (I) and MFOM (I) Conferment Ceremony in UAE 2014

5. LFOM (I) and MFOM (I) Conferment Ceremony in Dublin, Ireland 2014

6. Dr. Fatma receiving Zayed Center for Health Sciences Delegation

Dr. Abderrahim Oulhaj: Senior biostatistician with a special interest in the statistical modeling of diabetes and cardio-vascular complications, neuro-degenerative diseases (Alzheimer’s), advanced survival analysis and mixed effects modeling. Dr. Oulhaj joined the Institute on 3 November 2013 from the University of Oxford where he worked as a senior biostatistician for almost 9 years. He also holds a Chartered Statistician (CStat) award from the Royal statistical society (RSS).

Dr. Tom Loney: Occupational, environmental and public health scientist with a special interest in human performance optimization of personnel employed in challenging environments, physical activity prescription for public health, measurement issues related to human physiological monitoring, and the epidemiology of non-communicable diseases amongst migrant workers.

Mr Faisal Aziz: Research specialist in public health research with special interest in non-communicable diseases risk factors. Additional research interests include psychiatric diseases epidemiology and health systems.

Ms Iffat Elbarazi: Research specialist in public health with special interest in occupational mental and psychological health and in the promotion of women’s occupational wellness. Additional research interests include clinical and community health education and promotion with a special focus on health promotion in health services.

Dr Mohamed El-Sadig: Epidemiologist and health economist, with a special interest in traffic safety and non-communicable diseases. He was a Research Director of the UAE Indoor Air, Health & Nutrition Study conducted by our department and the University of North Carolina.
Articles in Peer-reviewed Journals


Bodala Z, Agnaeber K, Nagel-


Emaus N, Wilsgaard T, Ahmed LA. (2014). Impacts of body mass index, physical activity, and smoking on femoral bone loss. The Tromsø Study. JBMR, 29(3); 175-80.


Shigdel R, Klouman E, Bhandari A, Ahmed LA. (2014). Factors associated with adherence to antiretroviral therapy in HIV-infected patients in Kathmandu District,


Books, Chapters, Reviews and Editorials


Published Abstracts, Letters and Correspondence


Proceedings, Conferences, Invited Lectures, Web Sites and Others


Adám B. (2014). Chemical hazards in the health care setting. World Day for Safety and Health at Work, Tawam Hospital, Al Ain, UAE, 1 May 2014.


Adám B. (2014). Health Impact Assessment, the tool for assisting health in all policies. 5th Health Assessment, the tool for assisting National Health Workshop, Dubai, United Arab Emirates, 3-5 March 2014.


Shah SM. (2014). Parents and Children Together (PACT) for obesity prevention. 3rd Global Breastfeeding Summit and 1st Annual Bright Start Parenting Event, 7 December 2014, University of Sharjah, Sharjah, UAE.


RESEARCH GRANTS

UAEU Seed Grants
Dr B Ádám (PI), Prof TC Aw, Drs T Loney, I Blair, A Elias, Ms I El Barazi, Drs X Baur, LT Budnik, JR Jepsen
Occupational chemical exposure from transport containers (OCET-CON).

Dr A Oulhaj (PI)
Use of a mixture survival cure model for predicting the time of conversion from pre-diabetes to diabetes.

CMHS Research Grant
Drs M Grivna (PI), F Al-Maskari, M El-Sadig, A Oulhaj
Environmental risk factors for school-related traffic injuries in Al Ain, UAE – post-interventional study.

UAEU Program for Advanced Research (UPAR) Grant
Drs M Grivna (PI), SM Shah, A Al Suwaidi, Prof N Nagelkerke, Drs L Al Marzouqi, J Vincenten, S Bharwani, M Sheek-Hussein, Ms I Elbarazi, Prof FM Abu-Zidan

UAEU Zayed Foundation Grant
Drs SM Shah (PI), J Al-Kaabi, F Al-Maskari, A Al-Dhaheri
Community partnership for diabetes prevention in youth: A randomized controlled trial. [2014-2016].

Others

United Arab Emirates Information and Communication Technology (ICT) Fund
Drs S Al Kobaisi (PI), A Al Faresi, F Al-Maskari, M Masud, A Oulhaj, T Loney
Health Monitoring System for Modeling Individual Exposure to Environmental Triggers of Asthma Episodes in the United Arab Emirates. [2014-2016].

Sheikh Hamdan Award for Medical Sciences
Drs SM Shah [PI], S Al Rukn, A Oulhaj, L Al Marzouqi
Risk factors for stroke in Emirati population: a case control study. [2014-2015]

Institution of Occupational Health and Safety of the United Kingdom Research Grant
Dr T Loney (PI), Prof TC Aw, Dr I Blair, Ms I El Barazi, Dr A Adem, Ms H Al Dhaheri, Dr RF Cooling
Assessment of Pesticide Exposure in Date Palm Agricultural Workers in the United Arab Emirates. [2014-2016].

2014
Intitute of Public Health

Standing from left to right:
Dr. Yusra Elobaid, Dr. Anza Elias, Ms. Soha Ali, Dr. Mohamed El Sadig, Dr. Michal Grivna, Dr. Mohamud Sheek-Hussein, Dr. Luai Ahmed, Dr. Faisel Yunis, Dr. Syed Shah, Dr. Abderrahim Oulhaj, Mr. Faisal Aziz, and Dr. Balazs Adam.

Seated left to right:
Dr Tom Loney, Ms Iffat Elbarazi, Dr Iain Blair, Prof Tar-Ching Aw (Chair), Dr Fatma Al Maskari, Ms Arlene Kaljee and Ms. Faye Miller (Fulbright Scholar).
Department of Internal Medicine

Research Profile

This Department has been highly active in the three fields of Teaching, Research and Clinical Services through 2014.

Below are some of the activities of the Department in 2014:

Clinical service
Members of the department provide inpatient and out of hours oncall consultant general and specialist service for the two main teaching hospitals on daily basis.

Clerkship & Residency Programs
We set up and contributed to a number of clinical teaching facilities and training programmes designed to enhance the learning experience in all areas of patient care and health care delivery.

Members of our department provide the clinical lead/directorship of the International Membership of the Royal College of Physicians (MRCP)[UK] diploma examination centre in Al Ain. We have a number of established examiners to Royal College of Physician of London who provide regular teaching sessions for residents and other junior doctors taking the MRCP diploma examination here in Al Ain.

Research Interest and collaboration
Many of our research priority areas such as obesity, diabetes and cardiovascular disease are not single academic disciplines but rather draw on many university and hospital departments from genetics to health services research studies and from nutrition to sociology. This is because the UAE society has been through rapid socioeconomic and social changes with urbanization over the last 40 years. Accompanying changes in diet and lifestyle are leading to growing epidemic of overweight/obesity, diabetes and other related cardiovascular diseases. Addressing some of these health issues requires collaboration and strong and vigorous research community.
The Department members hold a significant number of new and ongoing clinical research grants from the National Research Foundation/UAEU Research Affairs, Sheikh Hamdan Award for Medical Research and Abu Dhabi Executive Council.

**Individual Profiles**

**Professor Salah Gariballa**, MD, FRCP. Consultant in Acute Medicine and Clinical Nutrition. His research interest is in the role of nutrition in prevention and treatment of disease. Conducted a number of externally funded clinical trials and lectured & published widely on this subject including 2 recent chapters and a textbook on the role of Nutrition in the treatment & prevention of chronic disease.

**Professor Elsadig Kazzam**, M.B.CH.B., M.D., Ph.D., SCIM., SCC., FRCP (London), FESC., FACC., FAHA. Senior Consultant Cardiologist. His research focuses on clinical and experimental cardiology. His main interest is cardiac remodelling of both systolic & diastolic functions and recently more on right ventricular function. He is using non-invasive techniques (including Doppler Tissue Imaging, Doppler /2D Strain, Speckle Tracking, Cardiac MRI, Cardiopulmonary Exercise Test and Holter as well as Ambulatory Blood Pressure Monitoring. Currently he is involved in 4 projects. (1) Thalassemia and (2) Obstructive Sleep Apnoea (OSA) both completed. The OSA project resulted in the award of a master degree under his supervision. The third project in the role of electrolyte and circulatory homeostasis during dehydration and rehydration in the one-humped camel (Camelus Dromedarius), blockage of renin-angiotensin system is also studied. This project resulted in 5 publications. The 4th project on air pollution from road traffic is becoming a serious hazard in the UAE.

**Professor Johann Sebastian Braun**, MD, PhD. Consultant in Neurology. His research focuses on brain damage and neuroprotection. His main interest is the pathophysiology of neuronal injury in stroke and in meningococcal meningitis. His recent results: brain cytokine upregulation in meningitis, neuronal injury by bacterial cytolysins in vitro and in meningitis, cerebral vasospasm and hyperperfusion in eclampsia, new avenues for stroke therapy strategies to achieve neuroprotection.
Dr Juma Musabah Alkaabi, BSc, MBChB, FRCP. Consultant Physician and Endocrinologist. His research is in diabetes, obesity, osteoporosis, dyslipidaemia and thyroid disorders.

Dr Shirina Al Sowaidi, MBBS, FRCP(C). Consultant Physician in Allergy and Immunology. Research interest in allergy disease epidemiology, asthma, allergic rhinitis and anaphylaxis.

Dr Omran Bakoush, MD, PhD. Consultant Nephrologist. His research interest is in the epidemiology of diabetic and non-diabetic chronic kidney diseases with focus on searching for prognostic markers for the disease outcome. His research group’s recent significant finding is in the role of urine excretion of immunoglobulin M as a reliable predictor of cardiovascular complications in people with diabetes.

Prof Srdjan Denic, MD, FACP. Consultant Physician and Hematologist-Oncologist. His research focuses on common inherited blood disorders and human inbreeding. He has produced new reference standards for red cells and neutrophils for Emirati populations. His recent finding is that tribalism contributes to the burden of beta-thalassemia disease more than consanguinity per se. Results of his study suggest that consanguineous unions may increase relative fitness in the presence of high mortality form diseases like malaria. He is proposing a new theory of human consanguinity that is based on sociobiological principles of behavior.

Dr Inaam Bashir, MBBS, PhD. Consultant Physician, Hematologist and Haematopathologist. Her research interest is in malignant haematology mainly acute and chronic leukaemias.

Dr Abdullah Shehab, MMEd, MD, FRCP, FACC, FSCAI. Consultant Physician, Interventional Cardiologist and Clinical Pharmacologist. His research interest is in coronary artery diseases, hypertension, heart failure, clinical pharmacology, and medical education. He is an investigator in following registries: Gulf RACE, Gulf SAFE, Gulf COAST, Gulf CARE and CEPHEUS.

Dr Ali Al Dhanhani, MBBS, MSc, FRCP(C). Consultant Physician and Rheumatologist. Research interest is in epidemiological studies of systemic lupus erythematosus and rheumatoid arthritis specifically on issues of quality of life and work disability.

Dr Ali Al-Fazari, MBBS, FACP, FRCP(C). Consultant Physician and Gastroenterologist. His research interest is gastric carcinogenesis, liver toxicology and inflammation.

Dr Mohammed Al Houqani, MBBS, FRCP(C). Consultant in Internal, Sleep and Respiratory Medicine. His research interest is on the epidemiology of respiratory and sleep related disorders.

Dr Sultan Al Karam, MBBS, FRCP(C). Consultant Physician and Interventional Cardiologist. Research interest is in cardiovascular disease and interventional cardiology.

Dr Saif Jaber Al-Shamsi, MBBS, FRCP(C). Consultant in Acute General (internal) Medicine. Research interest is in persistent hypertension.

Dr Arif Alper Cevik, Consultant Emergency Physician and coordinator of Emergency Medicine clerkship and Core Faculty of Tawam Emergency Medicine Residency Program. His professional interests are Emergency Medicine education, emergency and critical care ultrasound, and trauma management. His research interest is in acute clinical problems in Emergency Medicine

Dr Hassan Galadari, MBBS. Consultant Physician and Dermatologist. His research interest is in soft tissue augmentation and botulinum toxin.

Dr C Sharma (Medical Research Specialist I) and Dr Brenda Bin Su and Mr J Yasin (Medical Research Specialist II) have been enmeshed in the research activities of various faculty within and outside the Department. Their workload increases steadily with time. Mr A Al Essa (Research Nurse) is busily occupied with several research projects. Ms R Safieind and Ms R Shouk recently joined the Department to support cardiovascular, epidemiology and nutrition research respectively.

Ms S Al-Shamsi and Ms K Al-Neyadi continue to provide secretarial services and Mr Hisham Hassan vital administrative services for the Department.
Leadership, management and administrations
Department members serve on a number of local, national and international committees.

Here are some examples:
Al Jalila Foundation
Arab Examination Board
National Continuous Medical Education Committee

National Diabetes Service Planning Group
Sheikh Hamdan Award for Medical Research
World Heart Failure Society.

The Department members published 44 papers in peer-reviewed journals, and a significant number of new and ongoing clinical research grants are held by members of the department.

Professor Elsadig Kazzam: Establishment of the first Non-Invasive Cardiology Lab for Clinical Research
Articles in Peer-reviewed Journals


Gariballa S (2014). Poor vitamin C
status is associated with depression symptoms following acute illness. Int J Vitam Nutr Res.


Published Abstracts, Letters and Correspondence


Cetinkaya O, Cevik AA, Acar N, Ozakin E, Kaya F, Şakalar Ş. (2014). Comparison of Alvarado Score System And Procalcitonin Levels In The Effect of Acute Appendicitis Diagnosis, In the Patients With Right Lower Quadrant Pain In The Emergency Department. EACEM, Turkey.


Gariballa S. (2014). 25-hydroxyvitamin D status and muscle function in acutely ill patients and their response to mixed nutrient supplements. ESPEN


Proceedings, Conferences, Invited Lectures, Web Sites and Others


Al-Karam S. (2014) Faculty and session chair, 4TS conference, Faculty and session chair 2nd Gulf Bifurcation Symposium, Dubai

Alsowaidi S. (2014). Pediatric Allergy and Immunology From Science to Practice. Allergic Rhinitis Around The World, Kuwait. (Speaker)

Alsowaidi S. (2014). European Academy of Allergy and Clinical Immunology Annual Congress, Copenhagen De’nmark. (Poster Presentation)

Braun JS. (2014). Neurological Clinical Skills. Lecture, Charité University, Berlin, Germany


Galadari H. (2014). Non-Surgical Rejuvenation of the Forehead and the Upper Face from Anatomy to Practical Training in Facial Injections – Live demo: Tear trough, Aesthetic and Anti-aging Medi-
their response to mixed nutrient function in acutely ill patients and roxyvitamin D status and muscle function in acutely ill patients and their response to mixed nutrient supplements. British Association of Parenteral and Enteral Nutrition Conference, Harrogate, England.

Gariballa SE. (2014). Obesity and Heart Failure, 4th World Heart Failure Conference, Al Ain UAE.

Kazzam E. (2014). 4th World Heart Failure Society Congress, Danat Resort, Al Ain, UAE. 11-13th December 2014. (President of the Congress and Chairperson and speaker in a number of sessions]
- Keynote speaker, Professor W. J. Remme Lecture, Right Ventricular Failure and function in Health and disease.
- Heart Failure in the Middle East
- The President lecture: Pathophysiology of Diastolic Heart Failure

Kazzam E. (2014). World Federation of Cardiology, World Congress of Cardiology 2014, 4-7th May 2014. Melbourne, Australia. (Invited Faculty and Chairperson)

Kazzam E. (2014). World Federation of Cardiology, World Congress of Cardiology 2014, 4-7th May 2014. Melbourne, Australia. (Invited Faculty and Chairperson Sessions

World Heart Failure Society Session - Meet the Experts: Different Heart Failure-Different Treatment. Symposium: The latest RAAS management in congestive Heart Failure.


Lectures:
- Assessment of Right Ventricular Remodeling in Health and Disease: Echocardiographic Approach
- Heart Failure Society: what we can do in Developing Countries


Lecture: Guidelines in Acute Heart Failure.


Kazzam E. (2014). Prize (World Heart Failure Society) to be presented in the next World Heart Failure Society Congress in Beijing – China (2016) for the best scientific paper.

Shehab A. (2014). Arab health cardiology meeting


Shehab A. (2014). 2nd Annual Cardio Arab Conference, 17-19 April 2014 in Marriott Marquize Hotel, Dubai, UAE.


RESEARCH GRANTS

CMHS Research Grants
Dr M Al-Houqani (PI)
Corbon Monoxide Levels among Midwakh Smokers.

Prof E Kazzam (PI)
Risk factors, and consequences of obstructive sleep apnoea and short sleep duration: Special emphasis on cardiovascular disease and neurohormonal activation. [2014-2015]

UAEU Center-Based Interdisciplinary Research Grant
Dr S Alsowaidi (PI)
Early predictors, risk factors of allergic diseases and the complex interplay between biochemical markers, lifestyle and socio-economic determinants among nationals of the United Arab Emirates.

UAEU Startup Grant
Dr A Shehab (PI)

UAEU National Research Foundation Grants
Prof E Kazzam (PI)
Cardiac remodeling and ventricular interaction in patients with Thalassemia Major: Detailed Echocardiographic and Magnetic Resonance Imaging Evaluation in relation to Neurohormones and Collagen markers

Dr AS Al-Fazari (PI)
Role of estrogen in gastric epithelial homeostasis

Sheikh Hamdan Bin Rashid Al Maktoum Award for Medical Sciences
Prof S Gariballa (PI)
Effects of vitamin D supplementation with or without calcium on health and well-being of vitamin D deficient UAE citizens: A randomised double-blind placebo controlled trial.

Dr AS Al-Fazari (PI)
Studies on hepatocytes and myocytes toxicities of the lipid lowering agents statins (2014-2016)

Others
Gulf COAST from Kuwait University
Dr A Shehab (PI)
Gulf locals with acute coronary syndrome events registry [2012-2015]

Dr A Shehab (PI)
Hypertension study registry in Al Ain outpatient clinics [2015-2017]
Professor & Chair: Prof M Elzubeir

Professor: Prof S Elango

Associate Professor: Dr S Shaban

Senior Lectures: Dr R Benner

Medical Communication and Study Skills: Mr M Campbell Ms G Kershaw

Administrative Assistants: Ms K Al Neyadi Ms H Kablani Mr CP Nair Ms M Al Neyadi

Administrator, Medical Education: Ms L Ravindranathan

Clerk II: Mr T Usman

IT GROUP

Senior IT Support Specialist: Mr Alsajir M Basheer Ms L Mohammed

MEDIA CENTER

Clerk II: Ms M Al Housani Audio-visual Systems Administrator: Mr Z Mohammed

Multimedia Designer: Ms I Lizarrituri Medical Photographer: Mr A Prasad

SKILLS AND TEACHING LABORATORY

Clerk II: Mr B Abubakkar Administrator, Clinical Skills Laboratory: Miss A Al Baeek

Clerk II: Mr S Pandian

Medical Research Specialist II: Mr A Wahab

Margaret Elzubeir’s research interests are in the areas of medical student selection, academic performance, small group learning, curriculum and faculty development.

Sambandam Elango’s main research activities are in the area of Simulation in Medical Education, Clinical Education, Assessment of competence and Leadership in Education.

Sami Shaban’s research interests are in Health Informatics and electronic curriculum and assessment systems for medical education.

Geraldine Kershaw’s research interests are in the areas of professionalism, student portfolios, and academic integrity.

Summary of current research projects:

1. Effective Use of a Medical School Curriculum and Assessment Management Systems in Integrated Medical Education: Shaban S.
2. Effective Use of an Electronic Assessment System including question management and data banks as well as assessment delivery and analysis: Shaban S & Elzubeir M
3. Factors determining Medical Students’ Residency Choice: Ibrahim H, Shaban S, Elzubeir M.
4. Self-Assessment Accuracy: Aburawi EH (Pediatrics), Shaban S, Elango S, Elzubeir M (corresponding author)
5. Students’ research activities through the lens of Transformative Learning Theory: Elzubeir M, Howarth C (Physiology)
6. Developing high quality single best answer multiple choice questions (MCQs): Description of an enhancement-focused strategy: Al Mahmoud T, Elzubeir M, Branicki F (Surgery)
7. YouTube video enhancing senior medical students’ learning: Mirghani H (ObGyn), Elzubeir M
8. Students’ access to patients in obstetrics & gynaecology: Mirghani H (ObGyn), Elzubeir M
9. Evaluation of a Health Promotion curriculum: Grivna M (Institute of Public Health), Kershaw G
10. Student perceptions of portfolio use: Kershaw G
**Articles in Peer-reviewed Journals**


**Proceedings, Conferences, Invited Lectures, Websites etc**


Back row, from left to right:
Mr T Usman, Mr Alsajir Basheer,
Mr Athiq, Dr Raney Benner,
Dr Sami Shaban, Mr Mark Campbell,
Dr Mohammed Al Houqani,
Professor Sambandam Elango,
Mr Ashok Prasad, Mr. Zeeshan
Mohammed, Mr Babuhan Abubakkar.

Front row, from left to right:
Mr Ahmed Fathy, Ms Ivanna Lizarrit-
urri, Ms Lakshmi R, Ms Hoda Mansour,
Ms Geraldine Kershaw,
Professor Margaret Elzubeir,
Ms Amira Al Baee, Ms Mariam Al
Neyadi, Mr CP Nair.
Members of the Department of Medical Microbiology and Immunology have a broad range of research interests in the fields of cellular and molecular immunology, bacteriology and virology. Research activities in the Department are strongly supported by a diverse number of intramural and extramural grants to individual faculty members.

**Prof Basel al-Ramadi:** Our primary research interest is focused on the role of the innate immune system in immunoregulatory control of microbial infections and cancer. Current ongoing projects include the influence of obesity and metabolic pathways on anti-tumor immunity, targeting of myeloid-derived suppressor cells as a modality in cancer immunotherapy, and recognition of natural bee-derived products by the immune system and their role in anti-tumor immunity.

**Prof Tahir Rizvi:** Recent research interests of my laboratory are directed towards studying molecular steps involved in the replication of retroviruses such as human, simian, and feline immunodeficiency viruses (HIV, SIV, & FIV), Mason-Pfizer monkey virus (MPMV), and mouse mammary tumor virus (MMTV). The overall goal of our research efforts is to enhance our understanding of the regulation of retroviral gene expression, cancer induction, design and development of retroviral/lentiviral vectors and packaging cell lines for safe and efficient human gene therapy as well as DNA vaccine development. Specifically, our ongoing research efforts are directed towards delineating the gRNA export, dimerization, and packaging mechanisms and their interplay during retroviral replication. Using HIV, FIV, SIV, MPMV, and MMTV as model systems, our current ongoing studies are focused on gaining enhanced understanding of how structural motifs (regardless of the primary sequence) facilitate retroviral gRNA export, dimerization as well as packaging and/or cross/co-packaging into the nascent virus particles. These studies are being accomplished by employing a combi-
nation of in vivo (genetic complementation assays), in vitro (biochemical probing/mapping-SHAPE), and structural prediction/phylogenetic approaches to test our proposed hypotheses. Over the years, Prof. Rizvi’s laboratory has been able to successfully compete for both intramural and extramural grant support for his work on retroviruses. Studies on retroviral RNA packaging and dimerization have been published in journals of international repute.

**Prof Tibor Pal:** My main research interest is the investigations of the molecular epidemiology of multi drug resistant Gram-negative pathogens and of the genetic background of their antibiotic resistance. We are focusing particularly on the strains producing carbapenemases, i.e. an emerging threat in the UAE. Also, the relationship between drug resistance and the presence of certain virulence genes and cell wall elements are being studied. We cooperate with colleagues in Paris, Edinburgh, Vienna, Rome, Kuwait, Riyadh, Muscat.

**Dr Gulfaraz Khan:** The main theme of research in our laboratory is to understand the biology of Epstein-Barr virus (EBV) and its role in the pathogenesis of EBV associated diseases, in particular, malignancies and autoimmune disorders. Our current efforts are focused on three broad areas: (1) Establishing an in vitro and in vivo model for EBV (2) Investigating the role of EBV latent genes, in particular EBERs, in cell transformation and oncogenesis (3) Role of EBV in the pathogenesis of multiple sclerosis.

We recently published some of our results related to the mechanism of excretion of EBV-encoded small RNAs (EBERs) (see Fig.1). We have shown for the first time that these small RNAs are excreted via nano-vesicles called exosomes (see Fig.2). These vesicular structures not only protect EBERs from endonuclease degradation, but also provide a means for their transport to uninfected cells. We are currently examining the biological impact of exosomes excreted by EBV-infected cells on surrounding cells.

**Figure 1:** Transmission electron microscopy and western blot for CD63 on exosomal fractions
Exosomes were isolated using differential ultracentrifugation and examined using transmission electron microscopy. (A) Nanovesicles with typical size (50-120nm) and morphology resembling exosomes were observed in isolates from both EBV positive (EBV-LCL) and negative (293T) cells. (B) Western blotting for the exosomal marker CD63, confirmed the identity of these nanovesicles to be exosomes (From: Ahmed W et al. 2014; Plos One; 9:e99163).
Dr Mariam Al Shamsi: Main research activity is in the area of inflammation and autoimmunity. Currently I am investigating the changes in cellular bioenergetics in cells and tissues during clinical course of experimental autoimmune encephalomyelitis, rodent models of multiple sclerosis. Our experimental models are DA (Dark Agouti, susceptible) and OA (Oxford Albino, resistant strain). Representative data are presented in Figures 3-4.

**Figure 2:** Detection of EBERs and EBER binding protein La in exosomal fractions (A) RNase treatment of purified exosomes prior to RNA extraction and RT-PCR did not abolish EBER amplification signal, suggesting that EBERs were present in exosomes and not in the extra-exosomal fraction. (B) To determine if the EBER-1 binding protein La was present in exosomes, 25µg of exosomal protein fraction was separated by 10% SDS PAGE and immunoblotted using anti-La monoclonal antibodies. Exosomal fractions from all cell lines clearly showed presence of La protein (From: Ahmed W et al. 2014; Plos One; 9:e99163).

**Figure 3.** DA rats developed severe EAE whilst AO did not (A, C). Rats were immunized with Myelin basic protein in complete Freund adjuvant. A, Clinical scores show that DA rats show severe disease at the height of disease whereas AO rats do not develop disease (E). Results are mean clinical scores ± SEM (n = 5), p < 0.001; representative of four experiments. C, Pathology of spinal cord sections of DA (A, C, D) and AO (B) were examined 14 days after immunization using H&E staining at low (A and C) and high magnification (B and D). DA rats exhibited typical perivascular and subpial infiltrates of different sizes. Semi-quantitative assessment of the histological sections from the spinal cord of DA and AO rats of 10 noncontiguous sections per spinal cord were scored (F) p < 0.001 (n = 3). (G) Micrographs of Luxol fast blue stained sections of the spinal cord of immunized DA at height of disease (n=5). The dorsal column (square box) of the DA rat is enlarged in (H) to show areas of infiltration around which there seem to be evidence of demyelination (arrows). Bar = 20 µm
There is minimal evidence of demyelination that was only present around areas of mononuclear cellular infiltration at the height of clinical disease in DA rats. Demyelination was further confirmed by electron microscope (Fig.4) where myelin fibers around nerve fibers showed evidence of demyelination significant in DA but absent in AO rats sections. Even though mitochondria seem to be normal in structure; we have noticed that those from spinal cords of diseased DA rats were significantly smaller compared to those from treated but not diseased AO rats.

**Figure 4:** Electron micrographs of sections of the spinal cord of non-immunized DA (A), immunized AO (B), and grade 3 disease DA (C, D) rats. Note the normal myelination of fibers in spinal cords of both non-immunized DA and immunized AO rats (asterisks). Note also the evidence of demyelination in C and D (thin arrows) including splitting of the myelin sheath either at the major dense line or at the intraperiod line and stripping of nerve fibers. Also present are areas of where there seems to be stripping of the nerve fibers of myelin (thick arrows). At sections of spinal cords from immunized DA rats show nerve fibers that are demyelinated (star) and fibers surrounded by a layer myelin that is disrupted (thin arrows). (E) A graph representing comparing the size of mitochondria in AO with that in DA spinal cords. As shown in E, despite the normal appearance of mitochondria in axons of diseased DA (DAi) rats, they are significantly smaller (p< 0.005) compared with those in the axons of immunized AO (AOi) and non-immunized DA (DAi) rats. Bar A, B= 0.1 μm; C, D=0.5 μm

**Dr Agnes Sonnevend-Pal:** Main research activities are in the area of molecular epidemiology and antibiotic resistance of human pathogenic bacteria. She studies multi-drug resistant pathogenic bacteria, like Acinetobacter baumannii, extended spectrum beta lactamase (ESBL) and carbapenemase producer Escherichia coli and other Enterobacteriaceae, methicillin resistant Staphylococcus aureus (MRSA), which are the major threat in the hospitals of the UAE and becoming more and more prevalent in the community, as well.

**Dr Eyad Elkord:** Main research interests are in the area of Cancer Immunology and Immunotherapy. His group has special interest in the role and function of immunosuppressive cells (T regulatory cells and myeloid-derived suppressor cells) in cancer. Recent evidence shows that anti-tumor immunity and cancer immunotherapy are negatively impacted by effects of immunosuppressive cells. We showed that T regulatory cells (Tregs) are expanded in peripheral blood and tumor microenvironment of cancer patients, which correlates with poor prognosis and reduced overall survival. Treg infiltration of tumors is correlated with a lack of some patients’ responsiveness to therapy. These observations suggest that Tregs are implicated in the immunopathology of cancer and their specific targeting may improve the efficacy of immunotherapeutic modalities.

Neuropilin 1 (NRP1) is a transmembrane protein with diverse roles in physiological and pathological settings. NRP1 expression has been reported on T cells in inflammatory microenvironments and in secondary lymphoid tissue. Tumor-infiltrating lymphocytes (TILs) play an...
important role in cancer prognosis. We showed for the first time that NRP1 is highly expressed on CD3+CD4+ TILs compared to peripheral blood mononuclear cells (PBMCs) (Fig. 5). We also found that NRP1 expression correlated closely with CD25 expression in TILs, and NRP1 was expressed on both Helios+ and Helios– FoxP3-expressing Tregs and on a FoxP3–Helios– T cell subset. It was also induced on PBMCs following in vitro co-culture with tumor tissue (Fig. 6). Therefore, NRP1 is upregulated on TILs and can be induced on PBMCs by tumor tissue. Further studies are warranted to define the function of NRP1 on human TILs. As a therapeutic target, NRP1 may allow selective targeting of TIL subsets including suppressive Tregs.

Figure 5: NRP1 expression on CD3+CD4+ TILs. (A) Representative flow cytometric plots showing NRP1 expression on CD3+CD4+ TILs isolated by explant culture compared with CD3+CD4+ PBMCs from both healthy donors and LI/CRC patients. (B) Bar graph comparing mean expression of NRP1 on CD3+CD4+ TILs and PBMCs from patients and healthy donors. (C) Bar chart comparing NRP1 expression on TILs and autologous PBMCs from 3 LI/CRC patients. (D) TILs from one patient showed exceptionally very high levels of NRP1 expression.

Figure 6: Induction of NRP1 on PBMCs by co-culture with tumor tissue. (A) Cryopreserved PBMCs were thawed and directly stained (OH). PBMCs were also co-cultured with allogeneic tumor tissue and analysed for NRP1 expression after 48H and 96H. NRP1 expression was analysed on CD3+CD4+ T cells. (B) PBMCs co-cultured with allogeneic tumor tissue for 96H were analysed for NRP1 expression on CD3+CD4+ T cells gated for different levels of CD25 expression: CD25 negative (CD25–), CD25 intermediate (CD25INT) and CD25 high (CD25HI).
Articles in Peer-reviewed Journals


Published Abstracts, Letters and Correspondence


Books, Chapters, Reviews and Editorials

Ramadi BK. (2014). Intravenous administration of manuka honey as adjuvant therapy in combination with chemotherapy inhibits tumor growth and improves host survival in colon carcinoma mouse model. The 9th International Scientific Conference for Medical Students in the GCC Countries, Al-Ain, UAE, December 26-29.


Al Ramadi BK.(2014). Targeting tumor myeloid suppressor cells as a novel approach in cancer immunotherapy. Invited Speaker, Department of Pathology, Faculty of Medicine, University of Jordan, Amman, Jordan, April 2.


RESEARCH GRANTS

CMHS Research Grants
Dr A Sonnevend [PI]
The genetic background of nanoparticle susceptibility in Staphylococcus aureus biofilms NP/14/29
Dr E Elkord [PI]
Levels of myeloid-derived suppressor cells in peripheral blood and tissue of breast and colorectal cancer patients.

Dr G Khan [PI]
Mechanism of excretion of Epstein-Barr virus encoded small RNAs from immortalised cells

Prof TA Rizvi [PI]
Identification and characterization of genomic RNA packaging enhancer (GPE) sequence and its role in feline immunodeficiency virus (FIV) RNA packaging.

Prof T Pal [PI]
Molecular background of colistin resistance in emerging pan-resistant Enterobacteriaceae in Abu Dhabi

Sheikh Hamdan Award for Medical Sciences
Prof B al-Ramadi [PI], Dr MJ Fernandez-Cabezudo
Obesity as a potentiating factor in tumor development: Implications for cancer immunotherapy.

Dr MJ Fernandez-Cabezudo [PI],
Prof B al-Ramadi.
Neuro-immune modulation of inflammatory diseases: potential role in the amelioration of diabetes.

Terry Fox Fund for Cancer Research
Prof B al-Ramadi [PI], Dr MJ Fernandez-Cabezudo
Inactivation of myeloid-derived suppressor cells as a novel target for enhancing cancer immunotherapy.

Dr E Elkord [PI]
Differential characterization of T regulatory cells in cancer patients compared to healthy individuals

Prof TA Rizvi [PI]
Title: “Structural and functional
analysis of the Rem-responsive elements (RmREs) of mouse mammary tumor virus (MMTV): Implications for developing new generation vectors for cancer gene therapy. 

Prof TA Rizvi [PI]
Co-packaging and Recombination among Genetically Distinct Retroviruses: Implications for the Development of Retroviral Vectors for Gene Therapy

Prof T Pal [PI]
Molecular Features of ESCAPE Pathogens Causing Blood-stream Infections in Patients with Malignancies - A Multidisciplinary Study

National Research Foundation / UAE University
Dr A Sonnevend [PI]
The genetic environment of NDM gene in Enterobacteriaceae: its effect on the gene expression and on the spread of resistance.

Prof B al-Ramadi [PI], Dr MJ Fernandez-Cabezudo
Obesity as a potentiating factor in tumor development: Implications for cancer immunotherapy.

Dr MJ Fernandez-Cabezudo [PI], Prof B al-Ramadi
Neuro-immune modulation of inflammatory diseases: potential role in the amelioration of diabetes.

Dr E Elkord [PI]
Differential characterization of T regulatory cells in cancer patients compared to healthy individuals

Dr E Elkord [PI]
Investigations into the role and function of immunosuppressive cells in colorectal and breast cancers.

Prof I Zuburtikudis, Dr E Elkord
Neuropilin1 in tumor-infiltrating lymphocytes: A potential therapeutic target in cancer

Dr G Khan [PI], Prof T Adrian, Dr S Attoub
Impact of Epstein-Barr virus small RNA (EBER-1) on genes associated with inhibition of apoptosis.

Prof TA Rizvi [PI]
Existence and biological significance of long-range interactions (LRIs) in retroviral RNA packaging signals: Implications for developing vectors for gene therapy.

Prof T Pal [PI]
Disinfectant-driven selection of efflux pump-mediated antibiotic resistance in multi-drug resistant pathogens - a molecular study

Others
Prof T Pal [PI]
Molecular basis of ertapenem resistance among Enterobacteriaceae isolated in the Arabian Peninsula.
Merck Sharp & Dohme (MSD) Grant.

Medical Microbiology & Immunology

Standing left to right:
Mr. Mohamed Al-Haj, Mr. Allen Shahin, Mr. Yassir Awad, Professor Tahir Rizvi, Dr. Ahmed Al Qahtani, Dr. Gulfaraz Khan, Professor Tibor Pal, Dr. Eyad Elkord, Mr. Mohammed Hashik

Seated left to right:
Ms. Ghada Bashir, Dr. Maryam Al Shamsi, Professor Basel al-Ramadi, Dr. Zakeya Al Rasbi, Ms. Akela Al-Ghazawi, Dr. Agnes Sonnevend-Pal, Ms. Lizada Ahmed
Research Profile

The Research interests in the department are in Obstetrics, Fetal Medicine, and Minimal Access Gynecology Surgery and in Women’s Health Education.

Dr Shamsa Al Awar’s major area of research of interest is
- Fetal abnormality.
- Maternal health.
- Placental perfusion.
- General women and community health initiatives.

Dr Hisham Mirghani’s major area of research of interest is
- Fetal growth behavior during maternal fasting.
- Fetal growth and pregnancy outcome in GDM.
- Fetal abnormalities
- Placental perfusion studies
- Medical education: learning style and acquisition of clinical skills

Dr Osman Ortashi’s major area of research of interest is
- Gynecology and gynecological cancers. His research is focusing on cervical cancer prevention and Human Papilloma Virus related cancers and diseases.
- Knowledge, attitude & practice towards the Human Papillomavirus infection & vaccine.
- Cervical screening

Dr Hassan M Elbiss’ major area of research of interest is
- Urogyneacology, minimal access surgery, in-vitro human human placenta perfusion
- Epidemiology of Pelvic Flood Dysfunction
- Management of Pelvic Flood Dysfunction
- Gynaecological laparoscopic surgery
- Gynaec-oncology

Assistant Professor and Chair: Dr S Al Awar
Associate Professor: Dr H Mirghani
Assistant Professor: Dr H Elbiss
Dr O Ortashi
Medical Research Specialist II: Dr N Osman
Medical Research Assistant: Ms Z H Balayah
Administrator: Ms S Al Yahyae
Articles in Peer-reviewed Journals


Published Abstracts, Letter, Correspondence


Proceedings, Conferences, Invited Lectures, Web Sites and Others


Al Awar S. (2014). American Board Review Course, 5-9th May 2014, Baltimore, USA


Al Awar S. (2014). Multiple women health issues related TV interviews

Al Awar S. (2014). Organizing cervical cancer prevention campaign with HAAD


Mirghani HM. (2014). Role of ultrasound in high risk pregnancy. The 3rd International Conference of Al Ain Cromwell Hospital, in collaboration with New York Presbyterian Hospital/ Columbia Medical Center, New York, USA. Al Ain. 7 March, 2014.


Mirghani HM. (2014). 24th World Congress on Ultrasound in Obstetrics and Gynecology in Barcelona, Spain; 14 - 17 September 2014.


Ortashi O. (2014). HAAD cervical cancer workshop (more than three times)


RESEARCH GRANTS

CMHS Research Grants
Dr H Elbiss (PI)
Placental transport of Solifacin and potential effect on placenta structure

UAE University Program for Advanced Research
Dr H Mirghani (PI)
The transport of sotalol and flecainide across the placenta: ex-vivo human placenta perfusion study.

UAE University Program for Advanced Research
Dr S Al Awar (PI)
Paracetamol as Over-Counter-medicine (OTC) in Pregnancy.
Academic staff in the Department of Pediatrics pursue research that promotes child health. Progress has been made in several areas, such as genetic disorders, inborn errors of metabolism, pathogenesis of viral infections, nanotoxicology, vitamin D deficiency, immunization gaps, and animal models of human diseases, such as multiple sclerosis, RSV and influenza infections.

The familial and sporadic forms of cerebral dysgenesis have been investigated at a molecular level. A newly recognized type of agyria-pachygyria associated with agenesis of the corpus callosum has also been delineated. The severe form of myotonia with bone dysplasia [Stüve-Wiedemann Syndrome (SWS)] has been identified to be common in the UAE. A founder mutation in the leukemia inhibitory factor receptor (LIFR) has been discovered in all families with SWS. The gene for Joubert syndrome has been mapped to 9q34.3, and its genetic heterogeneity has been established. A newly recognized type of epiphyseal dysplasia has been described, mapped to 15q26.

Our group has published studies describing the prevalence of metabolic and genetic disorders in the UAE. A low rate of lymphocyte respiration has been identified in children with trisomy 21. The group investigated why some anti-epileptic drugs (e.g., vigabatrin and lamotrigine) ingested by women during pregnancy cause neural tube and other defects. These drugs are found to be teratogenic. Methionine on average was 5 times lower in the embryos of treated pregnant mice than in non-treated controls. Studies are ongoing to determine the impact of folic acid and vitamin B12 supplementations on the frequency of these anomalies in the animal model.

Aflatoxins, commonly found in nuts and grains, are found to be increased in pregnant women and their offspring. The immunosuppressive effect of aflatoxin B1 in human lymphocytes has been described.
Department of Paediatrics

The bioenergetics and apoptosis of gastric epithelium have been investigated in stomach biopsies from adults. The average rate of gastric epithelium oxygen consumption was found to be 0.18±0.04 µM O2 min-1 mg-1 and cellular ATP 173±101 pmol mg-1.

The effects of various cytotoxic agents on human and animal tissues are also being investigated. Human lymphocytes, fibroblasts, foreskin, and gastric epithelium are used for this purpose. Animal tissues are also used, such as murine and rat hepatocytes, cardiomyocytes and pneumocytes. The studied toxins and drugs include novel nanoparticles, aflatoxin B1, dactinomycin, doxorubicin, atorvastatin, sorafenib, regorafenib, PI3K and MEK inhibitors, metformin, valproate, HIV drugs, zole-dronic Acid, bufomin, salbutamol sulphate, and platinum-based compounds. The toxic effect of ammonia is being investigated in murine brain.

Blood count reference intervals have been established for the neutrophil, lymphocyte and erythroid lineages from birth to 6 years of age. The prevalence of latent TB infection in pediatric patients has also been established. A national survey for patients with Down Syndrome and its associated problems has been conducted. The study assessed the prevalence of overweight/obesity and established the reference values for body mass index (BMI) percentile curves for Emirati children with uncomplicated Down syndrome. The study also included the epidemiology of congenital heart disease in these children. Pediatric studies are ongoing to assess cardiovascular risks of diabetes mellitus. With a high parental refusal rate for procedures on their children, a study has been conducted to compare the underlying factors behind parental refusal or consent for lumbar puncture.

The association of uric acid urolithiasis with rotavirus gastroenteritis recently described in Japan has been investigated in our pediatric inpatient community. Several studies on the clinical picture, outcome and several selected complications of bronchiolitis are currently underway. We are currently investigating the value of serum cytokines, metalloproteinases and heat shock proteins in children to differentiate early between Kawazaki disease and pyrexia of infectious causes.

A study is being carried out to look into the proportion of renal scarring and urological anomalies that can be missed by implementing the NICE or the AAP guidelines for imaging children with urinary tract infections. In view of the high prevalence of hypovitaminosis D in young pregnant women, a population-based study on the status of vitamin D levels among female adolescents has been completed, showing a very high prevalence. This information will lead to the development of interventional studies, aimed at achieving normal vitamin D status in women prior to pregnancy. A collaborative study with the department of physics at the UAE University and neonatal units in UK hospitals has looked at the value of computerized texture analysis of “flares” on neonatal cranial ultrasound. We found this new technology to be highly predictive of lesions which will eventually develop into periventricular leukomalacia with poor neurodevelopmental prognosis. With this new technology, the results are apparent several weeks before changes can be seen on other imaging modalities.

Research in medical education has looked at the content validity comparison between the in-house and the NBME pediatric examinations. Clinical research is conducted by faculty in collaboration with both Tawam and Al Ain Hospital to study autoimmune mechanisms in children with epilepsy and encephalopathies. Auto antibodies against specific neuronal channels and receptors have been found in a subgroup of these patients.
Articles in Peer-reviewed Journals


Published Abstracts, Letters, Correspondence


Proceedings, Conferences, Invited Lectures, Websites etc.


Suleiman J. (2014). Pediatric Neurology: Cases from Clinical Practice. The 2014 Neuroscience Update, American Centre for Psy-


RESEARCH GRANTS

**CMHS new Research Grant**
Drs EH Aburawi (PI), S Emerald, S Ojha. Profiling the role of miRNAs 19 and 29 and its isoforms in Emirati patients with Diabetes Mellitus.

Dr J Suleiman (PI)
Neuronal Antibodies in Pediatric Encephalitis in UAE

**UPAR (United Arab Emirates Advanced Research Program)**
Dr J Suleiman (PI)
Autoimmune epilepsy and Encephalitis in UAE

**Sheikh Hamdan Award for Medical Sciences**
Drs EH Aburawi (PI), J Alkaabi, A Shehab, Prof. B Ali, F Al Darmaki, H Al Saadi.

Cardiovascular Diseases Risk Factors in UAE adolescents and young adults with type 1 and type 2 Diabetes Mellitus. [Extension – 2014].

**Emirates Foundation Grant**

[2014 Paediatrics]

www.cmhs.uaeu.ac.ae/Departments/Paediatrics  Tel: 76/700 / Fax: 7672067
Department of Pathology

Research Profile:

Pathology is a science that relies on detecting gross organ abnormalities and documenting microscopic structural tissue changes that underlie disease. Pathology is the link between basic medical sciences and clinical practice. It provides an in-depth understanding of disease or pathogenesis. The contribution of pathology in research is varied and spans across basic laboratory and animal research to clinical trials. The focus of the research in the department is on genetic diseases, chronic diseases (e.g. diabetes mellitus) and malignancy. Research on neoplasms addresses pathogenesis, diagnosis and treatment.

Prof. Mukesh M. Agarwal - Clinical chemistry:
In the UAE, the prevalence of diabetes mellitus (DM) is amongst the highest in the world. This remains a major epidemiological challenge for the country. Multiple studies agree that aggressive life-style changes (after delivery) in women with gestational diabetes (GDM) can delay and even prevent the onset of Type 2 DM. Much of our research efforts are directed to GDM. We are continually studying the value of various simple screening tests, which have a high degree of sensitivity. Ultimately, not missing any pregnant woman with GDM will help us to start prevention for DM after childbirth. This will attain our ultimate objective: to decrease the epidemic of Type 2 DM in the UAE.

Prof. Bassam Ali - Human Genetics
1. Identification of the molecular defects underlying single gene disorders in the UAE and Arab populations.
Recessive disorders are highly prevalent in Arab populations including UAE mainly due to high levels of consanguinity and lack of prenatal and/or pre-conception diagnosis. We are developing
a molecular genetics research laboratory to look at the molecular defects causing recessive disorders found in the UAE population with emphasis on mental retardation phenotypes, metabolic and dysmorphology disorders. We are collaborating with major research groups at Harvard Medical School (USA), University of California in San Diego USA), King Faisal specialist Hospital and Research Center (KSA) and Sultan Qaboos University (Oman).

2. The cellular mechanisms of human mono- genic disorders.
We are interested in protein trafficking and quality control within eukaryotic cells. The protein quality control at the endoplasmic reticulum level is responsible for the development of several human genetic diseases including cystic fibrosis and emphysema. We recently elucidated the cellular mechanisms underlying Robinow syndrome and Acromesomelic Dysplasia type Maroteaux, recessive disorders that has been found in several parts of the Middle East including Oman and Saudi Arabia. We are currently looking to establish the mechanisms underlying Familial Hypercholesterolemia, Hereditary Hemorrhagic Telangiectasia and other ER-associate degradation diseases. In addition, we are exploring ways of manipulation ER quality control for potential therapy of such diseases.

3. Pharmacogenetics and pharmacogenomics
We are interested in establishing the alleles and genotypes frequencies of the genes encoding important drug metabolizing enzymes among UAE and Arab populations.

Dr. Suhail Al-Salam – Histopathology/ Renal pathology and CNS pathology
1. Role of Galectin-1 and Galectin-3 in Breast carcinoma chemoresistance.
Breast carcinoma is the most common malignant neoplasm and the second cause of cancer death in women worldwide. It is the commonest cancer among the UAE population and the most common cancer among females. Despite all the advances in early detection, drug resistance is a major problem in our battle against cancer. Galectin-1 (Gal-1) and Galectin-3 (Gal-3) are members of the beta-galactoside-binding family and they play a role in cell proliferation, adhesion, and migration. Both of them have antiapoptotic function hence they can play a role in cancer chemoresistance. Cancer chemoresistance will lead to cancer recurrence and increased mortality and morbidity. This project is aimed at carrying out a prospective study to determine the role of Gal-1 & 3 in breast cancer chemoresistance with the aim of establishing Gal-1 and Gal-3 expression as a biomarker for drug resistance if successful, this would establish Gal-1&3 expressions as a key prognostic marker for evaluating treatment success in breast carcinoma.

2. Role of Trefoil Factor Peptides in the Development and Progression of Glioma.
Gliomas are the most common primary central nervous system tumors. They are the second most common cancer among children in UAE. They are graded into four grades from grade 1 which is the most benign to grade 4 which is the most malignant. They are characterized by progression from low grade to high grade within the same tumor. This progression is not well understood. Furthermore, the pathogenesis of glioma is obscure. Several studies have shown the transforming potential of TFF peptides which is illustrated in tissues involved in cancer progression, while other studies have shown tumor suppressor action of TFF peptides. How can the apparent contradiction between the tumor-promoting and tumor-suppressing functions of TFF peptides be resolved? We hope that this project will answer some of these queries. There are nearly no published data concerning the expression of TFFs in human gliomas. In addition there were no previous reports concerning the role of trefoil factors in the pathogenesis or progression of glioma.

3. Hypoxic signals in myocardial Ischemia.
Coronary heart disease is a major cause of death in the United Arab Emirates. Hypoxia is an integral component of myocardial ischemia/infarction. Hypoxia triggers multiple signaling pathways in cardiac cells that cause them to adapt and subsequently survive ischemia. Our research will address mechanism of this hypoxic damage by investigating the role of HIF-1 alpha and its targets in animal models. Our preliminary data has shown that HIF-1 alpha is expressed by human and mouse cardiac myocytes in early ischemia. We hypothesized that in hypoxic myocardium, the robust expression of HIF-1 alpha serves to maintain expression of proteins which promote cell survival. We expect that this study will elaborate on the proposed
protective role of these proteins in the heart and determine if they have diagnostic or therapeutic potential in the future.

Dr. Alia Al Bawardi - Histopathology/ Breast pathology/ Renal Pathology
1. Murine model for nephrotoxicity and cytoprotection.
Diabetes and hypertension are common co-morbidities, with both adversely affecting renal function. Nephrotoxic drugs are frequently used in clinical practice to manage a wide spectrum of diseases from simple bacterial infection to cancer. The study aim is to develop a murine model for assessing nephrotoxicity and cytoprotection. The nephrotoxicity will be induced by drugs and bacteria. The cytoprotection will be conferred by thiol agents. The following biomarkers will be monitored; cellular bioenergetics, caspase activity, and glutathione and histopathology and electron microscopy.

Several studies have confirmed the link between human carcinogenesis and molecular aberrations in cellular signaling pathways. For example, key mutations in Ras/Raf/MED/ERK or PI3K/PTEN/Akt/mTOR are implicated in the pathogenesis of numerous human epithelial cancers. Therefore, targeting these pathways with specific inhibitors of RAS, ERK, PI3K, AKT and/or mTOR is expected to control the disease. The research involves studying the cytotoxicity of targeted anticancer agents (e.g., inhibitors of PI3K, AKT, mTOR and MEK) in fresh samples of human epithelial tumors.

3. Investigation the role of Mouse Mammary Tumor Virus (MMTV).
Presence in the UAE Population. Breast cancer is a leading cause of mortality among women worldwide. In the UAE, it has been on the rise with a higher incidence in young women. Being a multifactorial disease, it is critical that we understand the risk factors that are at play so that one can begin to address the source of its induction/ development within the UAE and globally. We aimed to assess the role of mouse mammary tumor virus (MMTV) in this disease. MMTV has been conclusively shown to be the causative agent of breast cancer not only in mice, but a distinct possibility exists that a virus similar to MMTV, human mammary tumor virus (HMTV), may have a role to play in human breast cancer as well. An increasing number of studies in the past few years have reported the detection of MMTV-like sequences in specific world populations with breast cancer; however, the results have been controversial due to many reasons, including differences in techniques, severity/type of cancer, and differences in geography. The study aims at looking at a large number of breast cancer cases to assess its association or lack of as a causative agent in breast cancer in the UAE.

Dr. Saeeda Almarzooqi - Histopathology/ gynaecological and paediatric Pathology
1. Cytotoxicity Analysis of Anticancer Therapies Targeting Cell-signaling.
Key mutations in Ras/Raf/MED/ERK or PI3K/PTEN/Akt/mTOR are implicated in the pathogenesis of numerous human epithelial cancers. Targeting these pathways with specific inhibitors of RAS, ERK, PI3K, AKT and/or mTOR is expected to control the disease.

Breast cancer is a multifactorial disease, current study investigate the role of mouse mammary tumor virus (MMTV). MMTV has been conclusively shown to be the causative agent of breast cancer not only in mice, but a distinct possibility exists that a virus similar to MMTV, human mammary tumor virus (HMTV), may have a role to play in human breast cancer as well.

3. Oral and laryngeal squamous cell carcinoma:
The prevalence of high risk human papilloma viruses (HPV) in United Arab Emirates population. Background: High risk human papillomaviruses causes anogenital squamous cell carcinoma. Recent evidence implicates the very same viruses in the pathogenesis of oropharyngeal and laryngeal squamous cell carcinoma. The current study will determine the prevalence of human papillomavirus in oral and laryngeal squamous cell carcinomas in the local population of the United Arab Emirates.
OTHER DEPARTMENTAL ACTIVITIES:

1. **Emirates Art and Photography Award 2014**

Organizers: Dr. Saeeda Almarzoqi and Dr. Alia Albawardi with a team of dedicated and talented medical students. The philosophy of “Art and Photography in Pathology Award”; was to stimulate medical students’ imagination and create a gratifying learning atmosphere. The aim was to enhance medical student’s awareness of pathology as an important medical subspecialty, and to encourage them to pursue it as a potential career. This initiative is unique in the Arab world. Participation in the award was open to medical students from all medical schools within the country.

We received more than 40 art works from all medical schools in the U.A.E. Five winners were chosen based on the artistic qualities and scientific accuracy. Winners were:

1. Mahra Al Dahbashi, College of Medicine & Health Sciences-UAEU, work titled: India Ink
2. Fatema Saif AlMazrooei, Salm AlZaabi, Jawaher Rashed AlZeyoudi, Maryam Salem AlZeyoudi, College of Medicine & Health Sciences-UAEU, work title: Lung Carcinoma
3. Hayfa Mohamed Moneer Khan, Dubai Medical College for Girls, work titled: Starry Night by Denis Parsons Burkitt Lymphoma
4. Al Afra Al Jaberi, College of Medicine & Health Sciences-UAEU, work titled: The Silent Killer
5. Majid Mohammed Abu Samra, College of Medicine & Health Sciences-UAEU, work titled: Alzheimer’s disease

2. **Pathology educational instagram account: path_gram_uaeu**

An interactive link that present clinically encountered clinical cases with emphasis on pathological findings and diagnosis.
Original Peer-reviewed Scientific articles


### Published Abstracts, Letters and Correspondence


### Proceedings, Conferences, Invited Lectures, Websites and Others


Albawardi A. (2014). Invited speaker at a student targeted discussion forum titled “oh, the specialties you’ll choose” held at College of Medicine and Health Sciences, Al Ain, 28th April 2014.


Almarzooqi S. (2014). Chair of the Emirates Art and Photography Award in pathology 2014. A co-founder of the award that targets medical students in UAE to increase awareness of pathology as an interesting and needed subspecialty. Award ceremony held at UAEU main campus 15th April 2014.


Almarzooqi S. (2014). Emirates Medical Association-Pathology Society meeting, March 22nd 2014, invited speaker “the soft part of pediatric pathology”.

Almarzooqi S. (2014). Organizer of a student targeted discussion forum titled “oh, the specialties you’ll choose” held at college of medicine and health sciences, 28th April 2014.


RESEARCH GRANTS

CMHS Research Grant
Dr S Al-Salam (PI) Trefoil factor 3: A novel protein in breast cancer chemoresistance. [2014-2016].

CMHS startup Grant
Drs A Albawardi, S Almarzooqi (PI), Prof AK Soud In Vitro Assessment of Antitumor Activities. [2013-2016].
Drs A Albawardi (PI), S Almarzooqi in vitro effects of platinum compounds on murine renal cellular respiration. [2013-2016].

Drs S Almarzooqi (PI), A Albawardi, Prof AK Soud In Vitro Assessment of Antitumor Activities. [2013-2016].
Drs S Almarzooqi, A Albawardi (PI) in vitro effects of platinum compounds on murine renal cellular respiration. [2013-2016].
Sheikh Hamdan Bin Rashid Al-Maktoum Award for Medical Sciences Profs B Ali (PI), L Al-Gazali The Pharmacogenomics of Warfarin Metabolism in UAE Population. [2012-2014]
Profs L Al-Gazali (PI), B Ali Exome sequencing and homozygosity mapping to identify causative genes and mutations in Emirati families with recessive conditions. [2012-2014]
UAEU-NRF Grant
Profs B Ali (PI), L Al-Gazali Evaluation of the Genetic Manipulation of ER folding and ER-Associated Protein Degradation Components as a Therapeutic Target for ERAD Diseases. [2013-2015].
Drs A Albawardi, F Mustafa (PI) Characterization of Mouse Mammary Tumor Virus (MMTV) in Human Tumors in the UAE: Is MMTV a General Biological Carcinogen. [2013-2015].
Dr S Al-Salam (PI) HIF-1α survival signal in Ischemic Myocardium: A protective role of Galectin-1 and Galectin-3. [2011-2014].
UAEU-Zayed Health Centre Interdisciplinary Grant: 
Profs B Ali (PI), L Al-Gazali
Novel approaches to ameliorate the effects of mutations underlying Lysosomal Storage Disorders in Emirati patients. [2014-2017].

Profs B Ali, L Al-Gazali (PI)
The identification of the genetic defects underlying monogenic disorders in UAE. [2014-2017].

Terry Fox Fund for Cancer Research
Dr S Al-Salam (PI).
Role of Galectin 1&3 in the breast cancer chemoresistance. [2011-2014].

Others
Al Jalila Foundation Seed Grant
Drs S Al-Salam, A Amin (PI)
Therapeutic Effects of Crocin against Hepatocellular Carcinoma: A Preclinical Study. [2014-2016].
Department of Pharmacology & Therapeutics

Research Profile

The Pharmacology & Therapeutics Department has special interests in Diabetes and Degenerative Diseases, Neuroscience, Clinical Toxicology, Gastroenterology and Oncology. The research is done with state of the art equipment in purpose-built laboratories with good technical and other support.

Prof. Salim Bastaki

Gastroenterology: Gastrointestinal diseases have increased in recent years. Our research is based on gastrointestinal secretion and the mechanism of action of PPIs and other acid inhibitors on acid secretion. In the early years, Histamine H2-receptor antagonist, Sucralfate and Muscarinic receptor antagonists were used more often. But with the introduction of the proton pump inhibitors (PPIs) their use has declined owing to the potent anti-secretory and anti-ulcer activity of the PPIs. At present we are studying the new H3R antagonist on Gastric acid and Ulcer formation in the rat in vivo and in vitro. We have finished and published the effect of receptor antagonist and PD-136450 on stress-induced gastric ulcer on in rats and the healing rate of alcohol-and indomethacin-induced ulcers in the same rats.

Teratology: Epilepsy affects approximately 1% of the world’s population and it is the second most common neurologic disorder after stroke. It is a heterogeneous symptom complex—a chronic disorder characterized by chronic seizures. Approximately 0.5% of all pregnancies occur in women with epilepsy. It is known that epileptic women demonstrate a higher liability to obstetric complication than non-epileptic females and congenital malformations are more common in their offspring than those of normal or rats. We have finished working on the effects of Aflatoxin B on pregnant mice and working on the new antiepileptic drug (AED) on the fetuses of mice.
**Pharmacogenetics:** Oxidation by enzymes encoded at the CYP2D6 locus is the main route of elimination for a large number of drugs including many commonly prescribed in psychiatric practice such as antidepressants and neuroleptics. The CYP2D6 locus is highly polymorphic and numerous mutant CYP2D6 alleles are currently known including defective alleles which yield no functional protein product and duplicated active alleles which cause ultrarapid oxidation. Two CYP2D6 oxidation phenotypes EM (extensive metabolisers) and PM (poor metabolisers) are commonly recognized. These phenotypes can be accurately predicted by genotyping. The clinical implications of the CYP2D6 polymorphism are of potential importance to psychiatric practice in the UAE since tricyclic antidepressants are widely prescribed for treatment of depression. These drugs have a small therapeutic index and unpleasant side-effects or therapeutic failure is commonly encountered when fixed dose regimens are used. We just published the work in PlosOne the top on line Journal. At present we are working on NAT2 phenotyping and genotyping in the Emiratis.

**Prof. Abdu Adem**

**Diabetes**

*Mechanisms of Apoptotic Cell Death in Diabetes*

In almost all multicellular organisms, cell suicide or apoptosis appears to play an important role in the maintenance of cellular homeostasis. Apoptosis is tightly regulated by a set of genes that either promote apoptosis or promote cell survival. Although a number of stimuli appear to trigger the process of apoptosis, there are two major signaling pathways of apoptosis: the death receptor pathway and the death receptor-independent or mitochondrial pathway. Mechanisms of apoptotic cell death are being studied in kidneys of an animal model of diabetes. The ultra structural features in the tubules seem to implicate apoptosis in the pathology of renal nephropathy. In addition he reported, for the first time, a significant loss of foot processes of podocytes (*) in the diabetic rat kidney (Fig.1 left). These findings could contribute to the understanding of the patho-physiology of diabetic nephropathy.

**Neurodegenerative Diseases**

*Novel Selective Ligands for Muscarinic Acetylcholine Receptors*

Five muscarinic acetylcholine receptor subtypes (M1-5) have been cloned and are found in the brain. However, the pharmacological identification of the subtypes responsible for the various central effects of the muscarinic drugs is difficult due to the lack of highly selective muscarinic agonists and antagonists. His lab in collaboration with others, has isolated muscarinic M1 and M4 receptor subtype selective toxins from mamba snake (Dendroaspis) venoms. At present the status of M1 and M4 receptors in health and disease states in humans are being investigated. Results from his lab have shown significant decrease of M4, but not of M1 receptors in the hippocampus of Alzheimer’s patients compared to controls. Moreover, changes in these receptors have been reported by his group in adrenalectomized animal models which have been shown to have a selective loss of hippocampal neurons. Attempts to isolate and characterize M2, M3, and M5 selective toxins by his group is in progress. Behavioral, biochemical and electrophysiological techniques are used in his laboratory to understand the role of other neurotransmitters in diabetes, epilepsy, aggressive behavior, aging, and degenerative diseases.

**Prof. Murat Ahmet Oz**

The research interest of Prof. Oz focuses on the identification of ion channels and neuronal networks upon which neuropharmacologically active agents act to modulate neuronal excitability. To this end, actions of neuropeptides such as vasopressin, angiotensin, and cholecystokinin on the spinal cord preparations and the effects of bioactive lipids such as endocannabinoids on the functions of ion channels are the major research topics investigated in his laboratory.

**Dr. Samir Attoub**

**Cancer research**

My research is focused on the role of PI3K/Akt/NF-κB pathway as a driving force behind lung and colon cancer progression (apoptosis, inva-
sion, angiogenesis and metastasis) using siRNA technology and in parallel screening of potential anti-cancer drugs.

1. Identification of Akt isoforms involved in colon cancer survival and invasion

The PI3K/Akt/NFκB signaling cascade is constitutively activated in cancers. Akt is linked to the transforming activity of c-src, c-kit, c-met oncogenes and growth factors, such as EGF and IGF receptors. Drugs targeting receptor tyrosine kinases (ErbB2/HER2 and ABL/c-kit) impact the PI3K/Akt pathway. Consequently, the inhibition of Akt is considered to be an attractive cancer therapeutic target. Three isoforms of Akt (Akt1/PKBα, Akt2/PKBβ, and Akt3/PKBγ) are over-expressed and activated in cancers, but the degree of functional redundancy between them on cancer cell survival and invasion are unclear. The identification of the Akt isoform that is the most promising target for cancer therapy is unknown and will be addressed in the following specific objectives:

a. To explore the respective roles of Akt-1, -2 and -3 in cancer cell survival, invasion, tumor growth and metastasis, studies will be conducted using RNA interference technology in LNM35 human lung cancer cells and HT29 human colon cancer cells.

b. To characterize the ability of different isoforms of Akt (Akt-1, -2 and -3) to transactivate different subsets of target genes to orchestrate either cell survival or invasion. This will be investigated in colon and lung cancer cells using microarray analysis.

The effects of knockdown of Akt-1, -2 or -3 silencing on invasion will be investigated using the collagen type I and the chick heart invasion assays, cell-cell and cell-matrix adhesion and expression of E-Cadherin. The effect of knock down of the Akt’s on HT29 cell line on tumour growth will be tested in nude mice. In addition, we will assue the development of new blood vessels (CD31 antibody), the presence of apoprotic cells (caspase 3 activity), and proliferative activity (ki67 antibody). We’ll test the therapeutic impact of the Akt isoforms inhibition on metastasis using the highly invasive and metastatic lung cancer cell line LNM35 targeting the lymph nodes and lungs. This cell line is stably transfected with a vector encoding luciferase, to allow a rapid and reliable quantification of micro-metastases. To identify the mechanisms underlying the effects of Akt isoform inhibition, we will search for differentially expressed genes using microarray analysis and confirm the results by real-time RT-PCR.

It is anticipated that this project will provide evidence that targeting Akt-1 and/or -2 is a promising strategy for the treatment of colon and lung cancer.

2. Screening of potential anti-cancer compounds using in vitro and in vivo assays

The overall goals of this part of my research are directed towards studying the in vitro and in vivo cytotoxic properties of the synthesized/purified drugs (Luteolin, Thymoquinone and Frondoside A). The effective drugs will be further investigated in order to determine their mechanisms of action using various molecular biological techniques. In addition, we will attempt to investigate the effects of these drugs on cell survival and invasion in vitro and on tumor growth in vivo. The effects on metastasis in nude mice using various cancer cell lines will also be investigated.
Dr. Rajesh Mohanraj
Main research interest pertains to deciphering the role of neutral sphingolipids and identification of novel therapeutic targets for diabetic vascular complications.

Dr. Shreesh Ojha
The research interest of Dr. Shreesh Ojha focuses on targeting the interplay of oxidative/nitrosative stress and inflammatory signaling and their manipulation using natural, synthetic or semi-synthetic bioactive agents in the pathogenesis in ischemic heart disease, diabetes and diabetic vascular complications and metabolic syndrome. He uses the animal models of ischemic heart diseases and dietary models of diabetes and its vascular complications, obesity and metabolic diseases. His research work pertains to investigate the mechanisms that may be responsible for modifying; inducing or preventing cardiovascular or metabolic disease based on evidences arises from different approaches including hemodynamic, biochemical, histological and immunohistochemical. Currently, various substances are being tested to identify novel compounds which might find their use in future therapeutics for ischemic heart diseases and metabolic syndrome.

Dr. Bassem Shabab Sadek
Histamine H3 Receptors as Novel Drug Targets for Therapeutic Management of Epilepsy and Cognitive Disorders

The development of selective antagonists targeting central histamine H3 receptors enables the explanation of their physiological and pathophysiological functions, as the difficulty for developing satisfactory therapy of Alzheimer’s disease (AD), Attention-Deficit-Hyperactivity-Disorder (ADHD), or drugs abuse (DA) lies in the complex pathophysiology of the disease, which involves numerous pathways that include deficiency in cholinergic neurotransmission, abnormalities of adrenergic, serotonergic and dopaminergic neurotransmission. Thus, the development of H3 receptor antagonists belonging to different chemical classes capable of penetrating into the CNS and modulating histaminergic neurotransmission in the central nervous system can positively affect the multi-neurotransmitter disorders, e.g. AD, ADHD, or DA.

The research interest of Dr Bassem Shabab Sadek focuses on the structural development of those histamine H3 receptor antagonists targeting cognitive disorders. To this end, different chemical classes of antagonists, e.g. piperidine- and pyrrolidine-based antagonists will be synthesized and investigated for their in-vitro antagonistic effect at human histamine H3 receptors. Selected compounds with high in-vitro antagonist activity will be further examined on their selectivity profile against a wide set of human GPCRs expressed in different cell lines. Those most promising antagonists will be investigated on their in-vivo modulating effects on...
epilepsy, memory impairment and drug addiction using different animal models in rats and mice, as such pharmacologic evaluation is a key stone in the development of future drugs of significant role in therapeutic management of aforementioned central disorders.

Dr. Fakhreya Yousuf
Major research activities are in the area of stroke and vascular diseases. She investigates the cellular and molecular mechanisms of white matter injury due to chronic stroke/ischemia, especially the role of inflammation and matrix metalloproteinases in white matter damage in a rat model of vascular cognitive impairment. Vascular cognitive impairment (VCI) is a heterogeneous disease due to large and small vessel pathology. Small vessel disease with arteriolosclerosis secondary to hypertension and diabetes with white matter injury is the most common form. As the population increases in age, the incidence of vascular causes of dementia is projected to rise, creating a pressing need to use animal models to elucidate the pathophysiology of the white matter damage and identify effective treatments. During her postdoctoral fellow in the USA, she developed a novel model for white matter gliosis in older spontaneously hypertensive rats that are stroke prone (SHR-SP). At 12 weeks of age they underwent unilateral carotid artery occlusion (UCAO) and were fed with the Japanese permissive diet (JPD) with added salt. Four weeks later (week 16 of life), they developed extensive white matter damage with gliosis, apoptosis of mature oligodendrocytes in white matter lesions, and compensatory increase in immature oligodendrocytes. Increased MMPs associated with BBB disruption and myelin breakdown. Memory impairment, as determined by Morris water maze (MWM), was evidenced starting at week 3 following UCAO/JPD. This model combines hypertensive changes in the blood vessels with hypoxia and genetic/environmental factors, making it similar to VCI in patients. Her current objectives are to understand the molecular and subcellular basis of oligodendrocytes death, myelin loss, and BBB opening in UCAO/JPD rat model of vascular cognitive impairment. She is looking into the role of hypoxia/HIF-1α expression in MMP-9 induction, opening of the BBB, and white matter damage. She is also developing strategies for therapeutic intervention to prevent or lessen BBB damage, myelin loss and cognitive impairment in vascular cognitive diseases.

Articles in Peer-reviewed Journals


amine Restores Pancreas Lipid Composition in Obesity-Induced Insulin Resistant Rats. Lipids. [in press]


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Published Abstracts, Letters, Correspondence


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RESEARCH GRANTS

CMHS-UAEU Grant
Prof A Adem [PI]
Development of a translational model of the cognitive deficits in schizophrenia (2013-2015)

Prof S Bastaki [PI]

Dr S Attoub [PI]
Impact of the combination of Frondoside A with Oxaliplatin or 5-fluorouracil in the treatment of colon cancer. (2014-2015)

Prof TE Adrian [PI], Dr S Attoub, Prof E Mensah-Brown
Dr BS Sadek [PI]
Pro-cognitive evaluation of novel histamine H3 receptor antagonists belonging to non-imidazole class. (2013-2015)

Dr J Fakhreya Y [PI]

Dr S Ojha [PI]
To investigate the therapeutic potential of endocannabinoid system ligands in murine model of metabolic syndrome. (2013-2014)

Prof M Oz [PI]

UAEU Centre-Based Interdisciplinary Grant
Dr T Loney [PI], Profs A Adem, Tar Ching Aw
Toxicological Effects of Pesticide Exposure in Agricultural Workers in Al Ain, UAE. (2014 - 2016)

Prof A Adem [PI], Profs S Shehab, AE Salem
Novel Mechanisms for effective antidepressant drugs. (2014)

Dr R Iratni [PI], Drs S Attoub, J Viallet, SA Qamar
Potential role of Drap1 (NC2a) as a novel tumor suppressor of breast cancer. (2014-2016)

Dr GKhan [PI], Prof TE Adrian, Dr S Attoub
Impact of Epstein-Barr virus small RNA (EBER-1) on genes associated with inhibition of apoptosis. (2014-2016)

Prof B al-Ramadi [PI], Drs M Fernandez-Cabezudo, Dr S Attoub
Development of Manuka Honey and related products as adjuvant therapy for cancer. (2014-2016)

Terry Fox Fund for Cancer Research
Dr S Attoub [PI]
Effect of Frondoside A on tumor cell survival and invasion in vitro and the growth of breast tumor xenografts in athymic mice. (2012-2014)

UAEU Program for Advanced Research (UPAR)
Dr BS Sadek [PI]

Prof AE Salem [PI], Dr I Abdou, Prof A Adem, Dr S Attoub

UAEU - Start-up-grant
Dr R Mohanraj [PI]

Dr J Fakhreya Y [PI]

Sheikh Hamdan Award For Medical sciences
Dr R Mohanraj [PI]

Sheikh Hamdan Bin Rashid Al Maktoum Award for Medical sciences
Prof S Bastaki [PI]
Reproductive toxicology studies on a new antiepileptic compound H3R ligand 3-(1H-imidazo-4-yl) propyl pent-4-enylcarbamate in the mouse.

National Research Foundation (NRF) -UAEU
Dr M Oz [PI]
The effects of 2-Arachidonyl Glycerol, a major endocannabinoid, on the function of 5-HT3 receptors of the hippocampal Interneurons. (2012-2014).

Dr S Ojha [PI]

Dr R Mohanraj [PI], Prof A Adem
Role of SMPD2 in diabetic retinopathy. (2012-2014)

Dr J Fakhreya Y [PI]
Hypoxia regulation of MMP-9 in a novel model of vascular cognitive impairment. (2012-2014)

Prof A Adem [PI]
Exposure to heavy metals and Tauopathies. (2013-2015)

Dr S Attoub [PI]
Notch isoforms in cancer cell survival and invasion: who is the culprit? (2012-2014)

Virginia Youth Tobacco Project; VA, USA (Small Grant Award)
Dr. M Oz [Co-PI]

Sheikh Hamdan Bin Rashid Al Maktoum Award for Medical sciences
Prof S Bastaki [PI]
Reproductive toxicology studies on a new antiepileptic compound H3R ligand 3-(1H-imidazo-4-yl) propyl pent-4-enylcarbamate in the mouse.
Standing from Left to right: Mr. S Alikutty, Dr. M H Ali, Prof. A Adem, Dr. B Sadek, Mr. M El Wasila, Prof. M Oz, Mr. Hamadi, Dr. R Mohanraj, Dr. S Ojha, Dr. SM Nurulain, Mr. A Shamsulislam, Mr. M Shafullah, Mr. K H Kader.

Sitting from Left to right: Ms. N S Khan, Ms. S Sulaiman, Ms. K Al Kaabi, Dr. S Attoub, Prof. S Bastaki, Dr. F Yousuf, Ms S Duncan, Ms. K Arafat, Ms. N Amir

www.cmhs.uae.ac.ae/Departments/Pharmacology. Tel: 7672000 / Fax: 7672033
Research Profile

Members of Staff of the Physiology Department have interests in neuroscience and muscle (including skeletal, cardiac and smooth muscle). The experimental work includes normal physiology as well as pathophysiology, particularly in relation to the peripheral nerves, autonomic nervous system, and heart in the diabetic state, which is a common disorder in the United Arab Emirates. The work requires complex electrophysiological and cellular methodologies, as well as electron microscopy, using in vitro and in vivo techniques. Other departmental research interests include uterine smooth muscle physiology, cardiovascular and pulmonary effects of particulate air pollution, cancer biology, as well as novel therapeutics for cancer, type 2 diabetes mellitus, and obesity.

Basic neurophysiology and experimental clinical neurophysiology laboratories
The research activities of the basic neurophysiology laboratory presently broadly focus on skeletal muscle function and muscle pain. The main techniques employed are classical electrophysiological techniques (EMG, ENG, muscle force and velocity, single fiber and single unit recordings) and sensorimotor and pain assessment animal behavioral methods. Currently, in collaboration with several colleagues at CMHS we are focusing on validation of behavioral abnormalities in the Rotenone rat model of Parkinson disease and the possible role of basal ganglia in chronic pain modulation. The second area focuses on neural plasticity particularly in the spinal cord related to processing of somatic pain in cervical and lumbar spinal networks as well as of visceral pain. We are particularly interested in changes of

*Professors Lammers and Fahim retired in August 2014.
the cellular and functional properties of spinal pain-related neural networks in various chronic pain conditions. Finally, our laboratory is trying to identify the effects of various repetitive Transcranial Magnetic Stimulation (rTMS) protocols on gene expression in diseases like stroke and chronic pain.

The Experimental Clinical Neurophysiology laboratory uses various Transcranial Magnetic Stimulation (TMS) techniques, and other classical Clinical neurophysiology methods (H and F wave and visual evoked potentials) to investigate mechanisms of human nervous system plasticity and the possibilities to remodel these processes in health and diseases. We primarily focus on the organization and plasticity of cortical inhibitory and excitatory pathways in the normal human motor cortex, and in movement disorders and chronic pain. Furthermore, we are interested in application of TMS and transcranial direct current stimulation (TDCs) in neurorehabilitation and treatment of movement disorders and chronic pain syndromes.

Finally, Dr. Ljubisavljevic’s special interests over the years were cortical processes related to volition in exercise and fatigue. The work focuses on mechanisms associated with sensorimotor integration and maladaptive plasticity in central fatigue. Our research activities are partly conducted in collaboration with colleagues from the Institute for Neurology, University Clinical Center Belgrade, and with the Neurology division of Tawam Johns Hopkins Hospital.

**Aging and neurodegenerative disorders**  
Studies on aging and neurodegenerative disorders have focused on synaptic plasticity and synaptic remodelling, particularly at the nerve-muscle junction in various peripheral neuropathies including those caused by diabetes, aging and heavy metal poisoning. Electrophysiological, laser confocal microscopy and electronmicroscopy techniques are used in combination to focus on changes in muscular performance in these conditions. It is hypothesised that free radicals are involved in these nerve injuries and antioxidants like vitamin E & C may have a protective role. Studies on the cerebral microcirculation include changes in the susceptibility to thrombus formation in the brain, and the effects of metals, aspirin and heat.

**Cardiovascular function and diabetes**  
The major research focus of Professor Chris Howarth is diabetes mellitus and heart function and this work is carried out in the ‘Electrophysiology Research Laboratory’, a joint venture between Professor Howarth and Dr Murat Oz (Pharmacology). A variety of in vivo and in vitro techniques are employed to investigate the effects of type 1 and type 2 diabetes on the heart. Biotelemetry is used to continuously measure the ECG and other parameters in vivo. Video edge detection techniques are used to measure shortening and fluorescence photometry is used to measure intracellular Ca2+ in individual cardiac myocytes. Patch-clamp tech-
Techniques are used to study membrane currents. Work in the Electrophysiology Research Laboratory is supported by technical staff, research assistants, undergraduate medical and science students, Ph.D. and M.Sc. students and post-doctoral scientists from overseas laboratories who visit on a regular basis. Professor Howarth has ongoing collaborations with researchers in other departments in CMHS and various international research laboratories in the UK, Ukraine and other countries. Recent projects have investigated the effects of diabetes on atrioventricular node and sinoatrial node cell electrophysiology, effects of sucrose-enriched diet on gene expression and Ca2+ transport in ventricular myocytes from the Goto-Kakizaki type 2 diabetic rat and the effects of anti-diabetic drugs on the electrophysiology of ventricular myocytes from diabetic rats. Work in the laboratory has been generously supported by Sheikh Hamdan Bin Rashid Al Maktoum Award for Medical Sciences, Emirates Foundation, National Research Foundation, United Arab Emirates University, College of Medicine & Health Sciences, LABCO a partner of Sigma-Aldrich and the Al Ain Equestrian, Shooting and Golf Club.

**Mapping Laboratory**

Work has proceeded very well in 2014 with major research developments obtained both in the mapping lab in Al Ain and through our collaborations with other laboratories around the world. This led to several joint publications, together with Ming Lei and his collaborators at Oxford and Cambridge, UK, with Leo Cheng and his group at the University of Auckland, with Luke Fullard and Maria Ferrua from the Massey University, Palmerston North, also in New Zealand, and two publications with Herbert Schäfer, Zweibrücken, Germany, one of which won the Martin-Wienbeck Award.

But probably the most important achievement has been the publication of our first paper on electrical propagation in the urinary bladder; a project that was started many years ago by John Morrison and that, when John left the faculty, was ably continued by Fayez Hammad from the department of Surgery. In this paper, we show for the first time the pattern of electrical propagation in the bladder with interesting similarities and differences with other smooth muscle organs.

Another milestone was reached when we were invited to organize a symposium on ‘Electrical propagation in smooth muscle organs’ that took place last August in Budapest, Hungary. This symposium was held in the context of the annual meeting of the Federation of European Physiological Societies (FEPS) whereby speakers were invited to review this topic in the stomach (Leo Cheng, Auckland, NZ), in the small intestine (Wim Lammers, Al Ain, UAE), the pregnant uterus (Chiara Rabotti, Eindhoven, the Netherlands) and the urological system (Fayez Hammad, Al Ain, UAE).

This symposium, in turn, led to an invitation by the journal Acta Physiologica (IF: 4.25) to dedicate a special issue on this topic. All four speakers wrote a review and this was supplemented with 3 more invited reviews (Susan Wray, Liverpool, UK; Konrad Schulze, Iowa City,
US and Marcus Drake, Bristol, UK). The special issue has meanwhile been published in the February 2015 issue of Acta Physiologica.

This year saw the departure of Wim Lammers from the department of Physiology and the College of Medicine and Health Sciences. His departure on August 31st was followed by the appointment of Dr Sandeep Subramanya on September 1st 2014. One of the aims of this succession is to continue the use of the high resolution mapping system in the lab, which is currently the only smooth muscle mapping lab in the world.

However, Dr. Subramanya also has a track record conducting research on water soluble vitamin transport in health disease. He is in the initial phase of establishing transport studies in the faculty.

Pathophysiologic mechanisms of particulate air pollution

Air pollution from road traffic is a serious health hazard, and particulates have become cause for increasing concern. The UAE has seen tremendous growth in road traffic during the last fifteen years resulting in a significant increase in vehicular air pollution. In the major cities such as Abu Dhabi, Dubai or Sharjah, vehicle emissions are currently considered as one of the greatest contributors to urban air pollution. Inhaled particulate air pollution with diameter below than 2.5 μm contributes to respiratory and cardiovascular morbidity and mortality.

Diabetes, hypertension and renal failure are considered as major health problems in the UAE and the world at large. Not only the life-threatening complications but the cost of treatment is imposing enormous and increasing strains on national health budgets. In my laboratory we are studying the mechanisms underlying the effects of air pollution on diabetes, hypertension and renal failure. My laboratory is also searching for novel novel pharmacological agents that can ameliorate or prevent the toxicity of air pollution. Nanotechnology is a broad interdisciplinary area of research, grouping physical, chemical, biological, and engineering expertise involved in manufacturing materials at a sub–100-nm scale. Whereas benefits of nanotechnology in areas as diverse as diagnosis, imaging, drug delivery, and information and communication technologies are extensively publicized, the discussion of the potential effects of the widespread use of nanotechnology in consumer and industrial products is just beginning to emerge. In my laboratory, we are investigating the biokinetics and the pulmonary and cardiovascular toxicological potential of engineered nanoparticles. Studies on the pulmonary and extrapulmonary effects of particle shapes (e.g., spheres, tubes, rods), chemistries (e.g., polystyrene, TiO₂, FeTiO₂, carbon) and surface characteristics (iron coating, charge) are being investigated. These studies involve in vivo and in vitro investigations.

Water-pipe smoking (WPS) is a major type of smoking in Middle Eastern countries and is increasing in popularity in Western countries and is perceived as relatively safe. While the adverse pulmonary and cardiovascular effects related to cigarette smoke have been extensively described, data related to the effects of WPS are very scarce. Clinical studies have reported some difficulties in studying the isolated effects of WPS because most of the smokers are also current or past cigarette smokers. Therefore, experimental studies investigating the pathophysiological mechanisms underlying the adverse health effect of WPS are critical and much needed. In my laboratory, we are assessing the respiratory and cardiovascular effects of WPS in mice.

The cancer laboratory

The overall thrust of the pancreatic cancer program is elucidating the molecular mechanisms underlying its rapid growth and invasion and in developing novel strategies to treat it. Prof. Adrian investigates various aspects of this pancreatic cancer, including growth and differentiation signaling pathways, the role of the lipoxygenase pathways in tumor growth and escape from apoptosis, the interactions between pancreatic cancer cells and the pancreatic endocrine islet tissue, as well as the reasons for the severe metabolic disturbance and cachexia that accompany this devastating disease. With his collaborators, he has developed some novel therapeutic agents, one of which recently entered clinical trials. New anticancer compounds have been isolated from marine organisms, including the sea cucumber. The mechanisms by which these agents cause cell cycle arrest and induce apoptosis in cancer
cells are currently under investigation. Recently, he has used oligonucleotide microarrays to identify novel growth-related genes from their expressed sequence tags and this has led to the discovery of a new tumor suppressor gene in the endoplasmic reticulum.

In other studies we have shown that the sea cucumber-derived triterpene glycoside, frondoside A causes marked growth inhibition of human pancreatic cancer cells, both in vitro and in vivo. Frondoside A causes apoptosis of the cancer cells via the mitochondrial pathway. We have recently shown that frondoside A has synergistic anti-cancer effects when combined with gemcitabine, the standard therapeutic agent used in this disease. Studies are underway to identify the mechanism of action of frondoside A.

Little is currently known about the mechanisms of cancer cachexia, which is a major cause of morbidity and mortality in cancer patients. In collaboration with Prof. Farouk Safi in the Department of Surgery and Dr. Joel Malik at Weill Cornell Medical College in Qatar, we have been investigating early gene expression changes in skeletal muscle from patients with cancer cachexia. The studies were performed using next generation RNA sequencing (RNAseq). Early exciting findings show marked differences in gene expression. In silico analysis using the Kyoto Encyclopedia of genes and Genomes identified grouping of genes with altered expression into different pathways (KEGG Pathways), particularly in expression of genes previously shown to be involved in various cardiomyopathies, with the ubiquitin protein degradation pathway, normal muscle contractile function, calcium signaling and metabolic pathways. These studies should shed light on the mechanisms of cachexia and pave the way for therapeutic intervention of this debilitating problem.

**Diabetic neuropathy and retinopathy**
Changes in gene expression in the diabetic eye, in sympathetic and dorsal root ganglia, corpus cavernosum and vascular tissues were investigated by low density expression array in studies funded by the Emirates Foundation and the FMHS by Professors Adrian and Morrison. Several interesting early changes in gene expression were seen, particularly in the retinas of diabetic animals. Ongoing studies include confirmation of the expression changes using fast real-time RT-PCR and immunocytochemistry for the protein products of these genes in collaboration with Dr. Eric Mensah-Brown in the Department of Anatomy. Marked changes in gene expression have been documented. For example, in the pelvic ganglia from diabetic animals the expression of vasoactive intestinal polypeptide (VIP) and neuronal nitric oxide synthase (nNOS) are dramatically reduced in diabetic animals, while expression of another transmitter, Cholecystokinin (CCK) is dramatically increased. Since VIP and nNOS play a role in penile erection and in control of bladder function, these changes are likely to explain the erectile dysfunction and for urinary retention that are seen in diabetics. Early changes in expression of several genes, including calpain 3, and several crystallins, in the retina have been seen in three different models of diabetes in the rat. Changes in expression of these genes are likely to be involved in the pathophysiology of cataracts, diabetic retinopathy and glaucoma.

**Clinical studies on lower gastrointestinal**

**hormones in diabetes and obesity**

Enteroendocrine L-cells produce glucagon gene products (GLP-1 and oxyntomodulin) as well as PYY. All are satiety factors. GLP 1 is also an incretin. The number of L-cells and hormonal contents increases distally through the gut with highest concentrations in the rectum. We have previously shown that intracolonic infusion of bile salts in humans causes secretion of L-cell hormones, triggered via TGR5 membrane receptors. Together with colleagues in the Department of Internal Medicine, Prof. Adrian has been investigating release of these lower GI hormones in obese patients with type 2 diabetes mellitus. Using a simple and well-tolerated agent, this group has shown substantial increases in circulating concentrations of GLP-1, PYY and insulin. The release of the lower GI hormones resulted in a fall in circulating glucose levels and a marked reduction in spontaneous caloric intake of a subsequent meal. This mechanism is likely to be valuable in the treatment of type 2 diabetes and obesity. Investigations focused on the improvement of diabetic status and reduction in body weight through this pathway are planned.

![Graphs showing relative expression of mRNA for VIP, neuronal NOS (NOS1), NOS2, somatostatin, and CCK in pelvic ganglia from control rats and diabetic rats 12 weeks after treatment with streptozotocin. Real-time RT-PCR confirmation of low density gene expression array data, n=8 in each group.](image)
Articles in Peer-reviewed Journals


Hamouda NN, Sydorenko V, Qureshi MA, Al Kaabi JM, Oz M, Howarth FC. (2014). Dapagliflozin reduces the amplitude of shorten-


Books, Chapters, Reviews and Editorials


Published Abstracts, Letters and Correspondence


Elzubeir M, Howarth FC. (2014). Examining medical students’ extra-curricular research activity through the lens of transformative learning theory. Association for Medical Education in Europe, Milan, Italy.


Salem KA, Sydorenko V, Qureshi MA, Oz M, Howarth FC. (2014). The Acute effects of pioglitazone on ventricular myocyte shortening and Ca2+ transport in the Goto-Kakizaki type 2 diabetic rat. The 8th Dubai International Conference for Medical Sciences, Dubai, UAE.
Proceedings, Conferences, Invited Lectures, Web Sites and Others


Awards

Prof A Nemmar Excellence in Teaching Award, College of Medicine and Health Sciences, UAEU - 2014

RESEARCH GRANTS

CMHS New Research Grants
Prof FC Howarth (PI) Effects of sodium-glucose co-transporter inhibitors on cardiac muscle contraction and Ca2+ transport in the diabetic heart.

Profs TE Adrian (PI), Farouk Safi Effects of Frondoside A on Pancreatic Cancer Stem Cells.

Prof TE Adrian (PI). Licofelone a dual LOX/COX inhibitor for cancer.

Profs TE Adrian (PI), Drs S Al Shamsi, A Al Dhanhani The function of the glomerular filtration barrier in angiotensin-induced hypertension and STZ-induced diabetes. Experimental studies

Prof M Ljubisavljevic (PI) Effects of transcranial direct current stimulation of left prefrontal cortex on motor performance in old age

CMHS Faculty Seed Grant
Dr Sandeep S (PI) Origins and Patterns of Electrical Propagation in the isolated Rat Uterus during the course of Pregnancy

UAEU / National Research Foundation Research Grant
Profs FC Howarth (PI), K Yuill, E Adeghate Electrical remodelling of the atrioventricular node in diabetes. [2011-2014]

UAEU Center-Based Interdisciplinary Research Grant Competition
Dr G Khan (PI), Prof TE Adrian, Dr S Attoub Impact of Epstein-Barr Virus Small RNA (EBER-1) on Genes Associated with Inhibition of Apoptosis. [2013-2016].

UAEU Program for Advanced Research grant
Prof FC Howarth (PI), An investigation of sinoatrial node cells electrophysiology in the diabetic rat. [2014-2016]

UAEU-Sultan Qaboos University joint collaboration Grant
Prof A Nemmar (PI), Prof BH Ali (PI) Experimental studies on the interactions between pulmonary exposure to particulate air pollution and acute renal failure: pathophysiological mechanisms and influence of protective drugs. [2012-2015]

Summer Undergraduate Research Experiences (SURE)
Prof A Nemmar (PI) Evaluation of the possible protec-
tive effects of emodin against particulate air pollution-induced impairment of vascular and cardiac homeostasis. [2014-2015]

Emirates Foundation
Profs TE Adrian (PI), JFB Morrison, A Perrin, Dr R Hennig
The Expression of Genes in Neurons and the Tissues they Innervate During Development of Neuropathy in Two Animal Models of Type 2 Diabetes and in Human Tissues [Extension - 2014],

Sheikh Hamdan Award for Medical Sciences
Profs FC Howarth (PI), TE Adrian, Dr M Oz, Prof H Raza, Mr A Qureshi, Ms K Parekh, Ms A John, Mr L Kury, Mr K Salem
Remodelling of cardiac muscle and Ca2+ transport proteins underlies the transition between normal contraction in pre-diabetic heart and abnormal contraction in genetic and diet-induced type 2 diabetic heart. [2012-2014]

Profs H Raza (PI), FC Howarth

Terry Fox Fund for Cancer Research
Profs TE Adrian (PI), F Safi, Drs Al Marzoogi, A Al Bawardi
Isolation of Human Pancreatic and Hepatic Cancer Stem Cells and Investigation of their Eradication
Profs TE Adrian (PI), JFB Morrison, A Perrin, Dr R Hennig
The Expression of Genes in Neurons and the Tissues they Innervate During Development of Neuropathy in Two Animal Models of Type 2 Diabetes and in Human Tissues [Extension - 2014].

National Research Foundation Grant
Prof M Ljubisavljevic [PI]
Long-term effects of noninvasive brain stimulation on food craving
Profs S Shehab [PI], M Ljubisavljevic
Neuropathic pain due to trauma and inflammation of the viscera

Prof YE Greish (PI), Profs TE Adrian, A Amin.
Targeting Pancreatic and Hepatic Cellular Carcinoma Stem Cells Utilizing a Novel Nanotechnology Approach. [2015-2017]

Prof A Nemmar (PI), Dr S Al-Salam, Prof BH Ali
Water-pipe (Shisha) smoking and hypertension: Pathophysiologic mechanisms and possible influence of antioxidant and anti-inflammatory drugs. [2011-2014]

Other
Joachim Leitner Foundation, Dubai
Profs TE Adrian (PI), T Rizvi
Characterization of TTMP a new tumor suppressor gene.

Al Jalilla Foundation
Profs TE Adrian (PI), E Mensah-Brown, Dr H El Salhat
Studies on the Transcriptome of Patients with Cancer Cachexia. [2015-2017].

Standing: [from left to right]
Mr P Rajagopalan, Dr Sandeep BS, Prof A Nemmar, Prof M Ljubisavljevic, Prof TE Adrian, Mr J Oommen, Mr Saeed, Mr MA Qureshi

Seated: [from left to right]
Ms P Jayaprakash, Ms Priyadarshini, Prof FC Howarth, Ms B Stephen, Ms S Beegam, Ms K Parekh.

www.cmhs.uae.ac.ae/Departments/Physiology. Tel: 7672000 / Fax: 7671966
A. Departmental Profile and Research Themes:

1. Epidemiological aspects of common mental health disorders in primary health care and community settings
   (a) Mental adjustment to cancer and its relation to Anxiety and Depression Among Oncology Patients at Tawam Hospital. Dr. O. Osman, Dr. E. Emam)

   (b) Prevalence of anxiety and depression among patients in Primary Care. (Dr. Osman, Dr. A. Shamsan, F. Almogaddam).

   (c) Affective and anxiety disorders in childhood and adolescence. (Dr. L. Amiri).

   (d) Life satisfaction among older adults in the UAE. (Dr. H. Moselhy).

   (e) The association of mental disorders with unhealthy behaviours among adults in the UAE (Dr. H. Moselhy).

   (f) Association of stress vulnerability, stress and work-related injuries in workplace settings (H Moselhy, S. Yousef).

   (g) Free time activities and behavioural disorders among UAE children (S. Yousef)

2. Personality, psychosocial and trans-cultural aspects of physical illness
   (a) Body image disturbance in outpatients undergoing bariatric surgery procedures. (Dr. O. Osman, E. Emam, F. Almogaddam).

   (b) Behavioral, social and functional morbidities among Bariatric Surgery patients in the UAE (Dr. O. T. Osman, E. Emam, F. Almogaddam, F. Torab)

   (c) Depressive disorders as a risk factor in susceptibility to coronary heart disease. (Dr. H. Moselhy, S. Yousef).

   (d) Relation of brain lesion and apathy, depression, cognition and daily function in stroke patients. (Dr. H. Moselhy, S. Yousef).

   (e) Psychiatric comorbidity among children with learning disorders.(S. Yousef)
(f) Psychosocial and environmental determinants of childhood behavioral disorders. (S. Yousef)

(g) Housemaids and behavioural disorders of UAE children (S. Yousef)

3. Cultural aspects of psychiatry

(e) A survey of Psychodermatology for Middle Eastern Dermatologists (Dr. OT OSMAN, F. Almugaddam)

4. Collaborative Research

(a) Adjustment to Mental Health problems Among Oncology Patients. Collaboration with Tawam Hospital psychiatry, Psychology and Oncology services. (Dr. E.Emam, Dr. O. Osman)

(b) Cultural Aspects of Trauma and Recovery: A Joint partnership research project with Harvard Program on Refugee Trauma (HPRT) –Harvard Medical School and UAEU Global Health Institute (Dr. O. T. Osman, Dr. L. Nasir & Dr. R. Mollica.)

(c) Drug and Alcohol Abuse in the United Arab Emirates. A joint partnership with the National Rehabilitation Institute (NRC) in Abu Dhabi (Dr. O.T. Osman, A. El Kashef, I. Blair, Dr. T.C. Awe)

(d) Pattern of heroin use among Egyptian population: positive gate way hypothesis (H Moselhy)

(e) Family profile among drug user in Mansoura, Egypt (H Moselhy)

(f) The rate of HIV among Egyptian adults drug users (H Moselhy)

(g) Suicidal behavior and attitudes of Jordan’s nursing students (S. Yousef, H Moselhy)

(h) Depression associates with factors influencing the carrier choice of Jordan’s nursing students (S. Yousef, H Moselhy)

(i) Depression and self-esteem among adolescents in UAE (S. Shah, S. Yousef)

(j) DiAlert: a prevention program for overweight first degree relatives of type 2 diabetes patients: Emirate National -Community Based Trail (Dr. Juma Alkaabi, S. Yousef).

(k) Burnout among health care workers in the emirates of Abu Dhabi: Across-sectional study (H Moselhy, S. Yousef).


(m) Internet addiction among Intern doctors in Cairo University Hospital (H Moselhy)

(n) Developing novel model for clinic-biological patterns in depression from biosignal, biochemical and genetic measures. Partnership with Khalifa University (H Moselhy, S. Yousef).

(o) Sexual dysfunctions among opioid dependents and its correlation with level of sex hormones (Moselhy)

(p) Behavioral and emotional problems among young children in Abu Dhabi Emirate, UAE (Co-Investigator; PI Al-Mekaini L) (Amiri L)

(q) Psychiatric manifestations in children with inborn errors of metabolism (IEM), (Co-Investigator, PI Al-Jasmi F) (Amiri L).

5. Postgraduate Education and Training

(a) Arab Board Curricular development, credentialing and accreditation in General Psychiatry (Dr. O. Osman).

(b) Arab Board Curricular development in child & adolescent psychiatry (Dr. O. Osman).

7. Recent translation, development and validation of psychiatric instruments for use among Arabic speaking population.

• Mini-International Neuropsychiatric Interview (MINI) (Dr. O. Osman).

8. Biological Psychiatric Research:

• Group IVA phospholipase A2: A potential marker for schizophrenia (Dr. H. Moselhy)

• Molecular genetic study of schizophrenia in Arab population (Dr. H. Moselhy)

• Blood and hair heavy metals levels among UAE children (S. Yousef).

• Association of heavy metals concentration levels with childhood developmental and behavioural disorders (S. Yousef).

• The Influence of A118G single nucleotide polymorphism of human Mu Opioid Receptor Gene and the MDR1 Gene in Egyptian patients with Tramadol Induced Seizure (H Moselhy)
Original articles in peer reviewed journals


Shaikh RB, Muttappallymyalil J,


**Published Abstracts, Letters and Correspondence**


**Proceedings, Conferences, Workshops, Invited Lectures, Web-sites and others**


Aziz, AK. (2014). Heart Failure and Depression. 4th World Heart Failure Congress, Al-Ain, UAE, 11th December.


Osman OT. (2014). How to understand and implement the Health Authority of Abu Dhabi Guidelines for Screening community Mental health patients for anxiety and depression. Oud Altsouba Family Health Centre, Al Ain, September 22.


Osman OT. (2014). Screening for Anxiety using the Generalized Anxiety Disorder Scale (GAD-7) Oud Altsouba Family Health Centre, Al Ain, October 6, 2014.


Osman OT. (2014). Coping with suicide, death and dying Cancer patients. Workshop at Alain Hospital, Al Ain, December 16.


Osman OT. (2014). Overview of Evidence Based Assessments and Therapies for Depression. Invited
Lecture in a Workshop on Psychotherapy Supervision. The Clinical Diploma in Applied Psychological Skills and Competencies in Mental Health. At the College of Medicine and Health Sciences- UAEU, November 19.


Research Grants

CMHS New Research Seed Grant
Dr L Amiri (PI)
Characteristics of suicide attempts among national UAE population

Khalifa University of Science, Technology and Research Grant
Dr Khandoker A (PI), Prof H Moselhy, Mr S Yousef
Developing novel model for clinical-biological patterns in depression from biosignal, biochemical and genetic measures [2014-2016]

UAE University Program for Advanced Research [UPAR] Dr B Ali (PI), Prof H Moselhy
Whole-Exome Sequencing and Homozygosity Mapping Analysis of Emirati Families with Multiple Schizophrenic Patients. [2014-2017]
Research Profile

All faculty members in the Department of Radiology focus on research in areas relevant to the nation’s need, i.e. imaging in oncology, evaluation and classification of genetic diseases and congenital malformations, neuro-imaging, radio contrast media (RCM) and MRI contrast media research and basic radiological research – incorporating animal studies in collaboration with CMHS basic sciences departments and departments at other UAEU colleges and units.

Prof. Ruth Langer’s main research interest is in the field of new cross-sectional imaging modalities, such as dual energy – and multi slice computed tomography (DECT, MSCT). DECT has been assessed for renal stone disease and renal stone composition in the UAE (fig. 1 a + b). The latter is different from renal stone composition in other parts of the world. Another field of interest is imaging in patients with congenital malformations and skeletal dysplasias, of greatest interest in the UAE and the entire Gulf region due to its high prevalence. Furthermore her research interest includes basic research in radio contrast media and gadolinium bound contrast agents (GBCA), the evaluation of nephrogenic systemic fibrosis (NSF), detected in patients with underlying renal disease and other disorders. Her research portfolio comprises animal studies on newly developed RCM and gadolinium bound contrast agents (GBCA), responsible for NSF in humans. She has been a member of the Oncology Research Priority Group and the Genetics Research Priority Group.

Dr. Klaus FW Neidl van Gorkom’s main areas of research include neuroimaging, head & neck-, molecular -, and cancer imaging, in accordance with particular needs of the UAE community. An ongoing project is imaging in patients after bariatric surgery in collaboration with the CMHS Department of Surgery. One of his long-term projects is the development of state-of-the-art,
Department of Radiology

high-tech neuro-imaging, like MRI spectroscopy in metabolic and genetic diseases and brain tumors, perfusion-imaging for stroke and tumors, tensor-imaging and functional MRI for behavioral diseases and tumors. Furthermore Dr. Neidl van Gorkom investigated in vitro gadolinium deposition in tissue after long-term intra-peritoneal GBCA injection in rats (fig. 2 a + b). He has been collaborating with the Neuroscience Research Priority Group and the Cancer Research Priority Group.

Dr. Hedvig Komaromy’s research interest was in the field of neuroradiology, particularly white matter changes in patients with multiple sclerosis, traumatic brain injuries, migraine, Alzheimer’s and Parkinson’s diseases. For such projects sophisticated imaging equipment must be further upgraded in the CMHS teaching hospitals for improvement of patient care. Her seed grant project was ‘multidetector trauma computed tomography – radiological findings in patients after road traffic accidents’, one of the leading causes of death in the United Arab Emirates.

A long-standing project was the implementation of new MRI tools for prognostic judgment in patients with traumatic brain injury to further develop rehabilitation of trauma victims.

**Fig. 1 a:** DECT, coronal reconstruction, left supra-vesical and intra-renal calculi: two high-level calcium-containing stones

**Fig. 1 b:** DECT, corresponding matched image at 80 kV and 140 kV for density measurement: high-level calcium containing stone

**Fig. 2 a:** Gadolinium concentrations in the skin, HD-groups were treated with 5.0 mmol/kg BW, all others with 2.5 mmol/kg BW

**Fig. 2 b:** Gadolinium concentrations in the kidneys, HD-groups were treated with 5.0 mmol/kg BW, all others with 2.5 mmol/kg BW
Articles in Peer-reviewed Journals


Published Abstracts, Letters and Correspondence


Proceedings, Conferences, Web Sites and others

Langer RD. (2014). The role of MSCT in trauma imaging. 4th International Radiology Conference, Al Ain, UAE, 2014


RESEARCH GRANTS

UAEU Seed Grant
Dr. H Komaromy [PI]
Multidetector trauma computed tomography radiological – findings in patients after road traffic accidents. Due to her resignation the grant was returned to the CMHS Research Office.
Research Profile

Faculty members in the Department have now increased from four (1999) to thirteen currently, seven of whom are UAE nationals (three being Teaching Assistants training overseas), with five previously advertised senior positions (breast/endocrine surgery, minimal access surgery, neurosurgery, orthopaedics and otorhinolaryngology) yet to be filled. All Faculty members have had Consultant privileges at Tawam Hospital and Professor Branicki, Abu Zidan and Al Mahmoud have privileges at Al Ain Hospital, Professor Branicki being the Head of the Surgical Institute (March 2013 to date).

Professor Frank Branicki
Clinical interests include the management of gastrointestinal bleeding, peptic ulcer and benign and malignant gastroduodenal disease in particular as well as acute care surgery and trauma management. Principal practice is in the management of esophago-gastric cancers. He has been an Instructor for 54 Advanced Trauma Life Support (ATLS) Courses, most as Course Director with involvement also in Advanced Trauma Care for Nurses (ATCN). These activities have generated data for presentation and publication. Collaboration with Assoc Prof Fawaz Torab led to a publication relating to peritoneal resorption capacity in an animal model of peritonitis. In addition, collaboration with Prof. Sherif Karam, Department of Anatomy, has involved experimental studies relating to gastric cancer conducted by a co-supervised Master’s student, now awarded, under supervision in Prof Karam’s laboratory. This work, funded by a research grant from the Terry Fox Foundation, has been published in two articles. Prof Branicki is Emeritus Editor of the indexed Asian Journal of Surgery and regularly reviews articles for the World Journal of Surgery, the European Journal of Surgical Oncology, etc. He also serves as the...
Chair of the Undergraduate Medical Curriculum Committee and Director of the Final Integrated Examination for undergraduates on completion of training. In June 2010 he was the recipient of the Distinguished Performance Award in the Faculty of Medicine and Health Sciences (CMHS) at UAE University, being inducted as a Fellow of the American College of Surgeons in San Francisco in October 2011. In November 2013, he acted as host for the inaugural UK overseas Joint Surgical Colleges Fellowship Examination (JSCFE) held in Al Ain and examined postgraduates for this exam in Sri Lanka in 2014. These have been professional activities in 53 countries including promulgation of ATLS to four countries which have since established their own courses (Syria, Oman, Egypt and Iran). In 2014 Prof. Branicki presented invited lectures in Abu Dhabi, Al Ain, Dubai and Ulaanbaatar (Mongolia).

Professor Farouk Safi
Prof. Farouk Safi’s clinical interests in colorectal and hepatobiliary surgery have led to presentations at national and overseas meetings. A member of the Scientific Committee for the 2nd Emirates Oncology Conference held in November 2014 his clinical practice has generated data relating to surgical interventions for hepatic, pancreatic and colorectal malignancy and management of inflammatory bowel disease. Prof Safi directed the 2nd Liver Surgery workshop hosted at CMHS in March 2012 with local and overseas invited Faculty. Liver failure after hepatectomy, atypical appearance of hepatocellular carcinoma and rare liver tumors are areas in which he has developed an interest.

Professor Fikri Abu Zidan
In 2014 Professor Fikri Abu-Zidan continued his focused research activities in the areas of trauma management, injury prevention, ‘point-of-care’ critical care ultrasound, and acute care surgery. He was effectively leading the Trauma Research Group of the CMHS till September 2013 when this transitioned to Dr Ali Jawas, Department of Surgery (CMHS). He is at present leading the CMHS Medical Education Research Group (MERGE).

Collaborative work continued with the Departments of Community Medicine (CMHS), and Departments of Surgery, Critical Care, and Orthopedics at Al Ain, and Al Rahba Hospitals. In 2014, Professor Abu-Zidan published 10 articles/reviews in international refereed Journals and gave 17 invited lectures in international conferences. At present he is studying methods of trauma training, biomechanics of injury, methods of injury prevention, and ‘point-of-care’ emergency ultrasound. He appointed Dr Hani Eid as a full time Senior Research Fellow in the Surgical Department to continue working on research stemming from the Road Traffic Collision Registry of Al-Ain City.

Professor Abu-Zidan serves at present as the Statistical Consultant for World Society of Emergency Surgery and the World Journal of Emergency Surgery and is the Statistical Editor for Hamdan Medical Journal. In 2014 Professor Abu-Zidan was invited as an International Judge for the International Major Incident Response Exercise (IMIREX) in Kuching, Sarawak, Malaysia and as an international expert in Belo Horizonte, Brazil for writing clinical guidelines for using ultrasound in trauma patients.

Professor Fayez Hammad
Prof. Fayez Hammad has clinical interests in minimally invasive surgery for renal stone disease and oncology in particular. He is the Founding Program Director for the residency training program in Urology which is currently under the auspices of HAAD (Health Authority of Abu Dhabi).

Prof. Fayez Hammad completed a study of the regional distribution and propagation of electrical activities in the isolated guinea-pig urinary
bladder in collaboration with Prof. Wim Lammers from the Department of Physiology, CMHS. This work which was funded by an Individual Research Grant from CMHS (UAE University, 2011) was published in the American Journal of Physiology. Also in collaboration with Prof. Lamers, Prof. Hammad has also conducted a project on ‘Slow wave conduction disturbances proximal and distal to ileal end-to-end anastomosis following ileocystoplasty’. Final results will be presented at the Annual meeting of the American Urological Association in New Orleans (May 2015). In the field of electrical propagation, Prof. Hammad had also recently published in Acta Physiologica 2014 a review article on “Electrical propagation in the renal pelvis, ureter and bladder”.

In collaboration with Dr. Ged Davis, University of Otago, New Zealand and Prof. Tony Wheatley, University of Galloway, Ireland, Prof. Hammad has completed a study on the effect of Bosentan on the Hemodynamic and tubular glomerular response to renal nerve stimulation following reversible unilateral ureteric obstruction in the rat, recently published recently in Physiological Research. In 2014, Prof. Hammad, analyzed all the available published data related to the Urology Publications from the United Arab Emirates. This work with the lessons learned was published recently in BMC Res Notes.

In collaboration with Dr Hasan Elbiss, Department of Obstetrics and Gynaecology, Prof. Hammad has submitted for publication a study related to the incidence of prolapse in UAE women. With Dr Omran Bakoush, Department of Internal Medicine, CMHS, Prof. Hammad has completed a major study on the effect of diabetes mellitus on the recovery of kidney function following ureteric obstruction. This study involves measuring renal function serially up to 30 days following reversible 24-hr unilateral ureteric obstruction in normal and diabetic rats. In addition to hemodynamic and tubular renal functions, the effect of both diabetes mellitus and ureteric obstruction on glomerular permeability were investigated.

Ongoing laboratory studies in the Department of Surgery Research Lab include the following projects rat models of ischemia-reperfusion injury a) renoprotective effects of aliskiren, b) effect of Alda-1 on renal function, c) effect of thymoquinone on the renal function and d) protective effects of Caryophyllene against renal dysfunction. All the experimental studies are performed in collaboration with Dr. Loay Lubbad, Research Assistant in the Department of Surgery.

Associate Professor Fawaz Torab
Associate Professor Fawaz Torab has been the Chair of the Al Ain Medical District (AAMD) Human Research Ethics Committee for many years. This Committee includes members from Tawam and Al Ain Hospitals in addition to Primary Health Care, Preventive Medicine, Zayed Military Hospital, Al Noor Hospital and Oasis Hospital. All research projects performed by human investigators or in a Health institution in AAMD are reviewed and approved by this Committee. A submission seeking renewal of acceptance with the Federal Wide Assurance authorities in the USA was successful. This will facilitate any research project carried out in collaboration with researchers in the USA. He is the Chair of the Human Research Ethics Committee which will cover, in addition to the above mentioned health institutions, all research carried out in humans in the UAEU. Dr Torab is also a member of the Research Ethics Board of UAEU.

Dr Torab is the ‘Founder’ and ‘President’ of the Obesity and Metabolic Surgery Interest Group in the UAE (OMSIG). This group was accredited in 2009 through the International Federation of Surgery for Obesity (IFSO) and the UAE has now
become a member of this prestigious federation. The team of OMSIG has won the bid to host the world conference of IFSO in 2018 in Dubai. In 2013, Dr. Fawaz was a founding member of the Gulf Obesity Surgery Society and was elected as General Secretary, in December 2014 he became Vice President. He is also the representative of the UAE to the Mediterranean and Middle East Endoscopic Surgery Society (MMESA) and was selected as President of MMESA until 2016. He was elected in 2013 as the President of the Emirates Society of the Laparoscopic-Endoscopic Surgery (ESLES) which functions under the umbrella of the Emirates Medical Association with 82 members throughout the UAE. He was the President of a successful annual ESLES conference was held in October 2014 in Al Ain under the patronage of HE Sheikh Hamdan bin Mubarak Al-Nahayan, Minister for Higher Education and Scientific Research and Chancellor of UAEU. ESLES has won the bid to organize the annual conference of MMESA which will be held in November 2015 in Dubai.

Assoc Prof Torab has been a member of the Scientific Committee of Sheikh Hamdan Awards since 2006 and a member of the Higher Committee of Research, Ministry of Health, since 2010. He was awarded by the Undersecretary of the Ministry of Health, UAE in May 2013 in appreciation for his contribution for the establishment of bariatric surgery in the UAE.

Assoc Prof Fawaz Torab's clinical interests are in acute care surgery, particularly pancreatitis and abdominal sepsis. There is a principal interest in laparoscopic procedures (bariatric surgery) for morbidly obese patients, whose co-morbidities affecting life style and life span can be ameliorated by surgical intervention. A prospectively collected large database relating to surgical procedures performed is accruing and Assoc Prof Torab has pioneered, in the UAE, the use of single incision laparoscopic surgery (SILS) for various procedures.

He has also continued oversight of basic and advanced laparoscopic surgical workshops and courses in the UAE and elsewhere for Residents in training and more experienced surgeons. Research interests in collaboration with departmental, basic sciences and hospital colleagues at Al Ain and Tawam Hospital include clinical outcomes of primary and revisional bariatric surgery and single port procedures, experimental models of peritoneal sepsis, experimental studies of treatment of breast cancer. In 2014 he has made significant contributions with presentations nationally in Al Ain, Abu Dhabi, Dubai and Fujairah and internationally in Turkey, Egypt and Austria. For his contributions to laparoscopic surgery in the country and his collaboration with other regional societies, he was awarded the Honorary Minimal Invasive Surgery Fellowship of the Indian Society of Minimal Invasive Surgery in November 2014.

Since 2005, he has conducted a prospective randomized study of open versus laparoscopic approach for repair of perforated duodenal ulcers with serial analysis of proinflammatory mediators. In collaboration with Prof Basel Ramadi, Chair of Medical Microbiology and Immunology (CMHS), and oncologists at Tawam Hospital, a patent has been submitted in the USA, through the UAEU for a potential new treatment strategy with studies of the effect of Manuka honey, alone or in combination with standard chemotherapy, on inhibition of proliferation and viability of an estrogen receptor-negative breast cancer cell line. Assoc Prof Torab was appointed Associate Editor of the Journal of Minimally Invasive Surgical Science in 2012.

Assistant Professor Ali Jawas
Assistant Professor Ali Jawas successfully completed residency training in General Surgery at the University of Toronto in 2004 and was appointed Assistant Professor in December 2004. Following his basic training in Vascular Surgery he has also completed a Fellowship in Toronto and rejoined us in Al Ain in October 2005. He is actively involved in the provision of vascular services in Tawam Hospital. Previously the Program Director for our Integrated General Surgery Residency Training Program Asst Prof Jawas was appointed by the Arab Board for Medical Specialization, Damascus, Syria as their representative for General Surgery training in the United Arab Emirates. He has been a member of the Evaluation Committee for surgical training programs in different emirates. Dr. Jawas organized written examinations for the Board (June, November 2014) at CMHS in General Surgery, Orthopedics, Urology and Neurosurgery, in addition he is involved in clinical examinations. He is an Executive Board Member of the Scientific
Department of Surgery

and Organizing Committee of a Hemostasis and Thrombosis Congress to take place in Dubai in 2015. Also a member of the Executive Committee of the Gulf Vascular Surgery Society Dr Jawas was involved in the preparations for the Bahrain International Vascular Symposium taking place in 2015. A member of the General Surgery Residency Program Advisory Committee (ACGME accredited program) he is currently the Head of Trauma Research Priority Group at CMHS. He acts as a reviewer for malpractice and medical liability cases for HAAD and Dubai Health Authority.

Main research interests are related to the study of the management of peripheral arterial disease in Gulf countries. An Executive Board member in the Vascular Society Dr Jawas contributed to writing the “Guidelines for the Management of Peripheral Arterial Disease in the GCC countries”. In 2013 he made two presentations at Cardiovascular Conferences in Oman and Turkey as well as participating in meetings in the USA.

Another compelling area of interest is vascular trauma. As an Instructor he has actively participated in teaching many Advanced Trauma Life Support (ATLS) Courses of the American College of Surgeons. Publication of the first article on the epidemiology of vascular trauma following road traffic collisions in the UAE was followed by articles on “Management of war related vascular injuries: experience from the Gulf War” and a “Management algorithm for blunt renal artery occlusion in multiple trauma patients”. In 2013, following election, he accepted the Headship of the Trauma Group at CMHS, UAE.

**Assistant Professor Tahra AlMahmoud**
Promoted to Associate Professor in June 2013, Dr Al Mahmoud completed residency training in Ophthalmology at McGill University, Montreal. Fellowship training in Ottawa was concerned with diseases of the anterior chamber of the eye, and a fellowship in Uveitis again at McGill was undertaken. Together with colleagues in Canada, she is involved in collaborative clinical research comparing clinical outcomes of various refractive procedures such as Advanced Corneal Surface Ablation and Femtosecond Thin-Flap LASIK. In addition, Dr AlMahmoud is planning to continue her collaborations with the Department of Ophthalmology at Al Ain and Tawam Hospital conducting ocular trauma research. Al Mahmoud has published ‘A Code of conduct and professionalism for residents in training.’

**Assistant Professor Saeed Al Thani**
Assistant Professor Saeed Al Thani completed Residency Training in Orthopedics at the University of Toronto and was appointed Assistant Professor in July 2004. Following Fellowship training in ‘sports injuries, hand and joint replacement surgery’ at the same institution in Toronto he rejoined the CMHS in Al Ain in January 2006 and has been able to establish a busy Sports Injuries clinic and surgical practice in Tawam Hospital.

Dr Al Thani is President of the Emirates Orthopedic Society, Chairperson UAE AO Chapter, and Vice President of the National Sports Medicine Committee. He is a member of World Orthopedic Alliance and has been a member of the Scientific Committee of the Combined 33rd SICOT and 17th PanArab Orthopaedic Association meeting, hosting an Orthopaedic World Conference. Assist Prof Al Thani also holds membership of the Arab Board Examination/Licensing Committee and has been actively involved in teaching postgraduate orthopaedic surgery courses in Oman, the UAE and Switzerland.

Assist. Prof Al Thani has interests in platelet rich plasma in tendinopathy management, functional outcome studies following rotator cuff repair and cruciate ligament reconstruction. He is also involved in establishing a National Total Joint Replacement Registry.

**Assistant Professor Ali Abbas Al Beloushi**
Assistant Professor Ali Al Belooshi completed his residency training in Toronto (Orthopaedic Surgery) having been appointed as an Assistant Professor in 2007. He undertook an extended period of subspecialty Fellowship training in lower limb arthroplasty including revisional surgery and is actively participating in elective and emergency clinical services at Tawam Hospital. Since 2009 he has been the Coordinator for the Junior Surgical Clerkship relinquishing this responsibility to Asst Professor Ali Jawas in June 2014.

He participated with two presentations in the International Congress for Joint Reconstruction (ICJR) meeting 2013 in Dubai. Chairperson for the hip and knee arthroplasty section of the
2nd Emirates International Orthopedic Congress held in Dubai there was oversight of the scientific program with more than 70 local and international speakers. Asst. Prof Al Belooshi has completed an MBA in post and is also the Chair of the Malpractice Committee in Orthopedic Surgery for the Dubai Health Care Authority and Head of the Orthopaedic Malpractice Committee for the Health Authority Abu Dhabi (HAAD).

**Assistant Professor Zuhair Al Fardan**

Assistant Professor Zuhair Al-Fardan completed Residency training in Plastic and Reconstruction Surgery in Toronto, and, subsequently, Breast Reconstruction Fellowship training including experience in microvascular, surgery. Appointed Assistant Professor he returned to the CMHS in August 2008 and is actively participating in clinical services at Tawam Hospital. Dr Al-Fardan’s main interest areas are wound healing and clinical outcomes of reconstructive surgery. His principal clinical practice involves breast reconstruction and hand surgery. Dr Al-Fardan is a co-founder and academic officer for the ‘Hand Surgery Club, UAE’ and co-founder of the ‘Abu Dhabi Plastic Surgery Club’. Asst. Prof Al Fardan is also an active Faculty member of AO-trauma Middle East which conducts hand surgery workshops countrywide, and an active member of the Canadian Society of Plastic Surgery. He has also conducted workshops for injectable fillers in the GCC countries. Dr Al-Fardan is a member of Organizing and Scientific Committees and Invited Faculty for Dubai Derma (2012) and Abu-Dhabi Dermatology and Aesthetic Medicine (2013) conferences.

**Dr. Mohamad Al Ali**

Dr. Mohamad Al Ali, appointed Teaching Assistant in the Department, undertook a short term period of training in Toronto for three months in 2007 and has completed residency training in Otorhinolaryngology at the Sahlgrenasks University Hospital, Sweden, where he is now undertaking Fellowship training in Rhinology.

**Dr Essa El Eassa**

Dr Essa showed great interest in learning research methodology under the direct supervision and mentoring of Professor Fikri Abu-Zidan. He has finished two research projects in trauma in a very short period that ended with two publications in high impact prestigious journals. One was published in World Journal of Surgery and the other in the Journal of Cardiothoracic Surgery. Furthermore, Dr Essa has recently finished his MBA in the field of “Change Management” which hopefully will encourage him to be involved in developing a course on Trauma Clinical leadership which is an important area for future trauma surgeons. Dr. Eassa is undertaking Residency training in General Surgery in Winnipeg (Canada).

A senior medical laboratory specialist, Mr Loay Lubbad took up appointment in the Department in May 2008 and is much involved, in particular, with experimental studies of smooth muscle function conducted by Prof. Hammad. Mr. Abdulla Jamal has been working for some years as a Departmental Secretary and has facilitated teaching activities in the both Clerkships, workshops and various CME activities with dedicated service to a high standard, with assistance from Mr. Aboobacker in office duties. Miss Zahra Al Nasser was approved as Departmental Secretary in April 2013 having acquired experience at Tawam Hospital and has taken on greater responsibilities with dedication and enthusiasm since the departure of Mr. Jamal in June 2014.

**Skills and Procedural Training**

In April 2004 the Department hosted inaugural back to back Provider and Instructor courses in the UAE for the Advanced Trauma Life Support (ATLS) with four invited Faculty and staff from Canada and the USA. These courses are training Emirati graduates and others in trauma care and will help reduce the burden of permanent disabilities and mortality from motor vehicle crashes. In March 2008 the CMHS was the site for inauguration of the Advanced Trauma Provider Course for Nurses (ATCN) in the UAE. These activities run in concert with ATLS courses are made possible with the enthusiastic participation of Instructors from Al Ain and Tawam Hospitals. The Department has hosted more than 40
With the support of Faculty Administration it was possible to establish a Clinical Skills and Procedural Training Centre which is a multidisciplinary venture to foster training for undergraduates and particularly Residents in a variety of clinical disciplines. Assoc Prof Fawaz Torab has been the Director of the Center with basic and advanced laparoscopic courses planned in collaboration with industry who have strongly supported the project financially. Both FAST and ATLS courses are accommodated as need be, and also courses in laparoscopic gynecological surgery and fetal ultrasonography. Ultrasound trainers include cardiologists, nephrologists, obstetrician/gynecologists, radiologists and surgeons. This initiative has been made possible with donations from instrument and equipment manufacturers. A number of Interns and Residents in the General Surgery training program have successfully completed ATLS, FAST and laparoscopic training courses.

Original Peer-Reviewed Scientific Articles


Hefny AF, Abu-Zidan FM. (2014). Comment on: “Marek et al. CT scan-detected pneumoperitoneum:...


Published Abstracts, Letters and Correspondence


Conference Invited Lectures and Presentations

Abu Zidan FM. (2014). Global Vision for the Improvement of Trauma Management (Key note lecture). 3rd Global Emergency Medicine Conference, Mohammad Bin Rashid Academic Medical Center, UAE.


Abu-Zidan FM. (2014). Data analysis. "Establishing a Trauma Registry" Workshop. 10th Middle East Trauma Conference, Dubai, UAE.

Abu-Zidan FM. (2014). Global vision in the management of multiple trauma patients. 10th Middle East Trauma Conference, Dubai, UAE.


Abu-Zidan FM. (2014). Predicting injury severity in multiple trauma patients: A challenging task. 3rd Global Emergency Medicine Conference, Mohammad Bin Rashid Academic Medical Center, Dubai, UAE.


Abu-Zidan FM. (2014). The RUSH protocol in shock. 3rd Global Emergency Medicine Conference, Mohammad Bin Rashid Academic Medical Center, Dubai, UAE.
Abu-Zidan FM. (2014). The RUSH protocol in shock. 10th Middle East Trauma Conference, Dubai, UAE.

Abu-Zidan FM. (2014). Trauma Registries: An essential part of trauma systems. “Establishing a Trauma Registry” Workshop. 10th Middle East Trauma Conference, Dubai, UAE.

Abu-Zidan FM. (2014). Trauma research in UAE: Lessons learned. 3rd Global Emergency Medicine Conference, Mohammad Bin Rashid Academic Medical Center, Dubai, UAE.


Branicki F, Eid HO, Hefny AF, Bashir MO Abu-Zidan FM. (2014). Camel-related injuries. 10th Middle East Trauma Conference. Dubai, UAE.

Branicki FJ. (2014). Emergency Surgery: requirements for efficient delivery. Efficiency in Surgical Operating Theatre Management, Hospital Build and Infrastructure Middle East: Exhibition and Congress, Dubai, UAE.


Branicki FJ. Gastric Surgery in 2014. 3rd Emirates Oncology conference and 14th Pan Arab Cancer Congress. Abu Dhabi, UAE.

Branicki FJ. Subspecialty surgical practice: a case for risk reduction. Ist Al Ain Hospital Mortality and Morbidity Conference. Al Ain, UAE.

Eid HO, Abu Zidan FM. (2014). How to establish a trauma registry: Practical advice. “Establishing a Trauma Registry” Workshop. 10th Middle East Trauma Conference, Dubai, UAE.

Eid HO, Abu Zidan FM. (2014). Trauma Severity Scores. “Establishing a Trauma Registry” Workshop. 10th Middle East Trauma Conference, Dubai, UAE.


Hammad FT. (2014). Case Discussion and Questions in Uro-Oncology. 3rd Emirates international Urological Conference and the 1st Societe Internationale D’Urologie Regional Conference in collaboration with the European Association of Urology and the Arab Association of Urology, Dubai, UAE.

Hammad FT. (2014). Catheter Associated Infections; 2nd Surgical Workshop, Al Noor Hospital, Al Ain, UAE.


Torab FC. (2014). Interactive Panel Discussion: Revision surgery following failed Gastric Band, Sleeve, and RYGB. 13th Middle East Surgery Conference, Dubai, UAE.

11th International Congress and Workshop of the Egyptian Society of Laparoscopic Surgery (ESLS). Hurghada, Egypt.


RESEARCH GRANTS

CMHS Research Grant
Dr M Grivna (PI), Prof FM Abu-Zidan, et al

Prof FT Hammad (PI), Mr L Lubbad
The effect of Alda-1 on the kidney functions following renal ischemia-reperfusion injury in the rat

Sheikh Hamdan Award for Medical Sciences
Dr FC Torab (PI)
Vitamin Supplementation Post Bariatric Surgery: A Randomised Controlled Trial of Sleeve Gastrectomy.

www.cmhs.uaeu.ac.ae/DepartmentsSurgery Tel: 7672000 / Fax: 7672067
Research Priority Groups

Diabetes and Cardiovascular
Genetics and Development
Immunology and Immunoregulation
Neurosciences
Oncology
Trauma
Introduction
The Diabetes and Cardiovascular Research Priority Group (DCRG) was established in the autumn of 2001 alongside other research priority groups. The DCRG works closely with the Al Ain Diabetes Research Group, Emirates Diabetes Society and the Emirates Endocrine Society.

Aims of the Group
- Facilitate diabetes and cardiovascular research in the College of Medicine and Health Sciences and the UAEU at large.
- Enhance basic and clinical research capabilities of established diabetes investigators.
- Act as a channel for research funding.
- Act as a resource for new faculty members and for those who may want to start research in diabetes/cardiovascular diseases.
- Present scientific research at national and international scientific conferences.
- Publish scientific research in national and international scientific journals.
- Cooperate and liaise with any local, national or international agency with similar research interests.
- Train post-doctoral, doctoral, masters and bachelors degree students.
- Act as a resource unit on diabetes mellitus and cardiovascular diseases.

Activities

19th Annual Workshop on Diabetes Mellitus and Endocrine disorders
The DCRG organized a one-day Conference on “Diabetes Mellitus and Endocrine Disorders” on Saturday, 5th of April 2014 at the College of Medicine & Health Sciences, United Arab Emirates University. The Conference attracted more than 350 delegates from across the UAE and abroad. In addition to the local delegates, we had speakers from abroad including, Dr. Ebaa Al-Ozairi, Assistant Professor and Consultant Endocrinologist, Faculty of Medicine, Kuwait University, Kuwait.

The Symposium covered different areas of diabetes including:

Core members:
Dr. Juma Al Kaabi (Chair)
Prof. Abdu Adem
Prof. Chris Howarth
Dr. Syed Mehboob Ali Shah
Prof. Thomas Adrian
Prof. M Agarwal
Dr. Fatma Al Maskari
Prof. El-Sadig Kazzam
Prof. Farouk Safi
Dr. Rajesh Mohanraj
Prof. Ernest Adeghate

In addition to the core members, group membership includes more than 45 other faculty members from within the CMHS.
• Overview of the management of Type 2 diabetes by Prof. Hussein Saadi, Consultant Endocrinologist, Chief of the Department of Medicine, Cleveland Clinic, Abu Dhabi.
• Overview of the Management of Obesity by Dr Ebaa Al Ozairi, Assistant Professor at Kuwait University and Consultant in Diabetes and Endocrinology
• Thyroid disorders and pregnancy by Dr. Ali Khalil, Consultant Endocrinologist, Imperial College Diabetes Centre, Abu Dhabi
• Diabetes in pregnancy by Dr. Bachar Afandi, Consultant Endocrinologist, Tawam Hospital, Al Ain
• Overview of the diabetic foot by Dr. Juma Al Kaabi, Associate Professor of Medicine & Consultant Endocrinologist, CMHS, Al Ain

Workshops on the use of insulin pumps were also conducted to familiarize nursing staff with this new technology.

Themes of research conducted by the group include the following:
• Neuropeptides and neurotransmitters in diabetes mellitus
• Trace elements in diabetes mellitus
• Immunology of diabetes mellitus
• Clinical pharmacology of diabetes mellitus
• Insulin and glucagon secretion in health and disease
• Effects of diabetes mellitus on cardiac muscle function
• Epidemiology of diabetes mellitus
• Diabetic complications (nephropathy, neuropathy and angiopathy)
• Lipids in human and experimental diabetes
• Metabolic syndrome and obesity
• Pancreas transplantation
• Hypertension
• Gestational diabetes

Grants obtained by members
• Exploring the Influence of expatriate domestic Workers on the physical, emotional and behavioural well-being of Emirati children-Federal Demographic Council
• The effect of betatophin on the metabolic parameters of diabetic rats. UAEU Grant
• Effects of exercise training on heart function in the Goto-Kakizaki type 2 diabetic rat*-UAE University Interdisciplinary Grant.
• Alterations in calcium signalling and cardiac muscle proteins underlie contractile dysfunction in Zucker diabetic fatty rat heart”. CMHS Project Grant
• Remodeling of Ca2+ transport proteins underlies cardiac muscle dysfunction in the Zucker diabetic fatty rat Sheikh Hamdan Bin Rashid Al Makhtoum Award for Medical Sciences Grant
• Localization of apolipoprotein A-1 and its effect in the pancreas of a rodent model of type 2 diabetes-CMHS Research Grant
• The Role of TNF-α in experimental autoimmune neuritis: a model of inflammatory demyelinating polyneuropathy-CMHS Research Grant
• Effect of ghrelin on the metabolic parameters of diabetic rats
• Search for Novel Anti-diabetic drug candidates Emirates Foundation Grant
• Several UPAR and NRF Grants were also awarded

Collaboration with local and international institutions

Local
Al Ain Diabetes Research Group
Emirates Diabetes Society (Emirates Medical Association)
Tawam and Jimi Hospitals, Al Ain, UAE
Neuroscience Research Group, FMHS, UAEU
Faculty of Science, UAEU
Faculty of Engineering, UAEU

International
University of Manchester, UK
James Cook University, Queensland, Australia
University of Bristol, UK
University of Leeds, UK
University of Central Lancashire, UK
Karolinska Institut, Sweden
Semmelweis University, Hungary
University of Pecs, Hungary
University of Nebraska Medical Centre, Omaha, USA

Publications
Members of the DCRG published more than 24 diabetes-related papers in top quality peer-reviewed journals including but not limited to Heart Failure Reviews, Medicinal Chemistry, Cell & Tissue Research, Journal of Endocrinology, Open Medicinal Chemistry Journal, Molecular and Cellular Biochemistry, Experimental
Physiology, PLoS One, Journal of Obstetrics and Gynecologic. The cumulative impact factor of these journals exceeded 36 (See Departments of Anatomy, Biochemistry, Community Medicine, Pathology, Pharmacology, Physiology, Psychiatry, Internal Medicine and Medical Microbiology for relevant publications).

Electron micrographs showing the glomerulus of normal (A) and diabetic (B) rats, 4 months after the onset of diabetes mellitus. Note that the basement membrane (arrow) of the glomerular capillaries of diabetic rats is thicker than that of control. The foot processes of podocytes (p) are fewer in the glomerulus of diabetic rats when compared to that of normal. Magnification: X7000.
Mission of the Group
Consanguinous marriages are prevalent in the UAE population and therefore recessively inherited single gene disorders occur more frequently in the UAE than in other populations with over 200 recessive disorders having been reported so far. In addition, the incidence of multifactorial diseases such as type 2 diabetes, obesity, hypertension, certain cancers, neurodegenerative and cardiovascular diseases has been steadily rising in the UAE over the past few decades. This is mainly due to rapid socioeconomic growth and a significant rise in life expectancy as a result of improved health care systems. The rapid increase in the prevalence of multifactorial diseases also suggests genetic predisposition to those diseases revealed by rapid changes in lifestyle including diet. The mission of the Genetics and Development Research Priority Group is to provide the highest quality research into the basis of genetic diseases prevalent in the UAE and high quality health care and education. In support of its mission, the group strives to (1) define the extent of genetic, developmental and multifactorial disorders in the country; (2) be the leading source of research into the causes and pathogenesis of these disorders and (3) seek new approaches to diagnosis, treatment and prevention of such disorders. Our mission is also to educate the next generation of health care leaders by providing continuing professional development to physicians with up-to-date courses and to educate the public by providing information on different genetic disorders and approaches to prevention.

Research Interests of Members of the Group
Principal investigators of the Genetics and Development Research Priority Group are affiliated to different departments within the College of Medicine and Health Sciences. The current membership of the group includes:

Prof. Bassam R. Ali (Pathology Department); Professor of Molecular Genetics and Leader of the Genetics and Development Research Group
Research interests: 1) Elucidation of the molecular and cellular defects underlying genetic disorders in the UAE and Arab populations; 2) Exploring novel therapeutic targets for genetic disorders and 3) Defining alleles and genotypes of genes underlying drug metabolism among Emiratis.
Prof. Yousef M. Abdulrazzaq (Paediatrics Department); Professor Emeritus.
Research interests: Neonatology, birth defects, metabolic disorders and asthma.

Prof. Thomas E. Adrian (Physiology Department); Professor.
Research interests: 1) Identification of diabetes susceptibility genes in UAE nationals; 2) Identification of genes involved in skeletal muscle cancer cachexia; 3) Characterization of novel genes involved with cancer growth and invasion

Prof. Lihadh Al-Gazali (Paediatrics Department); Professor of Clinical Genetics and Senior Consultant in Clinical Genetics.
Research interests: Delineation of the clinical and molecular aspects of congenital malformations in the UAE.

Dr. Fatima Al-Jasmi (Paediatrics Department) Associate Professor.
Research interest: Clinical, molecular and therapeutic aspects of inborn errors of metabolism.

Dr. Ahmad Hassan Al-Marzoouqi (Biochemistry Department); Associate Professor and the Director of Research and Sponsored Projects at the Office of the Deputy Vice Chancellor for Research and Graduate Studies.
Research interest: Protein Complexes that Modify Chromatin for Transcription Regulation

Dr. Suhail Al-Salam (Pathology Department); Associate Professor.
Research interests: Molecular pathology of cancers and cardiovascular conditions in UAE

Dr. Samir Attoub (Pharmacology and Therapeutics Department); Associate Professor.
Research interest: Cellular signaling in cancers.

Prof. Keith Bagnall (Anatomy Department); Professor.
Research Interest: The aetiology of adolescent idiopathic scoliosis

Prof. Salim Bastaki (Pharmacology and Therapeutics Department); Professor.
Research interests: 1) Oxidative phenotyping and genotyping UAE nationals using antidepressant drugs 2) Teratogenic effects of antiepileptic drugs

Dr. Srdjan Denic (Internal Medicine Department); Associate Professor.
Research interests: (1) Effect of human inbreeding on selection of alpha-thalassemia (2) The genetics of neutropenia

Prof. Omar M. El-Agnaf (Biochemistry Department); Professor.
Research interest: The role of protein misfolding and aggregation in neurodegenerative diseases

Dr. Eyad Elkord (Medical Microbiology and Immunology Department); Assistant Professor.
Research interest: Cancer Immunology and Immunotherapy with special interest in the role and function of immunosuppressive cells (T regulatory cells and myeloid-derived suppressor cells) in cancer.

Dr. Starling Emerald (Anatomy Department); Assistant Professor
Research interest: Epigenetics in metabolic syndrome and obesity

Prof. Sehamuddin Galadari (Biochemistry Department); Professor of Biochemistry and Molecular Cell Biology, Advisor to the DVC for Academic Affairs.
Research interest: Cellular signaling and human disease

Prof. Ruth Langer (Radiology Department); Professor and Chair
Research interest: Imaging of patients with congenital syndromes and malformations

Dr. Hisham Mirghani (Obs/Gyne Department); Associate Professor and Chair
Research interest: Prenatal diagnosis and fetal medicine

Prof. Hassib Narchi (Paediatrics Department); Professor.
Research interests: Causes and mechanisms of common diseases in Middle Eastern populations

Prof. Tahir A. Rizvi (Medical Microbiology and Immunology Department); Professor.
Research interest: Retroviral/lentiviral vectors for human gene therapy.

Dr. Sami Shaban (Medical Education); Associate Professor.
Research Interests: Biomedical informatics, health registries, e-learning, database-driven website design and relational databases

Prof. Abdul-Kader Souid (Paediatrics Department); Professor and Chair
Research Interests: 1) Analytical biochemistry; 2) Investigating effects of drugs and toxins on cellular bioenergetics and mitochondrial function

Dr. Jehan Suleiman (Paediatrics Department); Assistant Professor and Paediatric Neurologist.
Research Interests: 1) Paediatric Encephalitis in the UAE; 2) Bone health and vitamin D levels in children on chronic use of antiepileptic drugs in UAE
Publications and Grants
Please refer to the list of publications and grants for individual members of the group in their respective departments.

Collaborations of the group members with UAE, regional and international organizations

Local collaborations
- Ministry of Health
- School Health Authorities
- Sheikh Hamdan Awards for Medical Sciences
- Center for Arab Genomic Studies
- Central Veterinary Research Laboratory

Regional collaborations
- Sultan Qaboos University, Muscat, Sultanate of Oman
- King Faisal Specialist Hospital and Research Center, Saudi Arabia
- Weill Cornell Medical College, Doha, Qatar

International collaborations
- International Clearing House for Birth Defect Monitoring System [member]
- Harvard University, USA
- University of California, San Diego
- Cambridge University, UK
- Birmingham University, UK
- University of Salford, UK
- University of Manchester, UK
- Imperial College London, UK
- University College London Medical School, UK
- National Human Genome Research Institute
- National Institute of Health, Bethesda, USA
- Institute of Human Genetics, Erlangen, Germany
- Mount Sinai School of Medicine, New York, USA
- Telethon Institute of Genetics and Medicine Naples, Italy
- UT Southwestern Medical Center at Dallas, USA
- Institute fur Medizinische Genetik, Berlin, Germany
- Cincinnati Children’s Hospital, OH, USA
- University of Ottawa, Canada
- Medical University of South Carolina, Charleston, South Carolina

PhD Program
Several members of the group are involved in postgraduate studies teaching and students’ supervision. Prospective PhD and MSc students are encouraged to contact the above research group leaders in advance. Some PhD scholarships and fellowships are available to prospective students.

The major aim of the Immunoregulation and Infection Research Priority Group is to promote basic and clinical research in the fields of immunology, microbiology, and related disciplines. Through its wide membership encompassing investigators from a diverse number of departments in the College of Medicine and Health Sciences and affiliated hospitals, the Group aims to facilitate interdepartmental collaborations in basic and clinical research related to immunological disorders, infectious diseases, and microbial pathogens.

The group also undertakes sponsorship of international and regional visitors and speakers to CMHS and periodically becomes responsible for organizing international medical scientific conferences. In 2014 the group hosted the following research seminars:

5 February, 2014 “Interplay of the Cytokines, IFN-γ and IL-17 in Experimental Diabetes” by Professor Eric Mensah-Brown, Department of Anatomy, CMHS, UAEU.

18 March, 2014 “Middle East respiratory syndrome coronavirus - The story from the UAE” by Dr. Stefan Weber, consultant microbiologist, Head of Serology and Molecular Diagnostic Service, Sheikh Khalifa Medical City, Abu Dhabi.

22 April, 2014 “Immunotherapy of Cancer” by Dr. Eyad Elkord, Department of Medical Microbiology and Immunology, CMHS, UAEU.

17 June, 2014 “Viral Etiology of Human Breast Cancer” by Dr. Farah Mustafa, Department of Biochemistry, CMHS, UAEU.

15 September, 2014 “Tropical Medicine and Parasitology on the Arabian Peninsula” by Prof. Eskild Petersen, Professor in Tropical Medicine and Parasitology, Institute of Clinical Medicine, Faculty of Health Sciences, Aarhus University, Denmark.

27 October, 2014 “Neuro-immune interactions in the control of experimental diabetes” by Dr. Maria Cabezudo, Department of Biochemistry, CMHS, UAEU.

All the above events were well attended not only by the faculty

Group Leader:
Dr. Agnes Sonnevend

Core Members:
Professor Basel al-Ramadi
Professor Eric Mensah-Brown
Professor Tahir Rizvi
Professor Tibor Pal
DR. Adri Prinsloo
Dr. Ahmed Al Qahtani
Dr. Ahmed Deemas Al Suwaidi
Dr. Eyad Elkord
Dr. Farah Mustafa
Dr. Fawaz Torab
Dr. Gulfaraz Khan
Dr. Maria Cabezudo
Dr. Maryam Al-Shamsi
Dr. Mohammed Al Houqani
Dr. Suhail A Al-Salam
Dr. Suleiman Al Hammadi
members but also by postdoctoral trainees, graduate students, undergraduate medical students and research assistants.

**Original publications by IIRPG members:**
 Altogether, members of the group published 31 PubMed listed publications in 2014. A detailed list of publications of each IIRPG member can be found under their respective CMHS departments (refer to departmental reports as below):

**Department of Microbiology and Immunology**
Professor Basel al-Ramadi  
Professor Tahir Rizvi  
Professor Tibor Pal  
Dr. Agnes Sonnevend  
Dr. Ahmed Al Qahtani  
Dr. Eyad Elkord  
Dr. Gulfaraz Khan  
Dr. Maryam Al-Shamsi

**Department of Biochemistry**
Dr. Maria Cabezudo  
Dr. Farah Mustafa

**Department of Anatomy**
Professor Eric Mensah-Brown

**Department of Pathology**
Dr. Suhail A Al-Salam

**Department of Pediatrics**
Dr. Suleiman Al Hammadi  
Dr. Ahmed Deemas al Suwaidi

**Department of Internal Medicine**
Dr. Mohammed Al Houqani

**Department of Family Medicine**
Dr. Adri Prinsloo
Neuroscience Research Group

Neuroscience Research Priority Group for 2014
The UAE University Neuroscience Group was officially formed in 2006 by a Decree from the Vice Chancellor of the UAE University.

The group consists of basic scientists and clinicians with a common interest in the nervous system. The primary goal of the group is to strengthen collaborative research ties between its members and promote neuroscience research in the UAE and the region. The group develops educational programs at the UAE University that lead to higher degrees in Neuroscience, organizes seminars, congresses and workshops, and participates in scientific activities of other groups in the field of neuroscience. Moreover, the group develops educational programs, provides professional development activities, information and educational resources for neuroscientists at all stages of their careers in the UAE and the region.

Major Achievements for 2014
In the year 2014, the members of the group have presented several abstracts in national and international meetings and a number of publications have resulted from their research activities. Several members of the group have received major research grants from local and international bodies including Michael J. Fox Foundation for Parkinson Disease Research, USA, Shaikh Hamdan Award for Medical Sciences, Emirates Foundation, and several CMHS & UAE University Research Grants.

Scientific Collaboration
Several members of the group hold membership in prestigious organizations and serve on the editorial board of international journals and committees. Also the group members collaborate with a number of research groups, institutions and organizations within the UAE & abroad.

UAE:
Al Ain Hospital, Al Ain
Central Veterinary Research Laboratory, Dubai
Centre for Arab Genomic Study, Dubai
College of Science, UAEU
Hamdan Award for Medical Sciences, Dubai
Tawam Hospital, Al Ain
Zayed University, Dubai

Group Leader
Professor Omar El-Agnaf (Biochemistry Department)

Core Members
Prof. Milos Ljubisavljevic (Physiology Department)
Dr. Murat Oz (Pharmacology Department)
Dr. Ossama Osman (Psychiatry Department)

Members:
Prof. Abdu Adem
Prof. Safa Shehab
Prof. Eric Mensah-Brown
Prof. Ernest Adeghate
Dr. Fadwa El-Mughairibi
Dr. Fatima Aljasmi
Dr. Maria Cabezudo
Prof. Basel Al Ramadi
Dr. Gururaj Aithala
Prof. Lihadh Al-Gazali
Prof. Chris Howarth
Prof. Salim Bastaki
Dr. Juman Kubba
Dr. Ahmed Al Marzoqui
Dr. Klaus van Gorkom
Prof. Hamdy Moselhy
Prof. Johann Braun
Dr. Leena Amiri
Dr. Kanita Dervic
Prof. Sehamdduin Galadari
Prof. Bassam Ali
Dr. Suhaill Al Salam
Dr. Bassem Shaban Sadek
Dr. Md Emdadul Haque
Dr Fakhreya Yousuf Hussain Mohammad
Mohammad
Abroad:
Lund University Medical School, Sweden
Boston College, MA, USA
Bogomeletz Institute, Ukraine
Conway Institute, Dublin, Ireland
Columbia University, NY, USA
Chapman University, USA
Chinese University of Hong Kong, China
Center of Molecular Neurobiology, University of Hamburg, Germany
Harvard Medical School, USA
Imperial College, London
Institut Pasteur de Lille, Cedex, France
Institutes for Medical Research and Neurology, Belgrade, Yugoslavia
Iowa Medical School, USA
James Cook University, Queensland, Australia
Janssen Research Foundation, Belgium
Lancaster University, UK
Kyoto Prefectural University of Medicine, Kyoto, Japan
Laboratory of Neurogenetics, National Institute on Aging, Maryland, USA
Mayo Clinic, Florida, USA
Manchester University, UK
McMaster University, Canada
National Institute of Health, USA
Royal Free & University College London Medical School, UK
SGHMS, University of London, UK
Sultan Qaboos University, Muscat, Oman
The Karolinska Institute, Sweden
The Queen's University of Belfast, UK
University of Manchester, UK
University of Aarhus, Denmark
Universita La Sapienza, Rome
University of Aalborg, Denmark
University of Amsterdam, Netherlands
University of Bonn, Germany
University of California and San Diego, USA
University of Gevle, Sweden
University of Glasgow
University of Groningen, Netherlands
University of Turin, Italy
University of Xi'an, China
Utrecht Medical Centre, Netherlands

Summary of Grants & Publications 2014 (refer to departmental reports as below):
Shehab S (Anatomy).
Adeghate E (Anatomy).
Mensah-Brown E (Anatomy).
El-Agnaf O (Biochemistry).
Galadari S (Biochemistry).
Haque E (Biochemistry).
Al-Gazali L (Paediatrics).
Adem A (Pharmacology).
Bastaki S (Pharmacology).
Murat Oz (Pharmacology).
Sadek B (Pharmacology).
Mohammad F (Pharmacology).
Ljubisavljevic M (Physiology).
Osman O (Psychiatry).
Moselhy H (Psychiatry).
Gorkom van K (Radiology).
Al Salam S (Pathology).
Haque M (Biochemistry).
Mohammad F (Pharmacology).
Ali B (Pathology).
Introduction
The Oncology Research Group (ORG) comprises colleagues at the College of Medicine & Health Sciences, the College of Sciences; UAEU and the Abu Dhabi Health Authority, who share an interest in oncology research. The Chair of this group is Dr. Suhail Al-Salam, the Vice-Chair is Prof. Frank Branicki, the Secretary is Prof. Farouk Safi and Treasurer is Dr Farah Mustafa. Dr. Mohammed Jaloudi, Chair of Oncology at Tawam Hospital is the Deputy Chair.

Objectives
• To promote cancer research – being a catalyst for research activity
• To create a forum for collaboration between Faculty members, basic scientists and colleagues in clinical disciplines, Faculty staff and colleagues of the Abu Dhabi Health Authority dealing with oncology.
• To create and maintain an inventory of research activities
  resources available
  basic research expertise
  available clinical services
  specialty interests – subspecialties
  individuals – registry of interest in Oncology
• To act as a reference group regarding cancer research and funding
• To act as an advisory body to the Abu Dhabi Health Authority regarding cancer issues of national interest, e.g. breast cancer screening, cervical screening, risk factors
• To create a unified list of all cancer-related educational activities countrywide
• To act as an advisory body for education regarding cancer, organizing lectures on cancer, cancer conferences and meetings at a local and national level
• To promote quality control in the management of patients with cancer

Research Activities
During 2014, members of the ORG received a total of 42 research grants. In 2014, members of the ORG published 52 papers in international peer-reviewed journals.

Other Activities
Members of the group present their work at many local and international conferences. Some ORG members participated in Terry Fox “runs” which are arranged in different parts of the UAE.
Summary
During 2014 the Trauma Group has made major contributions in trauma education and research both nationally and internationally. The Advanced Trauma Life Support (ATLS) has actively continued. Between then the members of the Trauma Group published one book chapter and 9 papers related to trauma in international refereed journals and presented 31 abstracts and invited lectures at national and international meetings. Professor Abu-Zidan was invited as an International Judge for the International Major Incident Response Exercise (IMIREX) 2014, Kuching, Sarawak, Malaysia. Both Professor Fikri Abu-Zidan and Dr Asharf Hefny were invited as international experts for writing clinical guidelines for using ultrasound on Trauma patients, February 2014, Belo Horizonte, Brazil.

Mission
Our mission is to promote and perform research and education of a high standard in the field of trauma so as to improve patient care.

Major achievements of the Trauma Group in 2014 included:

A) Road Traffic Collision Registry:
The data from this project are still generating useful information on road traffic collisions. The detailed information on more than 1000 patients involved in road traffic collisions was useful to develop a new model for detecting injury severity which was published in "Injury". A full time Senior Research Fellow, Dr Hani Eid continued using the data from this registry considering different aspects of trauma epidemiology and management including distraction-related road traffic collisions and evaluating the value of the New Injury Severity Score. This has increased the research activity of the Trauma Group for the year 2014.

B) Participation in trauma training courses
The Trauma Group was actively involved in the organization and conduct of numerous courses.

1) ATLS Provider and Instructor Courses: It was deemed essential to train UAE doctors using ATLS principles to improve the management of trauma patients. More than 2200 doctors have taken the Provider Course to date countrywide in UAE. We have been encouraged by the increasing support and popularity of ATLS in the UAE and the region. A greater awareness of the value of ATLS...
for enhancement of the early management of severe trauma is more evident in our setting.

2) Point-of-Care Ultrasound training. We have noticed increasing support and popularity for “Point-of-Care” Ultrasound in clinical practice in our setting. Professor Abu-Zidan takes special interest in teaching medical students practical skills on performing the E-FAST for detection of intra-peritoneal, pleural fluid, peri-cardiac fluid, and pneumothorax. This will assure transfer of knowledge learned for the new generation. The Rapid Ultrasound in Shocked patients (RUSH) protocol is used routinely in our clinical practice.

C) Publications and Abstracts
In 2014, the group has published one book chapter and 9 papers related to trauma in international refereed journals. Both quality and quantity of research has improved. The group has presented 31 abstracts and oral presentations at national and international meetings in 2014. Details of these publications and presentations are to be found in the relevant Departmental Reports (Department of Surgery, and Department of Community Medicine).

D) International recognition
1. Professor Fikri Abu-Zidan and Dr Asharf Hefny were invited as international experts for writing clinical guidelines for using ultrasound in Trauma patients, International Congress on Innovations in Global Trauma Care, 2014, 19-23 February 2014, Belo Horizonte, Brazil (Fig 1).
2. Professor Abu-Zidan was invited to Sarawak, Malaysia December 2014, to participate as an International Judge, International Major Incident Response Exercise (IMIREX) 2014, 2-4th December 2014, Kuching, Sarawak, Malaysia (Fig2).

Research Grants

Media Reports on Trauma Group activities
The Trauma Group research activities on camel behavior and bites has attracted Media attention.
UAE medical researchers say camels ‘on heat’ are dangerous. 7 days in Dubai, February 12, 2014
https://7daysindubai.com/uae-medical-researchers-say-camels-heat-dangerous/
Medical Student Research
Research is becoming an increasingly important part of career development for medical students. The College of Medicine & Health Sciences (CMHS) provides a wide variety of opportunities for students to participate in research. Early in the curriculum students are told about the research interests of faculty and the special interest research groups. Planning and design of research projects, research ethics, research project funding and biostatistics are also introduced.

Opportunities for extracurricular research include laboratory attachments, summer research projects and the Dr Ali Mosawi Scholarship. Students are encouraged to join research laboratories and to shadow research activities. It is hoped that some of these attachments will lead to presentations at scientific conferences and publications in peer reviewed journals. The summer holidays are a good time for student research and more than 40 students were involved in research activities during the summer of 2014. The Dr Ali Mosawi Scholarship program provides opportunities for undergraduate and post-graduate students to visit UK Research Laboratories and Health Organizations.

The 9th International Scientific Conference for Medical Students in the GCC Countries was held in Al Ain, December 26-30, 2014. The conference was attended by more than 1300 delegates from around 20 countries. Keynote speakers included Professor Adeeba Kamarlzaman (University of Malaysia), Professor Linda Samuelson (Michigan State University) and Dr Mohamed Al Olama (Rashid Hospital, Dubai). The program also included 36 oral and 147 poster presentations, 18 workshops, a Medical Exhibition and a variety of exciting social events (see photographs).

**Prizes for Oral Presentations**

**First Prize**
- Almutawea L, Al Kalbani M, Lakhtakia R, Burney I
  *Patterns of presentation and outcomes of germ cell tumors in women in Oman*
  Sultan Qaboos University, Oman

- Al-Habsi A, Alsaadoon M, Tony S
  *Quality of life among children with thalassemia in Oman (caregiver perception)*
  Sultan Qaboos University, Oman

**Second Prize**
- Aljoudi S, Haddawi Y, Alsomali F, Kutbi E, Meer E, Binsalman A
  *Lifestyle habits and their relation to measures of obesity amongst adults living in Jeddah–Saudi Arabia: A cross-sectional study*
  King Abdul-Aziz University, Saudi Arabia

- Al Dhaheri M, Mohamed YA, Fernandez-Cabezudo MJ, Al-Ramadi BK
  *Intravenous administration of Manuka Honey as adjuvant therapy in combination with chemotherapy inhibits tumor growth and improves host survival in colon carcinoma mouse model*
  United Arab Emirates University, United Arab Emirates
Prizes for Poster Presentations
Community Medicine, Clinical and Basic Sciences

Winners

- Al Alem N, Al-Aklabi S, Sadee M, Al-Amer K, Khan M
  *The prevalence of diverticular disease in the National Guard Health Affairs, Riyadh, Saudi Arabia*
  King Saud Bin Abdulaziz University, Saudi Arabia

- Banjar L, Ghunaim A, Alshaikh H, Faruqui H, Alsamti M, Almalki A
  *Maternal outcomes of breast milk feeding in King Abdulaziz University Hospital, Saudi Arabia*
  King Abdulaziz University, Saudi Arabia

- Al Hemeiri A, Al Hammadi N, Yuvaraju P, Beegam S, Yasin J, Adeghate E, Ali BH, Nemmar A
  *Short-term pulmonary effects of nose-only water-pipe (shisha) smoking exposure in mice*
  United Arab Emirates University, United Arab Emirates

- Alabdulqader A, Alangari F, Niaz G, Chen L, Howison C, Pagel M
  *Measurement of tumor acidosis using chemical exchange saturation transfer MRI*
  Al Imam Mohammad Ibn Saud Islamic University, Saudi Arabia

- Al-Sweed A, Al-Sadhan M, Davamani F
  *Substrate zymography of snake venom components depicting the activity of matrix metaloprotease*
  Al Imam Mohammad Ibn Saud Islamic University, Saudi Arabia

- Al-Baloushi A, Baseer N, Watanabe M, Todd A, Shehab S
  *Selective contacts between non-peptidergic Aδ nociceptors and NK1 receptor-lacking Lamina I spinoparabrachial neurons in rats*
  United Arab Emirates University, United Arab Emirates

- Al-Hosani A, Al-Ali A, Nurulain S, Oz M
  *Carveol inhibits the function of human α7-nicotinic acetylcholine receptors*
  United Arab Emirates University, United Arab Emirates

*The 9th International Scientific Conference for Medical Students in the GCC Countries, Al Ain, December 26-30, 2014*
## Impact Factor

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وقد حاولنا تطوير والحفاظ على جودة هذا المجلد، وواصلنا إدراج ملهم عن الأقسام والتصاميم والتصاميم الأصلية من مجموعات الأصول البصريات، بما في ذلك تقرير عن البحث العلمي لطلبة الطب. في نهاية هذا المجلد أرفقنا قائمة تضم المجلات التي قمنا بنشرها وعوامل تأثرها.

حافظنا في هذا المجلد على التصميم الذي قمنا باستخدامه، حيث تم تصميمه من قبل قسم الإعلام المرئي وحظي على الموافقة العامة. وفي هذا الإصدار تم اتباع التصميم الذي ينص على أساليب موحدة والتناسق في استخدام العناصر البصرية، حيث يتميز هذا التصميم بسهولة تحديد الفصول والأقسام ومواقع النص.

يسرني أن اتوجه بالشكر والثناء لفريق الإنتاج، السيدة إيفانا مصممة الجرافيك التي وضعت جهوداً في تصميم المجلد، والسيد راجا جوبالان على جهوده في مرحلة تحرير المساهمات الأولية للإدارات وال التواصل مع جميع الأعضاء، بالإضافة إلى السيد أشوك لمساهمتة بتوفير الصور والتفاصيل، والآنسة الرائد للمشاركة والقائمة بدور الترجمة.

جزيل الشكر لكل المساهمين في هذا الإصدار، وأشكر بالأخص أعضاء الهيئة التدريسية.

الاستاذ الدكتور كيث باتنال
المحرر

مقدمة المحرر
قام نائب مدير الجامعة للبحوث والدراسات العليا في العام الماضي بالتعاون مع مدير المشاريع والبحوث على تنفيذ رؤية معايي الشيخ حمدان بن مبارك آل نهيان باعتبار جامعة الإمارات الجامعة الرائدة في الدولة والتي تتمثل أولويتها في إخراج أبحاث عالية الجودة. وقد ساهم الدعم المستمر من قبل مكتب نائب مدير الجامعة للبحوث والدراسات العليا على توفير مصادر تمويل كبيرة وتقديم حلول لعدة مشاكل وهمها تأخير تعيين مساعدي الباحثين.

يسرني أن أُشكر جميع المساهمين في هذا المجال والاستثمارات البحثية بكلية الطب والعلوم الصحية.

الدكتورة/ مريم الشامسي
مساعد العميد للبحوث والدراسات العليا
مقدمة مساعد العميد لشؤون البحث العلمي والدراسات العليا

خلال السنوات الأربع والعشرون الماضية قدم هذا التقرير السنوي عن المنشورات البحثية لكلية الطب والعلوم الصحية للمجتمع الخارجي اسهامات الكلية من خلال المنشورات البحثية والمساهمات الدولية والوطنية في اللقاءات العلمية والأنشطة الأكاديمية. حيث ساعدت الإسهامات البحثية لكلية الطب في تبوأ جامعة الإمارات مكانة رائدة في مجال البحوث الطبية الحيوية على مستوى دولة الإمارات والمنطقة.

وقد شهد العامين الماضيين فرص كبيرة لباحثينا من خلال توفير مختلف فرص التمويل السخية. بالرغم من الأجواء التنافسية العالية فقد تمكنت الكلية من تأميم عدد كبير من المنح الداخلية والخارجية أيضا مما ساهم هذا في تعيين ودعم طلبة بحوث دراسات عليا ذو كفاءة عالية والمحافظة أيضا على مستوى انتاجيتهم المتميز.

نحن نسعى جاهدين في مكتب الدراسات العليا والبحوث على توفير بيئة لباحثينا تحافظ على التعاون والمنتجة لمعايير الدولية بيئة يمكن من الإبداع في مجال البحوث عن طريق تخصيص الموارد بصورة حكيمة ورعاية قوة حديثة، وتوفر البيئة التحفيزية والموارد اللازمة من خلال الحصول على أحدث المعدات والتقنيات بالإضافة إلى تسهيل تخزين الكلية لإستهلاك العام. في السنوات الأخيرة قمت أيضا بتطوير وصيانة مرافق البحوث المركزية مثل وحدة التصوير والباحثات التحليلية ومرافق الخلية الجزيئية الحيوية بالإضافة إلى مربي لحيوانات التجارب الصغيرة.
وأثني على جميع الطلبة والفنين وموظفي الدعم الأكاديمي وأعضاء الهيئة التدريسية الذين ساهموا في إنتاج البحوث الطبية ونشرها في هذا التقرير السنوي.

إن نجاح الكلية يتحقق بفضل فريق عمل مخلص ومنتج.

الاستاذ الدكتور/ دينيس تيمبلتون
عميد كلية الطب والعلوم الصحية
كلمة العميد
خلال السنوات الاربع والعشرون الماضية قدم هذا التقرير السنوي عن المنشورات
زملائي الإعزاء في كلية الطب والعلوم الصحية.
يسعدني أن أقدم التقرير السنوي لملامح بحوث وإسهامات كلية الطب والعلوم الصحية التي قام بها الباحثين عام 2014. حيث تتوفر نسخة إلكترونية من هذا التقرير في موقع جامعة الإمارات العربية المتحدة.
تحتفظ كلية الطب والعلوم الصحية بفخامتها ضمن أعضاء الهيئة التدريسية الباحثين في الدولة وجميع أنحاء المنطقة. حققت كلية الطب والعلوم الصحية نجاحاً بفضل أعضاء الهيئة التدريسية الموهوبين، وعلاقات بحثية انتاجية بالتعاون مع الكليات الأخرى في الجامعة والجامعات الأخرى وجهات صناعية ومؤسسات الرعاية الصحية في جميع أنحاء الدولة والمنطقة. نحن نفرح بتماهي علاقات تعاونية مع جامعات خارجية تساهم في تكوين علاقات بحثية بالإضافة إلى تفاعل مهتمتنا التعليمية والتي تهدف إلى نبض الطبية وأعضاء الهيئة التدريسية.
وباعتبار كلية الطب والعلوم الصحية إحدى كليات جامعة الإمارات فهي الكلية الأولى التي تسعى في إتمام النتائج البحثية للجامعة حيث خصصت مراكز بحثية في أبوظبي ودبي والشارقة، وتتميز لزملاينا كمن نافذة في هذه المراكز البحثية.
اعرب عن جزيل امتناني لجميع طلبة الطب والدراسات العليا الذين ليسوا بحثاً فقط في التقرير السنوي للإسهامات البحثية بل على البيئة التعليمية التي نعم الكلية. بالإضافة إلى التماسك العاملين في الكلية والذين يساهموا في التقدم العلمي والثقافي لتعزيز مستقبل الأمة.
يسعدني أن أعرب عن شكري الخاص إلى المحرر الأستاذ الدكتور كيث باجنال على تفانيه والعمل الجاد في تحرير التقرير السنوي لملاحم بحوث وإسهامات كلية الطب والعلوم الصحية. وننطلق إلى مواصلة نجاح أبنائنا في كلية الطب والعلوم الصحية.
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المحتويات

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جامعة الإمارات العربية المتحدة
المنشورات العلمية و الاهتمامات البحثية

مكتب مساعد العميد لشؤون البحث العلمي و الدراسات العليا

2014