

مبادرات محمد بن راشد آل مکتوم العالمیة Mohammed _{Bin} Rashid Al Maktoum Global Initiatives قــلــيــلـما قــسـسڤ مــ إمليالم Foundation

A visionary science hub in the heart of Dubai, serving humanity

Unlocking Medical Solutions, Transforming Lives We are building a new reality for our people, a new future for our children, and a new model of development. *****

His Highness Sheikh Mohammed Bin Rashid Al Maktoum Vice-President and Prime Minister of the UAE and Ruler of Dubai





Converting our ambitions into an everyday reality "

I am immensely grateful to His Highness Sheikh Mohammed Bin Rashid Al Maktoum, Vice-President and Prime Minister of the UAE and Ruler of Dubai, for championing innovation and research, and for establishing Al Jalila Foundation, a global philanthropic organisation dedicated to developing medical research in the UAE.

We aim to position the city of Dubai and the United Arab Emirates as a platform for global medical innovation – research is an integral part of our strategy.

Research provides a portal to discovering new knowledge, advancing medical breakthroughs, and propelling economic development. Our work at Al Jalila Foundation supports the UAE Vision 2021 where research and innovation are at the core. Our hope is that it will be the catalyst for ensuring a thriving biomedical research culture.

Scientists around the world continue to search for answers into the causes, prevention and treatment of diseases affecting mankind. We share a vision – to see a world devoid of cancer, cardiovascular disease, diabetes, obesity or mental illness – and an obligation to safeguard the health of our children, and children's children.

Our investment in medical research reaffirms our commitment to embed research and innovation in the fabric of the nation's long-term healthcare strategy. Medical research has the potential to save lives and our efforts today will pave the way for advancements in medicine, giving hope to many.

Research is a life-long commitment and a responsibility we take seriously. A responsibility to our founder who has entrusted us with his vision. Responsibility to our donors who have empowered us to fulfill our mission. And responsibility to the people we serve: be it a hopeful patient, an aspiring student or a pioneering scientist.

We will work diligently to drive the national dialogue around the importance of medical research, and inspire medical breakthroughs, to improve lives in the United Arab Emirates and beyond.

HE Dr Raja Easa Al Gurg

Chairperson of the Board of Directors Member of the Board of Trustees Al Jalila Foundation

Advances in medical research are critical to the nation's prosperity "

It is hard to believe that less than a century ago, we did not have cures for diseases like tuberculosis. It seemed impossible to imagine that entire continents could kick out epidemics like polio. Over the years medical discoveries have translated into improved treatment protocols and therapies. And, with each new breakthrough, a new sense of hope emerges.

Advances in medical research are critical to the nation's prosperity and longevity. We, at Al Jalila Foundation, are proud to support aspiring scientists because today's investments in medical research will go a long way to ensuring better treatment options for future generations – giving hope to countless patients and their families.

Research provides a portal to discovering new knowledge, advancing medical breakthroughs, and propelling economic development. Our priority is to create opportunities to increase innovative and impactful research in the UAE to support our vision. Whilst still in our infancy, until 2017, we have supported 75 projects and funded 8 international fellowships. We have invested over AED 20 million in research studies covering a number of themes and topics. Our research is focused on cutting-edge translational research with the intent of confronting and mitigating some of the most challenging diseases in the UAE today. Through our research mission, we seek to identify causes of disease and to build on basic and clinical research findings to develop innovative prevention and treatment strategies.

We are proud of the quality of research we have sponsored and inspired by the capabilities, achievements and innovativeness of our grant recipients. It gives me immense pride to present Al Jalila Foundation Research Portfolio; here you will find all the information on our grant recipients and an overview of their research projects. As I write, we are in the middle of the 2018 research grant cycle and we hope to bring many more research projects to fruition as we continue to expand our research portfolio.

Through Al Jalila Foundation we hope to inspire medical advancements that will benefit future generations and realise our vision to be at the forefront of global medical innovation.

May I take this opportunity to thank our Board of Trustees, Board of Directors and Scientific Advisory Committee for their continued support and foresight. And, of course, special recognition to each one of our grant recipients and fellows for their unwavering commitment to biomedical research.

Professor Sehamuddin Galadari

Chair, Scientific Advisory Committee Member of the Board of Directors Al Jalila Foundation





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Scientific Advisory Committee



Professor Sehamuddin Galadari

Professor of Biochemistry and Molecular Cell Biology Chair, Scientific Advisory Committee Al Jalila Foundation



Professor Salah Gariballa Chair & Professor of Internal Medicine College of Medicine and Health Sciences United Arab Emirates University



Professor Mutairu Ezimikhai Provost Mohammed Bin Rashid University of Medicine and Health Sciences



Professor Bassam Ali Professor of Molecular and Genetic Medicine Department of Pathology College of Medicine and Health Sciences United Arab Emirates University



Dr Raghib Ali

Director Public Health Research Center New York University of Abu Dhabi





International Peer Reviewers

Overview of Research Grants 2014 - 2017

Research Grants Funded by Theme **2014 - 2017**

| | Number | AED (M) |
|------------------------|--------|---------|
| Cancer | 33 | 8.66 |
| Cardiovascular Disease | 9 | 2.54 |
| Diabetes | 12 | 3.24 |
| Obesity | 8 | 2.27 |
| Mental Health | 13 | 2.70 |
| TOTAL | 75 | 19.44 |

Research Grant Recipients by Nationality **2014 - 2017**

Research Grants Funded by Theme **2017**

Research Grants Funded by Value **2017**

Overview of Research Grants **2017**

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Professor Amr Amin BSc, MSc, PhD Department of Biology College of Science United Arab Emirates University

Research Theme

Cancer

Project Title

In vitro mechanistic analysis of the effect of safranal on angiogenenesis.

A multifaceted disease like cancer should be approached with therapies that target multiple biochemical and physiological pathways. Saffron has been used in folk medicine for centuries. Anticarcinogenic activity of saffron was reported at the beginning of 1990 and research on this subject has increasingly continued over the past decade.

Introduction of a natural compound-based active ingredient to cancer therapeutics would be an advancement in relation to the serious issues of drug resistance, relapse, and effective dose, etc. Given the current limited treatment options for liver cancer, introducing safranal as a novel therapeutic drug against liver cancer is much needed. With the same objective this study is assessing the anti-tumor properties of safranal with and without sorafenib in Hepatocellular carcinoma (HCC) cells and investigating the transcriptional and translational effects of safranal on angiogenesis of HCC cells.

This study advocates that the active components of natural products can be curative and protective in a sense of evoking less side effects; thereby enhancing the efficiency of isolated or synthesized chemical compounds with the ultimate possibility to inhibit or even reverse tumor development.

Professor Basel Al-Ramadi

PhD FRCPath

Department of Medical Microbiology

and Immunology

College of Medicine and Health Sciences United Arab Emirates University

Dr Maha M Ayad MD, MRCP(UK), FRCP (Edin.) Associate Professor Department of Pharmacology University of Sharjah

Research Theme

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Cancer

Project Title

On the anti-tumor role of the selective Endothelin-1 type A receptor (ETAR) antagonist Ambrisentan: Influence on in vivo breast cancer growth and metastasis.

Studies have reported that Endothelin-1 and its receptor Endothelin-1 type A receptor (ETAR), which are known for their role in vasoconstriction, also play a role in tumor growth and metastasis. The team recently observed that the ETAR antagonist Ambrisentan, which is FDA-approved for treatment of pulmonary arterial hypertension, has the capacity to inhibit proliferation and migration of cancer cells in vitro. With the current project the team aim to investigate the in vivo effects of the selective ETAR antagonist Ambrisentan on metastatic breast cancer using a preclinical animal model.

The team will use an orthotopic breast cancer model to study tumor growth and metastasis. Using luciferase-labeled 4T1 breast cancer cells, tumor growth and metastasis will be followed by bioluminescent imaging in live animals. The effect of orally-administered Ambrisentan treatment will be evaluated in preventative and therapeutic models. This research may define a non-redundant role for ETAR in breast cancer, thus potentially leading to a new therapeutic application for Ambrisentan, which would be of huge benefit to cancer patients.

Research Theme

Cancer

Project Title

Role of Galanin/Galanin receptor signaling as a potential novel therapeutic target for colorectal cancer with mutant p53.

Colorectal cancer (CRC) is the third most common cancer in men and the second most common in women worldwide, representing 9.7% of all cancers (excluding non-melanoma skin cancer). Human Galanin is a 30 -amino acid neuropeptide that is widely distributed in the central nervous system, heart and skin. Expression of Galanin has been observed in many tumors and previous studies have shown that the Galanin is upregulated in colon cancer and high expression of Galanin is associated with poor prognosis.

The study investigates the role of Galanin and its receptors in proliferation, invasion/migration and chemotherapeutic sensitivity in colorectal cancer, in addition to the link between p53 mutation and over-expression of Galanin in colorectal cancer and effect of Galanin/Galanin receptors on the clinical outcome of CRC patients. The proposed projects may pave the way to a potential pharmacological intervention to treat patients with CRC as an adjunctive therapy. GAL1 receptor modulation may increase the sensitivity of the cancer cells to currently used chemotherapeutic drugs

Dr Mohamed Haider BSc, MSc, PhD Assistant Professor College of Pharmacy University of Sharjah

Dr Mohammed El-Gamal BSc, MSc, PhD Assistant Professor College of Pharmacy University of Sharjah Research Theme

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Cancer

Project Title

Controlled release of tyrosine kinase inhibitors-loaded nanoparticles from thermosensitive injectable hydrogel scaffolds.

Tyrosine kinase inhibitors (TKIs) are unique chemotherapeutic agents that aim to stop cell division and growth or attempts to kill cancerous cells without destroying the healthy cells. However, their poor aqueous solubility limits their formulation, permeability, bioavailability and efficiency. Combining the use of nanotechnology and smart polymers to enhance the effect of TKIs, this study aims to develop a Drug Delivery System (DDS) with improved aqueous solubility and controlled localized release. This novel DDS can be utilized to improve the safety and efficacy of current TKIs and other active chemotherapeutic agents with similar limitations. Moreover, this research may lead to the establishment of relationships with the pharmaceutical industry interested in controlled release formulations.

The first goal of the study is to enhance the poor water solubility of TKIs through the use of nanotechnology; and the second goal includes the formulation and in vitro characterization of an injectable system that can localize TKIs intratumorally and increase their chemotherapeutic effect while reducing their peripheral toxicity.

Research Theme

Cancer

Project Title

Design and synthesis of novel indole derivatives as potential anti-cancer agents.

A hormone-sensitive cancer, or hormone-dependent cancer, is a type of cancer that is dependent on a hormone for growth and/or survival. Examples include breast cancer, prostate cancer, etc. Breast cancer is the most prevalent cancer in women globally, with an estimated 1.2 million new diagnoses every year. Nearly two-thirds of all breast cancers exhibit the estrogen receptor at the time of diagnosis, and require estrogen to develop and propagate. About 233,000 new prostate cancer cases were reported in 2014 among American men alone. Despite the different modalities available for management of these types of cancer, the success rate of therapy is still unsatisfactory. Moreover, non-selectivity of the available agents causes severe and fatal side effects. This reflects the need for new more selective agents to enhance the success rate of cancer therapy.

Through this research, the team aims to design and develop a more potent and more selective steroid sulfatase inhibitors to be efficient anti-cancer agents for treatment of hormone-dependent cancers. The developed compounds will be tested in vitro against cancer cell lines and against normal cells in order to investigate the selectivity index towards cancer cells than normal cells. If succeeded the team can develop safer and more efficient anti-cancer agents for the treatment of hormone-dependent cancers.

Dr Rifat Hamoudi PhD CEng CSci FIBMS MPathSoc Associate Professor Sharjah Institute of Medical Research

University of Sharjah

Research theme

Cancer

Project Title

The role of HER2, Estrogen & Progesterone receptors in breast cancer pathogenesis within the UAE population.

Breast cancer is the most common form of cancer among women in the UAE and globally and the number of cases have steadily increased over the last 3 decades. Despite advances in therapeutic efficacy in breast cancer, there still remains clear subsets of patients, whose disease shows little or no response to current therapeutic strategies.

Human Epidermal Growth Factor receptor-2 (HER2), Estrogen receptor (ER) and Progesterone receptor (PR) have been used as biomarkers for breast cancer diagnosis. Development of drugs targeting HER2 such as trastuzumab (Herceptin) proved effective treatment in subset of patients who are HER2 positive. There is evidence of HER2 intra-tumoural heterogeneity in breast cancer patients suggesting that HER2 and any potentially related molecules play a role in shaping the type of breast cancer a patient has. Similar observation might be seen with ER and PR. Therefore, studying the staining patterns of HER2, ER and PR and carrying out genomic and transciptomic characterization can help to better understand the nature of breast cancer subtypes. Since there seems to be unique genetics in Emirati patients, such investigation might provide further insights into the molecular mechanism of breast cancer as well as provide more personalised therapy for such patients.

Professor Abderrahim Nemmar

BSc, MSc, PhD Department of Physiology College of Medicine and Health Sciences United Arab Emirates University

Research Theme

Cardiovascular Disease

Project Title

Experimental investigation on water-pipe smoke (Shisha) induced cardiovascular pathophysiologic effects: influence of smoke exposure regimen, flavourings and possible protective effect of Gum Arabic.

It is estimated that more than 100 million people world-wide use water-pipe smoking and is a major form of smoking in the Middle East. Despite its widespread use, only few studies to date have documented the adverse cardiovascular consequences of water-pipe smoking. Therefore, experimental studies investigating the mechanisms underlying the cardiovascular effects of water-pipe smoke are much needed.

The team has recently demonstrated that exposure to water-pipe smoke increased blood pressure and thrombosis, and induced cardiac oxidative stress, DNA damage and fibrosis. Nevertheless, the effects of occasional versus regular smoke and flavoring have not been studied before. The study aims to assess the possible palliative effects of a commonly used natural antioxidant agent, viz Gum Arabic on the cardiovascular effects of water-pipe smoke.

Professor Alawi Alsheikh-Ali

MSc, MD Dean Professor of Cardiovascular Medicine College of Medicine Mohammed Bin Rashid University of Medicine and Health Sciences

Research Theme

Cardiovascular Disease

Project Title

Identification of novel mutations in Emirati subjects with Autosomal Dominant Familial Hypercholesterolemia (ADFH) in the UAE by whole exome sequencing (WES): The WORTH study (Whole exome sequencing of Emirati FH subjects).

Familial hypercholesterolemia (FH) is an autosomal dominant hereditary disorder presenting with high serum levels of lowdensity lipoprotein cholesterol (LDL-C). Patients with FH are at very high risk of developing atherothrombotic cardiovascular diseases (CVD). The burden of genetic disorders in the Middle East, including the UAE, is considerably higher than in Western countries. It is known that consanguineous marriages may result in increased risk of genetic disorders.

The genes associated with FH in the UAE are not well described. Using blood samples from the Emirati patients diagnosed with definite FH, the research team will perform whole exome sequencing to identify the prevalence of previously described FH mutations in other populations and potentially identify new mutations. The main objective of this research is to find these new genes causing FH in the Emirati population. This may facilitate the design of new diagnostic strategies for FH especially in the UAE population.

Dr Anatoliy Shmygol MD, PhD Associate Professor Department of Physiology College of Medicine and Health Sciences United Arab Emirates University

Dr Yajnavalka Banerjee

BSc, MSc, PhD Associate Professor of Biochemistry College of Medicine Mohammed Bin Rashid University of Medicine and Health Sciences

Research Theme

Cardiovascular Disease

Project Title

Characterization of direct effects of oxytocin on excitation-contraction coupling in neonatal and adult rat cardiomyocytes.

Cardiovascular disease is one of the main causes of mortality and morbidity in the world. The incidence of cardiovascular disease associated with diabetes is on the increase as diabetes mellitus becomes a global health problem currently affecting 400 million people worldwide. In the Gulf region ischemic heart disease is among the most common complications of obesity and type II diabetes. Ischemic heart disease often culminates in the myocardial infarction leading to necrotic death of cardiac myocytes due to prolonged ischemia. Finding new medicine to cure and prevent cardiovascular disease is impossible without improved understanding of the basics of cardiac physiology. Recent work in several laboratories has identified a cardioprotective action of the pituitary hormone oxytocin.

This project is aimed at discovering the mechanisms of direct effects of oxytocin on cardiac electrophysiology and excitationcontraction coupling in neonatal and adult rat cardiomyocytes in order to expand our understanding of the mechanisms underlying cardioprotective action of oxytocin. This work will provide theoretical basis for development of new therapeutics.

Research Theme

Cardiovascular Disease

Project Title

Reconnoitering the anti-inflammatory properties of direct thrombin inhibitors: Dabigatran and Hirudin, the RAPID study.

Atherosclerotic cardiovascular disease (CVD) remains as a leading cause of morbidity and mortality worldwide and in the United Arab Emirates. This burden is driven by prevalent pro-inflammatory risk factors such as diabetes II and obesity. Therefore, therapeutic strategies impeding atherosclerosis will promote effective management of CVD and its associated risk factors.

Dabigatran is a novel oral anticoagulant drug that directly inhibits thrombin by binding to its active site and is currently administered by cardiologists to patients who suffer from irregular heartbeat. This medication is administered as a preventive measure against stroke, however, there has been controversy on the effect of dabigatran on the risk of heart attack, with some researchers suggesting an increased risk of heart attack in patients given dabigatran.

The team will treat the blood samples collected from patients with irregular heartbeats with anticoagulants (Dabigatran and Hirudin) to understand the manner in which they stop inflammation, consequently reducing the risk of heart attack.

Dr Habiba Alsafar

BSc, MSc, PhD

Director of Khalifa University Biotechnology Center Associate Professor of Biomedical Engineering Department of Biomedical Engineering Khalifa University of Science, Technology and Research

Dr Hossam Abdelmagyd

BSc, MSc, PhD Associate Professor Associate Dean Clinical Program Director MDS Periodontics College of Dentistry Gulf Medical University

Research Theme

Diabetes

Project Title

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Clinical patterns, epidemiological determinants, risk factors and associated genetic predictors of diabetic kidney disease in the United Arab Emirates patients with type 2 diabetes.

Type 2 diabetes mellitus (T2DM) is one of the biggest global challenges with 422 million patients living with the disease recorded in 2014. In the UAE, the prevalence of T2DM was found to be very high and Diabetes Kidney Disease (DKD) increases the risk of morbidity and mortality in T2DM including end stage renal disease (ESRD). Renal failure can result from a range of complications and it is widely accepted that diabetes ranks as the most common cause of ESRD.

ESRD can only be treated with dialysis and kidney transplantation, which are very invasive and costly procedures. Therefore, better knowledge of genetic, clinical and epidemiological factors allows earlier and better treatment outcomes. There are two important questions regarding DKD: 1- Why patients with T2DM do not all develop DKS? 2- Why a small percentage of those that develop DKD progress into end-stage renal disease? There is a lack of knowledge of the possible genetic contributions to DKD and ESRD and correlations with clinical and epidemiological factors. This research proposes to address these questions to improve the treatment outcomes.

Research Theme

Diabetes

Project Title

Evaluation of halitosis and sialometry in Emirati diabetic patients before and after periodontal treatment.

Almost one in five people of the UAE population between the ages of 20 and 79 have type 2 diabetes. Diabetes can cause bad breath due to ketoacidosis in which the body uses fats instead of glucose. Breath malodour or halitosis is an important negative factor in social communication and therefore a problem to many individuals as it is negatively affected their quality of life.

Is there any relation between diabetes and related oral malodour? Increasing demand for quality of life necessitate to find a way to overcome periodontal disease and oral malodour usually accompanied with type 2 diabetes. Through this first study conducted among Emirati diabetic patients the team aims to understand the correlation between oral malodour, diabetes and quality of life. By identifying this it will be easy to solve and improve the quality of life for diabetic patients related to breath malodour.

Dr Jalal Taneera BSc, MSc, PhD

Assistant Professor Department of Basic Medical Sciences University of Sharjah

Professor Nabil Sulaiman

MD, MPH, DCH, FFPH, FRCP, PhD Head of Family & Community Medicine and Behavioural Sciences Department University of Sharjah

Research Theme

Diabetes

Project Title

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Molecular and metabolic signature of iron store in pancreatic β -cells.

Diabetes is a multifactorial disease, ascribed to an interaction between genetics and environmental factors like diet and sedentary lifestyle. Iron is an essential nutrient for humans, and has important functions as a cofactor for several enzymes and oxygen transporters. However, iron is potentially hazardous when present in excess amounts. The association between iron overload and risk of T2D is well established based mostly on epidemiological studies but there is a need for more functional studies in particular in pancreatic β -cells to unravel the role of iron content on β -cell function.

This study will advance understanding of the link between iron content and risk of diabetes at the molecular and metabolic levels and will also provide information about the role of iron regulatory genes in insulin secretion. Understanding the impact of iron content on pancreatic β -cell can also help to build a national prevention strategy for a safe range of body iron stores; an effort that may also help lower the risk of diabetes.

Research Theme

Diabetes

Project Title

All new diabetics in Sharjah & Ajman [ANDISA]: An epidemiological and genetic study toward individualised medicine (phase II).

Despite the high prevalence of T2D in the UAE, epidemiological data about diabetes incidence and subgroups in the UAE in general, and particularly the Northern Emirates (Sharjah/Ajman), is very limited. Furthermore, clinical data such as the response of diabetes subgroups to different modes of treatment and the prevalence of diabetes complications in these subgroups have not been investigated yet.

The study aims to enrol new diabetic patients aged 13-65 years in Sharjah and Ajman to collect basic, clinical, genetic and immunological data from a newly diagnosed population of diabetics to improve diagnostic categorisation rates and develop personalised treatment.

The proposal represents the first step towards precision medicine in diabetes in the UAE. It will provide better diagnosis and better personalised care for diabetic patients with lower cost.

Dr Kinda Khalaf

BSME, MS, PhD Associate Chair and Professor of Biomedical Engineering Khalifa University of Science, Technology and Research

Dr Suraiya Ansari BSc, MSc, PhD Assistant Professor

- Department of Biochemistry
- College of Medicine and Health Sciences

United Arab Emirates University

Research theme

Obesity | Diabetes

Project Title

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An investigation of the metabolically healthy obese (MHO) phenotype in the UAE as associated with T2D and CVD.

Given the increasing prevalence of obesity worldwide, a better understanding of the chronic disease risk with respect to distinct phenotypes is essential. Recent studies have shown that the MHO phenotype has a favorable metabolic profile, the risk of chronic disease remains a question of debate. Obesity with respect to the metabolically healthy obese (MHO) phenotype has not been studied previously in the UAE, particularly as associated with the risk of cardiovascular disease (CVD) and type 2 diabetes (T2D), the two main local risk factors of mortality and morbidity. This study aims to investigate the risk of developing T2D and CVD in metabolically healthy obese phenotypes in the UAE using a multi-level approach.

The results from this pilot study will provide the proof of concept and basis for a larger scale UAE population study providing insights on the etiology of obesity as associated with chronic disease towards better prevention and healthcare management.

Research theme

Obesity

Project Title

Effect of increased lipid levels on epigenetic regulation of human embryonic hepatogenesis: use of hESC derived hepatocytes as model.

Obesity and metabolic syndrome are increasing at an alarming rate in the Middle East and the UAE. A high percentage of the UAE's obese population are females, many of which are of childbearing age. Fetal exposure to excess blood lipids, particularly saturated fatty acids, could impact stem cell fate, affecting organ development. The liver being the major metabolic organ is at an increased risk of being affected in the developing fetus of obese mothers.

The major goal of this research is to understand the effects of maternal obesity on the developing embryo at the molecular level. This proposal plans to identify the genes affected by high lipids and changes in histone acetylation on the chromatin DNA in the developing human liver in vitro. The results would lead to identifying the effect of free fatty acids on the cell fate of developing embryonic live in humans as well as epigenetic molecular mechanisms which could be responsible for these changes. This could devise novel treatment strategies for children born to metabolically challenged mothers and who are at increased risk of developing metabolic diseases later in their life.

Professor Yousef Mohamed Abdulrazzaq AlBastaki

MD, DPP, DMHSS, PhD, FRCPCH, FRCPI Director of Medical Education Dubai Health Authority

Research theme

Obesity

Project Title

UAE population reference standard charts for weight, height, body mass index, skinfold thickness, and eating habits at ages 0–18 years.

The World Health Organization (WHO) has identified overweight and obesity as one of the top five risk factors globally for mortality and as a target for priority action. The United Arab Emirates (UAE) has undergone rapid urbanisation and economic growth in the last 50 years. It is well recognized that transitioning nations experience increased incidence and prevalence of NCDs associated with urban sprawl, sedentary lifestyles, change in diet and other risk factors.

For reliable estimates of obesity in children, valid measures should be used. Using body weight alone does not allow for differences in height and stature. A national cross-sectional growth survey of children aged 0-18 will be conducted using multistage stratified random sampling and each age, gender groups will have at least 200 samples. By using the collected data population growth charts will be constructed for weight, height, head circumferences, body mass index (BMI) skinfolds. This will enable the comparison of UAE growth charts with the growth charts from other countries and it will provide a better picture of the prevalence of obesity to health providers and will give the policy makers the trends of BMI and obesity among children in the UAE.

Professor Leontios J Hadjileontiadis BSc, MSc, PhD

Professor & Acting Department Chair Department of Biomedical Engineering Professor of Electrical & Computer Engineering Khalifa University of Science, Technology and Research

Project Title

Type of mood: a novel mental health state recognition of young adults in the UAE.

Is there a correlation between the mental state of young adults in the UAE with attributes derived from their keystroke dynamics on smartphone typing? How mental disorder such as depression affects keystroke dynamics?

For the first time in the UAE the mental health state of young adults with their keystroke dynamics during smartphone typing will be associated. This unobtrusive behavioral sensing might infer mental state status and reveal association with mental disorders like depression. Clinically, this could advance mental health monitoring towards personalised healthcare, introducing new sources of prognostic indices. This unique study will provide evidence for a novel and rich source of information about young adults' mental health via the micro-movements and coordination of fingers during their typing on a smartphone, explaining further the mechanism that binds emotional state with fine movement.

Dr Mohammed Uddin BSc, MSc, PhD Assistant Professor of Human Genetics College of Medicine Mohammed Bin Rashid University of Medicine and Health Sciences

Research Theme

Mental Health

Project Title

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An in vitro system to characterise recurrent pathogenic deletions in autism spectrum disorder.

Autism spectrum disorder is a growing health concern around the globe. Autism spectrum disorder is a genetically heterogeneous and complex disorder with a strong genetic background. The advent of genome based technologies (microarray, sequencing) has allowed scientists to detect hundreds of rare pathogenic mutations.

The lack of translation research to better understand the cellular and molecular impacts of such mutations results to a vacuum in therapeutics intervention. Each child impacted by autism carries a different genetic signature hence, a targeted personalized molecular approach is necessary. This study aims to characterise rare pathogenic mutations (deletion) that impact a significant portion of autism spectrum disorders as well as related neurodevelopmental disorders, which will be amenable to genetic, therapeutic interventions.

Dr Nabeel Al-Yateem BSc, MSc, PhD

Assistant Professor Department of Nursing College of Health Sciences University of Sharjah

Research Theme

Mental Health

Project Title

Clinical and economical evaluation of a community mental health support service for children and adolescents with chronic conditions in the UAE.

UAE healthcare policies identify mental health services as a priority area for further development. The UAE population comprises a large percentage of young people. As they grow they require effective physical health services and evidence-based psychological services. Children and adolescents living with chronic conditions face additional challenges. This has been shown to impact on their development and increases the risk of mental health illness. Currently, community mental health support services for young people are limited. This study is designed to trial an enhanced model of community mental health support, evaluate clinical outcomes and the economic feasibility of expanding this type of service to the UAE.

Research Fellowships 2014 - 2017

USA

Overview of Research Fellowships **2017**

8

Dr Khalid Mahmoud Medical Graduate College of Medicine and Health Sciences United Arab Emirates University

Dr Khalid Mahmoud is a medical graduate from College of Medicine and Health Sciences at the United Arab Emirates University. Through Al Jalila Foundation Fellowship, Dr Khalid undertook training at the Department of Interventional Radiology, University of Alabama at Birmingham, USA.

Dr Khalid has a keen interest in colorectal cancer as it is the third most common cancer worldwide, and fourth leading cause of cancer related death, with the liver being the most common site for distant metastasis in colorectal cancer. The Fellowship gave Dr Khalid the opportunity to join a research project which assesses the efficacy and safety of the Yttrium-90 Nano block technique in the treatment of non-resectable liver metastasis in patients with colorectal carcinoma.

In addition, Dr Khalid was able to collaborate with physicians and researchers from Harvard Medical School at Massachusetts General Hospital and publish preliminary results of this research. The research has been accepted to be presented in the Society of Interventional Radiology meeting 2019 in Texas, USA. With the opportunities presented through the Fellowship, Dr Khalid aims to continue his training through a residency program in the USA with a future goal to apply state of the art interventional radiology in the UAE healthcare system.

Dr Sumayya Al Shehhi

Assistant Professor Ras Al Khaimah Medical Health Sciences University Consultant Physician, Ministry of Health Ο

Dr Sumayya Al Shehhi is an Assistant Professor at the Ras Al Khaimah Medical Health Sciences University and a Consultant Physician in Ministry of Health, UAE. Dr Summayya has a keen interest in diabetes and obesity research as they are the most common non-communicable diseases in the UAE and globally. Through an Al Jalila Foundation Fellowship, Dr Sumayya gained a Master's degree in diabetes clinical research at the prestigious Imperial College London, UK.

During the Fellowship, under the supervision of Professor Gary Frost, Dr Sumayya participated in a study entitled "Deciphering Young Onset Diabetes Using Genetics and Biochemistry". The study aims to determine the detection rate of Maturity Onset Diabetes of the Young (MODY) cases in a diverse, multi-ethnic population diagnosed with diabetes at a young age, and to evaluate the clinical and biochemical characteristics of those genetically diagnosed MODY patients. Following on from the Fellowship training Dr Sumayya has now been accepted to a PhD program in the same institute.

Institutions Funded 2014 - 2017

| 1 | Al Jalila | Children's | Specialty | Hospital |
|---|-----------|------------|-----------|----------|
|---|-----------|------------|-----------|----------|

- 2 American University of Sharjah
- 3 Dubai Health Authority
- 4 Dubai Hospital
- 5 Gulf Medical University Ajman
- 6 Khalifa University of Science, Technology and Research
- 7 Latifa Hospital
- 8 Mediclinic City Hospital
- 9 Mohammed Bin Rashid University of Medicine and Health Sciences
- 10 New York University of Abu Dhabi
- 11 United Arab Emirates University
- 12 University of Sharjah

13 Zayed University

Al Jalila Foundation **Research Donors**

48 | Al Jalila Foundation

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