



مستشفى الملك فيصل التخصصي ومركز الأبحاث
King Faisal Specialist Hospital & Research Centre

2021

RESEARCH REPORT





مستشفى الملك فيصل التخصصي ومركز الأبحاث
King Faisal Specialist Hospital & Research Centre



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SCIENCE AND KNOWLEDGE ARE THE BASES FOR THE ADVANCEMENT OF NATIONS BY CREATING AN EDUCATED GENERATION THAT WILL LEAD SOCIETY AND CONTRIBUTE TO ENHANCING TOLERANCE AND COEXISTENCE AMONG PEOPLE.

**Custodian of the Two Holy Mosques King
Salman Bin Abdulaziz Al-Saud**



“

IT IS MY PLEASURE TO PRESENT SAUDI ARABIA'S VISION FOR THE FUTURE. IT IS AN AMBITIOUS YET ACHIEVABLE BLUEPRINT, WHICH EXPRESSES OUR LONG-TERM GOALS AND EXPECTATIONS AND REFLECTS OUR COUNTRY'S STRENGTHS AND CAPABILITIES. ALL SUCCESS STORIES START WITH A VISION, AND SUCCESSFUL VISIONS ARE BASED ON STRONG PILLARS.

**His Royal Highness Prince
Mohammed bin Salman bin Abdulaziz
Crown Prince, Prime Minister, and Chairman of the
Council of Economic and Development Affairs**

Our Mission

Our mission is to be a centre of excellence in biomedical research. We are dedicated to the advancement of science and the translation of research findings into better healthcare. We strive to provide an environment that enhances individual growth, collaboration, achievement and recognition.





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The Research Centre





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Stem Cell & Tissue Re-Engineering Program

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Department mission: To work towards achieving excellence in Cell Therapy using advanced technologies based on scientific discovery and Precision Medicine with the ultimate goal of curing human diseases that are presently considered incurable for KFSH&RC patients.

- Focus on investigating the molecular and cellular mechanisms of stem and immune biology, with direct therapeutic application in cell therapy and management of cancer, hematopoietic stem cell transplantation, and autoimmune diseases.
- Employ state-of-the-art technology platforms including transcriptomics and proteomics for a better understanding of stem and immune cell biology and its relation to human diseases and works towards achieving the goal of excellence in immune and cell therapy in the Middle East and worldwide. Expanding into Production of therapeutic cells for e.g. CAR T cells, Mesenchymal stem cells (MSc), Natural Killer (NK) cells, Regulatory T-cells (T-regs)

and NK CAR T-cells for different therapeutic applications with all needed modifications that make them suitable for human use.

- Developed proof of concept studies from bench to clinic translation and initiation of Phase I/ II clinical trials with advance cell and gene therapy products for KFSH&RC patients.

The Departmental members actively conduct a range of translational and research activities in collaboration with KFSH&RC laboratories and clinical departments, while equally pursuing pre-clinical research. In addition, building a dynamic collaboration with local and international institutions, in collaborative projects to develop platforms within the scientific and clinical community as well as the industry at large.

Apart from research and development, the program is committed to education and training, and the advancement of Saudi scientists, physicians, technicians and students.



Ayodele A. Alaiya, MB.BS, MPH, Ph.D., FRCPath

Staff Names

Full Names	Title
Ayodele Alaiya	Principal Scientist
Monther Alalwan, PhD	Senior Scientist
Khaled Alhussein, PhD	Senior Scientist
Syed Farhatullah, PhD	Senior Scientist
Hazem Ghebeh, PhD	Senior Scientist
Ameera Mohamed Gaafar	Scientist, PhD
Abdullah Alsuliman-	Scientist, PhD
Zeyad Al Raddadi-	Associate Scientist, PhD
Sheema Almozyan	Post- Doctoral Fellow, PhD
Amer Al-Mazrou-	Research Associate, MSc
Rajaa Hussien	Research Associate, MSc
Rabab Allam	Research Associate, MSc
Zakia Shinwari	Research Assistant, MSc
Hanan Alqudairy	Research Assistant, MSc
Abdullah Aldhfyhan	Research Technician, PhD
Noura Alotbaibi	Research Technician, BSc
Alanoud Aldossry	Research Technician, BSc
Abdulrahman Alsobhi	Research Technician, MSc
Jumanah Yousef	Research Technician, BSc
Hana Binkhamis	Hospital Assistant

Names of Joints

Full Names	Title
George Kulik	Prof.
Zikra Alkhayal	Pediatric Consultant
Alanood Almurshedi	Dr.

Ongoing Research Projects

Title of the Research	PI	Approved
Proteomic profiles in the context of HER2 phenotype by comparing HER2 amplified tumor to tumor without HER2 amplification: Implications for efficacy of targeted therapies. RAC#2150005	Dr. Taher Twegieri Dr. Alaiya	2016
Expression proteomics for the Assessment of Renal damage related to Pyelonephritis in Pediatric Patients. RAC# 2161 014	Dr. Ayodele Alaiya	2016
Proteomics Of Protein Losing Enteropathy And Its Protein Based Therapy With Albumin. RAC # 2191133	Dr. Ayodele Alaiya	2019
The role of the immunomodulatory molecule B7-H1 (PD-L1) in the initiation and maintenance of Cancer Stem Cells. RAC# 2140-001	Dr. Hazem Ghebeh	2014
Profiling of Nasopharyngeal Carcinoma in Saudi Arabia using immune and stem cell markers. RAC# 2150 013	Dr. Hazem Ghebeh	2015
Study for Safety and Efficacy of a Combination of the Investigational PD-L1 Monoclonal.	Dr. Hazem Ghebeh	2015
Biomarkers of Response and Toxicity to anti-PD-L1 and paclitaxel combination therapy in triple negative breast cancer. RAC# 2160-017	Dr. Hazem Ghebeh	2017
Dissection of the Intrinsic Role of PD-L1 on Cell Proliferation and Metastasis. RAC# 2190-002	Dr. Hazem Ghebeh	2019
Characterizing the development of normal mammary gland from pluripotent stem cells in the absence of fascin using a knockout mouse model. RAC # 2170 003	Dr. Monther Al-Alwan	-
Fascin expression on dendritic cells is fundamental for activation of T cells post-transplantation and the acute GVHD pathogenesis. RAC# 2170 019	Dr. Abdullah Alsuliman Dr. Monther AlAlwan	-

Ongoing Research Projects

Title of the Research	PI	Started From
Role of fascin actin-bundling protein 1 (Fscn1) in thyroid cancer development and progression. RAC # 2190 005	Dr. Monther Al-Alwan	-
Evaluating the effect of fascin loss on mesenchymal stem cell development, differentiation potential and immunomodulatory function. RAC # 2190 008	Dr. Monther Al-Alwan	-
An Open-Label, Randomized Phase III Study Comparing Post-Transplant Cyclophosphamide with Calcineurin Inhibitors as a GvHD Prophylaxis to Standard Care of Methotrexate and Calcineurin Inhibitors for Acute Leukemia Incorporating Patient Pharmacogenomics Profiling. RAC# 2181104	Dr. Riad El Fakih Dr. Ayodele Alaiya	-
Phase I/II Study of a Lentigen® CD19 Chimeric Antigen Receptor (CAR) T Cells in Adult patients with relapsed/refractory CD19 Positive Non-Hodgkin's Lymphoma using a Closed Transduction System (NHLACART19. RAC # 2191301	Dr. Ali Al-ahmari, CO-I: Dr. Abdullah Alsuliman	-
Phase II Study of a Lentigen® CD19 Chimeric Antigen Receptor (CAR) T Cells in Adult patients with relapsed/refractory CD19 Positive Acute Lymphoblastic Leukemia using a Closed Transduction System ALLACART19 study. RAC # 2191207	Dr. Riad El Fakih, CO-I: Dr. Abdullah Alsuliman	-
Who is immune to Covid-19? Revision of the innate immune responses of individuals with asymptomatic SARS-CoV-2 infection. RAC # 2200048	Dr. Ameera M. Gaafar, CO-I: Dr. Abdullah Alsuliman	-

External Grant Funding

Title of the Research	PI	Started From
Phase I/II Study for the Safety and efficacy of a combination of the investigatioanti-B7-h17-h1 (PD-L1) monoclonal antibody MEDI4736 (AZ) with paclitaxel for the treatment of Metastatic Breast Cancer, AstraZeneca ESR-14-10649, 150,000 SR, 2016-2021	-	-

Research Collaboration

- Restorative Dental Sciences, Division of Endodontics, College of Dentistry, King Saud University
- Department of Oncology-Pathology, Karolinska Institute, Stockholm, Sweden
- Department of Botany and Microbiology, College of Science, King Saud University
- Department of Clinical Laboratory Sciences, College of Applied Medical Sciences, King Saud University

Publications

- Alaiya, A., Alshukairi, A., Shinwari, Z., Mariam, A. F., Alotaibi, J., AlOmair, W., . & Al-Mozaini, M. (2021). Alterations in the Plasma Proteome Induced by SARS-CoV-2 and MERS-CoV Reveal Biomarkers for Disease Outcomes for COVID-19 Patients. *Journal of Inflammation Research*, 14, 4313.
- Al-Mozaini, M., Alzahrani, A., Alsharif, I., Shinwari, Z., Halim, M., Alhokail, A., Alrajhi, A. and Alaiya, A.(2021). "Quantitative proteomics analysis reveals unique but overlapping protein signatures in HIV infections." *J Infect Public Health* 14(6): 795-802.
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- Sanderson, L. E., Lanko, K., Alsagob, M., Almass, R., Al-Ahmadi, N., Najafi, M., . & Kaya, N. (2021). Bi-allelic variants in HOPS complex subunit VPS41 cause cerebellar ataxia and abnormal membrane trafficking. *Brain*, 144(3), 769-780.
- Ghebeh, H., Mansour, F. A., Colak, D., Alfuraydi, A. A., Al-Thubiti, A. A., Monies, D., . & Tulbah, A. (2021). Higher PD-L1 Immunohistochemical Detection Signal in Frozen Compared to Matched Paraffin-Embedded Formalin-Fixed Tissues. *Antibodies*, 10(3), 24.
- Alraouji, N. N., Hendrayani, S. F., Ghebeh, H., Al-Mohanna, F. H., & Aboussekhra, A. (2021). Osteoprotegerin (OPG) mediates the anti-carcinogenic effects of normal breast fibroblasts and targets cancer stem cells through inhibition of the β -catenin pathway. *Cancer Letters*, 520, 374-384.
- Ghebeh, H., Al-Sayed, A., Eiada, R., Cabangon, L., Ajarim, D., Suleman, K., . & Al-Tweigeri, T. (2021). Weekly Paclitaxel given concurrently with Durvalumab has a favorable safety profile in triple-negative metastatic breast cancer. *Scientific reports*, 11(1), 1-9.
- Al-Rajhi, N., Mohammed, S. F., Khoja, H. A., Al-Dehaim, M., & Ghebeh, H. (2021). Prognostic markers compared to CD3+ TIL in locally advanced nasopharyngeal carcinoma. *Medicine*, 100(46).
- Zou, M., BinEssa, HA., Al-Malki, YH., Al-Yahya, S., Al-Alwan, M., Al-Jammaz, I., Khabar, KSA., Almohanna, F., Assiri, AM., Meyer, B., Alzahrani, AS., Al-Mohanna, FA., Shi, Y. (2021). β -catenin attenuation inhibits tumor progression and promotes re-differentiation and iodine uptake in BrafV600E-driven thyroid cancer. *Molecular Cancer Therapeutics*, 20(9),1603-1613.
- Barnawi, R., Al-Khaldi, S., Majid, S., Qattan, A., Bakheet, T., Fallatah, M., . & Al-Alwan, M. (2021). Comprehensive Transcriptome and Pathway Analyses Revealed Central Role for Fascin in Promoting Triple-Negative Breast Cancer Progression. *Pharmaceuticals*, 14(12), 1228.
- Shaim, H., Shanley, M., Basar, R., Daher, M., Gumin, J., Zamler, D. B., . & Rezvani, K. (2021). Targeting the α v integrin/TGF- β axis improves natural killer cell function against glioblastoma stem cells. *The Journal of clinical investigation*, 131(14).



Figure 1. Workflow illustration of COVID-19 biomarker discovery study. Peripheral blood samples collected from different sample cohorts were pre-processed. The biomaterials were inactivated prior to proteomic analysis, and complex differentially expressed protein (DEP) data were subjected to multivariate computational analysis for biological interpretation of the different stages of the coronavirus disease process. The datasets were filtered, and potential COVID-19-related biomarker panels were identified. The details of the clinical and demographic characteristics of all the samples are available in doi: 10.2147/JIR.S322430. eCollection 2021.

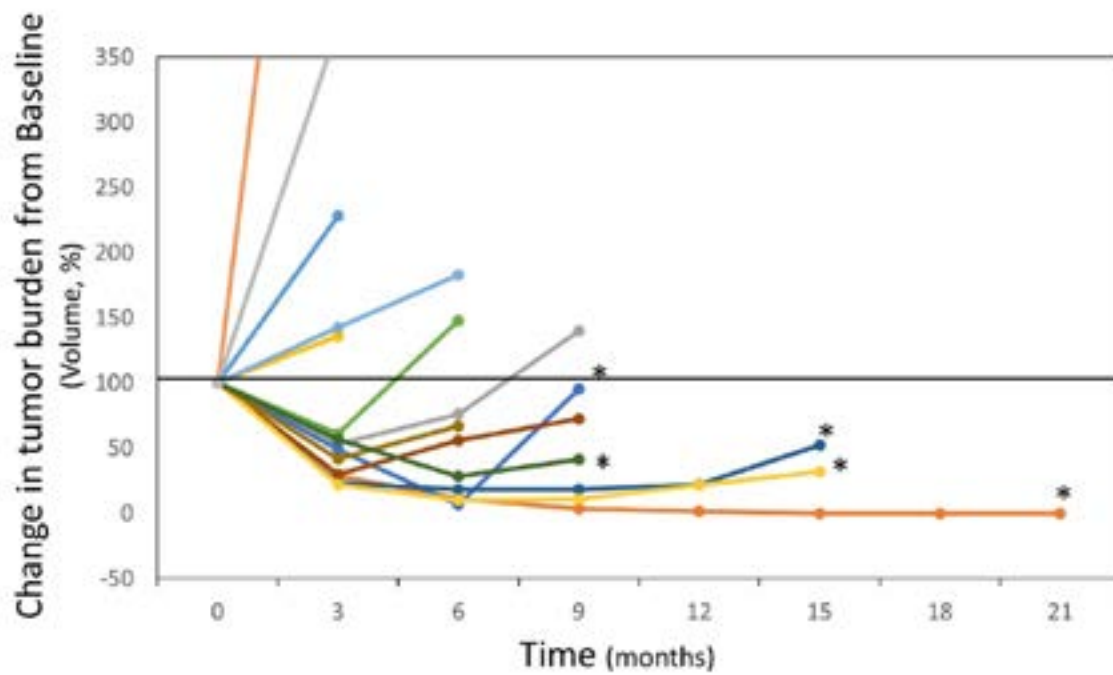


Figure 2. Change of tumor burden in patients after starting treatment. Timeline for change in tumor burden (total volume) based on tumor dimensions provided in patients' CT scans. * indicates patients with confirmed partial or complete response. Tumor burden is followed until discontinuation of therapy (n=13) or complete response (n=1). Details are available in DOI: 10.1038/s41598-021-98113-6

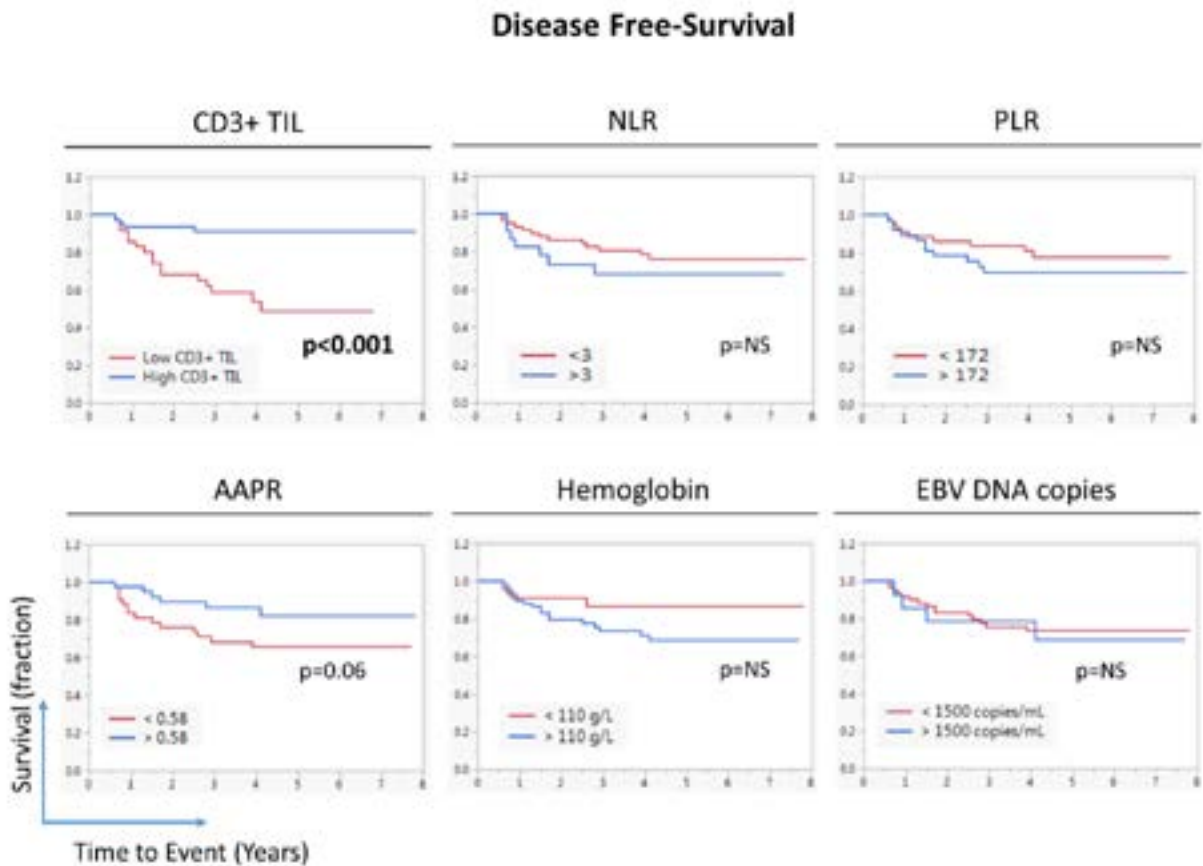


Figure 3. Effect of various Biomarkers on the disease-free survival (DFS) of LA-NPC patients (n=83). Kaplan–Meier survival curves showing disease-free survival (DFS) of patients in relation to their Tumor CD3+TIL infiltration or peripheral blood’s NLR (Neutrophil-to-Lymphocytes Ratio), PLR (Platelet-to-Lymphocytes Ratio), (Albumin-to- Alkaline Phosphatase Ratio) AAPR, hemoglobin, or EBV DNA copies. Statistical significance was calculated using the log-rank test. Details are available in DOI: 10.1097/

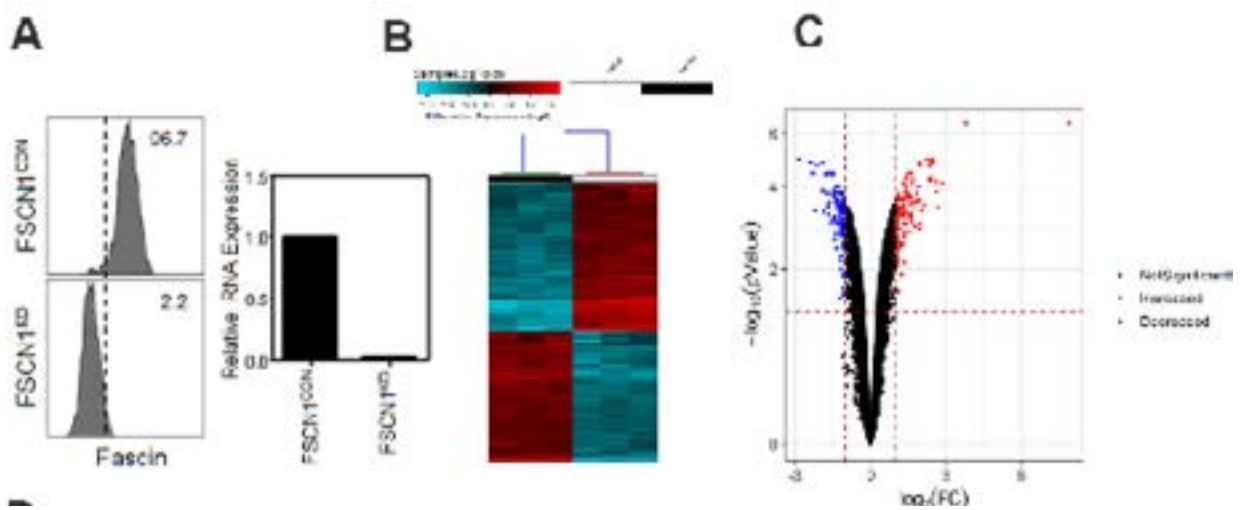


Figure 4. Differential gene expression analysis in fascin knockdown (FSCN1KD) compared to control (FSCN1CON) MDA-MB-231 cells. (A) Left: FACS histograms showing the levels of fascin expression in FSCN1CON and FSCN1KD MDA-MB-231 cells. Right: Bar graph showing the relative RNA expression of fascin in FSCN1CON and FSCN1KD MDA-MB-231 cells. (B) Heatmap depicting the relative expression levels of differentially expressed genes in FSCN1KD compared to FSCN1CON MDA-MB-231 cells. Each column represents one replica, and each row represents a single transcript. The expression level of each transcript in a single sample is depicted according to the color scale. (C) Volcano plot representation of significantly altered genes in FSCN1KD compared to FSCN1CON MDA-MB-231 cells. Red and blue colors indicate the genes with significantly increased or decreased expression, respectively. Black color indicates no significant change. Available in doi.org/10.3390/ph14121228

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Department of Molecular Oncology

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The Molecular Oncology Department is a translational research-oriented Department with the major goals to enhance the understanding of the molecular basis of cancer, to act as a catalyst for translational cancer research, and to promote the movement of that knowledge into the prevention and management of cancer. The department is composed of four sections: **Cancer Biology & Experimental Therapeutics;**

Molecular Endocrinology, Cancer Epigenetics and Translational Cancer Research. Despite the various restrictions imposed by the COVID-19 pandemic, we have had a year of growth and development and there have been significant scientific achievements, including several publications, submission of grants, and training several students at different levels. In addition, public awareness has been a particular focus for

A handwritten signature in blue ink that reads "Abdelilah A." with a period at the end. The signature is written in a cursive, flowing style.

Abdelilah Aboussekhra, PhD

Staff Names

Full Names	Title
Abdelilah Aboussekhra, PhD	Principal Scientist/Chairman/Section Head
Fahad Alkhodairy, PhD	Senior Scientist
Ali S. Alzahrani, MD	Senior Clinical Scientist/Consultant/Section Head
Nisreen Almoghrabi, PhD	Senior Scientist/Section Head
Amal Qattan, PhD	Scientist/Section Head
Mai Almohanna, PhD	Scientist
Avaniyapuram K. Murugan, PhD	Scientist
Syed Islam, PhD	Associate Scientist
Naif Bin Jumah, PhD	PostDoctoral Fellow
Kheloud Alhamoudi, PhD	PostDoctoral Fellow
Nujoud Alyousef	Research Associate
Meshael Alswailem	Research Assistant
Balgees Alghamdi	Research Technician
Noura Alraouji	Research Technician
Edith D. Cabal	Hospital Assistant II

Names of Joints

Full Names	Title
Huda Alkhalaf, PhD	Adjunct Scientist - KACST
Mysoon Alansari, PhD	Adjunct Scientist - KSU

Ongoing Research Projects

Title of the Research	PI	Started From
Single arm phase I/II study of the safety, tolerability and efficacy of the tolizumab followed by cisplatin/docetaxel in patients with triple negative locally advanced breast cancer. RAC# 2181156	Dr. Abdelilah Aboussekhra	Ongoing
Prognostic and predictive impact of AUF1 in locally advanced breast cancer: A retrospective study. RAC# 2151051	Dr. Abdelilah Aboussekhra	Ongoing
Effects of Ionizing Radiation on Breast Cancer-Associated Fibroblasts. RAC# 2190012	Dr. Abdelilah Aboussekhra	Ongoing
Role of Normal Breast Stromal Fibroblasts in Suppressing Breast Carcinogenesis: Identification of Active Molecules. RAC# 2180018	Dr. Abdelilah Aboussekhra	Ongoing
Role of the RNA-binding protein AUF-1 in promoting stemness in breast epithelial cells. RAC# 2180014	Dr. Abdelilah Aboussekhra	Ongoing
Preclinical Study of the Potential Use of Tocilizumab in Treating Breast Cancer. RAC# 2170006	Dr. Abdelilah Aboussekhra	Ongoing
Role of DNMT1 in Breast Carcinoma-Stroma Interplay: Potential for Prognosis and Treatment. RAC# 2160005	Dr. Abdelilah Aboussekhra	Ongoing
Long non-coding RNAs: Roles in prognosis and therapeutic resistance in Her2+ breast cancer. RAC# 2210002	Dr. Sayed Islam	Ongoing
Study the role of AUF1 inhibition in the chemosensitization of osteosarcoma cells. RAC# 2190025	Dr. Huda Al-Khalaf	Ongoing
Effect of blood serum from obese/lean women on breast stromal adipocytes. RAC# 2190020	Dr. Huda Al-Khalaf	Ongoing

Ongoing Research Projects

Title of the Research	PI	Started From
Clinical HSR-MicroRNAs expression profiling for the prediction of resistance to NAC in TNBC. RAC# 2210023	Dr. Amal Qattan	Ongoing
Clinical Studies- Biomarkers of Response and Toxicity of concomitant anti-PD-L1 and Paclitaxel therapy of TNBC.	Dr. Amal Qattan	Ongoing
Mutational profile of differentiated thyroid cancer in Saudi Arabia	Dr. Ali. S. Alzahrani	Ongoing
Study of the molecular basis of pheochromocytoma and paraganglioma. RAC # 2150015	Dr. Ali. S. Alzahrani	Ongoing
Determining the molecular mechanisms of the SARS-CoV-2 induced thyroid diseases and viral impact on thyroid cancer. RAC# 2210025	Dr. A.K. Murugan	Ongoing
Elucidating the role of noncodingRNAs (ncRNAs) in thyroid cancer. RAC# 2210017.	Dr. A.K. Murugan	Ongoing
Screening healthy Saudi women for methylated BRCA1 promoter in peripheral blood cells. RAC #: 2170017	Nisreen Al-Moghrabi	Ongoing
Screening for methylated BRCA1 in couples before, during and after pregnancy and in the newborns. RAC#: 2200004	Nisreen Al-Moghrabi	Ongoing
The molecular significance of constitutive MGMT epimutation in cancer-free females. RAC#: 2210004	Nisreen Al-Moghrabi	Ongoing
The effect of methylated BRCA1 promoter on the expression of microrna-155 in breast cancer cell lines. RAC#: 2190018	Nisreen Al-Moghrabi	Ongoing

Research Collaboration

- The Cancer Biology&Experimental therapeutics Section Collaborates with (KAUST, Jeddah) under the KFSHRC-KAUST Master Research Agreement. Title: Developing a potent pharmacologic inhibitor of The Peroxisome Proliferator-Activated Receptor γ -coactivator (PPRC1) for the treatment of drug resistant Myeloid Leukemia.
- The Molecular Endocrine Research locally collaborated with the Department of Pathology and Laboratory Medicine, King Faisal Specialist Hospital and Research Centre, Riyadh, Saudi Arabia.
- The Molecular Endocrine Research locally collaborated with the Centre for Genomic Medicine, King Faisal Specialist Hospital and Research Centre, Riyadh, Saudi Arabia.
- The Molecular Endocrine Research locally collaborated with the Department of Microbiology, College of Science, Female Campus, King Saud University, Riyadh, Saudi Arabia.
- The Translational Cancer Research Headed by Dr.Amal Qattan, PhD globally collaborate with the Centre for Stress and Age-related Disease, University of Brighton, United Kingdom
- The Translational Cancer Research Headed by Dr.Amal Qattan, PhD locally collaborate with several departments and centers inside and outside King Faisal Specialist Hospital and Research Centre such as the Oncology Centre Department, Pathology & Laboratory Medicine Department, RC Departments and Surgery Department at KFSH&RC.
- The Translational Cancer Research Headed by Dr.Amal Qattan, PhD locally collaborate with the College of Medicine-Alfaisal University, Riyadh, Saudi Arabia
- The Cancer Epigenetics Headed by Dr. Nisreen Almoghrabi has a Local collaboration with The Ministry Of Health, Riyadh, Saudi Arabia
- The Cancer Epigenetics Headed Dr. Nisreen Almoghrabi has a Local Collaboration with the main Hospital King Faisal Specialist Hospital and Research Centre: Dr. Hamed Alhussaini, (Oncology Center), Dr. Nuha Abdullah Khoumais, (Dept of Radiology) and Dr. Asam AlMalik (Surgery)

Other Achievements

- Dr. A.S. Alzahrani was selected as an Editorial Board Member of the prestigious journals in endocrinology (Journal of Clinical Endocrinology and Metabolism, Endocrine, and Thyroid).
- Dr. Amal Qattan was nominated to speak at the United Nation Headquarters (UNHQ), New York-US. Leading Courageously in Response to COVID-19 Pandemic. "Beyond the Borders: Equality in Science for Society". IDWGS Assembly. 11th February, 2021. United Nation (UNHQ), New York-US.
- Dr. Amal Qattan was offered an Editorial position for the prestigious journals: International Immunopharmacology, Elsevier [IF= 4.932, SJR=Q1] and Frontiers in Oncology, [IF=6.244, SJR=Q1].
- Dr. A.K. Murugan was selected as an Academic Editor for the prestigious American journals, PLOS One, BMC Medical Genomics. He was also offered Associate Editor position from the British Cancer Journal, Frontiers in Oncology.

Publications

- Alraouji, N. N., Hendrayani, S. F., Ghebeh, H., Al-Mohanna, F. H., & Aboussekhra, A. (2021). Osteoprotegerin (OPG) mediates the anti-carcinogenic effects of normal breast fibroblasts and targets cancer stem cells through inhibition of the β -catenin pathway. *Cancer Letters*, 520, p374-384.
- Alraouji, N. N., & Aboussekhra, A. (2021). Tocilizumab inhibits IL8 and the proangiogenic potential of triple negative breast cancer cells. *Molecular Carcinogenesis*, 60(1), 51-59.
- Al-Jomah, N., Al-Mohanna, F. H., & Aboussekhra, A. (2021). Tocilizumab suppresses the pro-carcinogenic effects of breast cancer-associated fibroblasts through inhibition of the STAT3/AUF1 pathway. *Carcinogenesis*, 42(12), 1439-1448.
- AlHarbi, B., & Aboussekhra, A. (2021). Cucurbitacin I (JSI124)dependent inhibition of STAT3 permanently suppresses the procarcinogenic effects of active breast cancer-associated fibroblasts. *Molecular Carcinogenesis*, 60(4), 242-251.
- AlKharashi, L. A., Bakheet, T., AlHarbi, W. A., AlMoghrabi, N., & Aboussekhra, A. (2021). Eugenol modulates genomic methylation and inactivates breast cancer-associated fibroblasts through E2F1dependent downregulation of DNMT1/DNMT3A. *Molecular Carcinogenesis*, 60(11), 784-795.
- Al-Mozaini, M., Noman, A. S. M., Alotaibi, J., Karim, M. R., Zahed, A. S. M., Karim, A. R., & Islam, S. S. (2021). SARS-CoV-2 viral load is correlated with the disease severity and mortality in patients with cancer. *Frontiers in Oncology*, 11.
- Alswailem, M., Alsagheir, A., Abbas, B. B., Alzahrani, O., & Alzahrani, A. S. (2021). Molecular genetics of disorders of sex development in a highly consanguineous population. *The Journal of Steroid Biochemistry and Molecular Biology*, 208, 105736.
- Alzahrani, A. S., Mukhtar, N., Aljomaiah, A., Aljamei, H., Bakhsh, A., Alsudani, N., & Sulaiman, O. (2021). The impact of COVID-19 viral infection on the hypothalamic-pituitary-adrenal axis. *Endocrine Practice*, 27(2), 83-89.
- Alzahrani, A. S., Hussein, M., Alswailem, M., Mouna, A., Albalawi, L., Moria, Y., & Dasouki, M. (2021). A novel claudin-10 mutation with a unique mechanism in two unrelated families with HELIX syndrome. *Kidney International*, 100(2), 415-429.
- Murugan, A. K., Al-Amr, A., Al-Ansari, M. M., Manogaran, P. S., Al-Hindi, H., & Alzahrani, A. S. (2021). Single nucleotide polymorphisms in matrix metalloproteinase 2 (MMP2) enhance BRAFV600E mutation-mediated oncogenicity and invasiveness of papillary thyroid cancer cells. *Endocrine-Related Cancer*, 28(4), 273-289.
- Murugan, A. K., & Alzahrani, A. S. (2021). SARS-CoV-2 plays a pivotal role in inducing hyperthyroidism of Graves' disease. *Endocrine*, 73(2), 243-254.

- Alzahrani, A. S., Albalawi, L., Mazi, S., Mukhtar, N., Aljamei, H., Moria, Y., . & Tuttle, R. M. (2021). How Does The AJCC/TNM Staging System Eighth Edition Perform in Thyroid Cancer at A Major Middle Eastern Medical Center? *Endocrine Practice*, 27(6), 607-613.
- Zou, M., BinEssa, H. A., Al-Malki, Y. H., Al-Yahya, S., Alzahrani, A. S., Al-Alwan, M., Al-Jammaz, I., . & Shi, Y. (2021). β -Catenin Attenuation Inhibits Tumor Growth and Promotes Differentiation in a BRAFV600E-Driven Thyroid Cancer Animal Model β -Catenin Promotes Thyroid Cancer Growth. *Molecular Cancer Therapeutics*, 20(9), 1603-1613.
- Alzahrani, A. S., Alswailem, M., Abbas, B. B., Qasem, E., Alsagheir, A., Al Shidhani, A., . & Shi, Y. (2021). A unique genotype of pseudohypoadosteronism type 1b in a highly consanguineous population. *Journal of the Endocrine Society*, 5(8), bvab095.
- Murugan, A. K., Qasem, E., Al Hindi, H., & Alzahrani, A. S. (2021). Analysis of ALK, IDH1, IDH2 and MMP8 somatic mutations in differentiated thyroid cancers. *Molecular and Clinical Oncology*, 15(4), 1-8.
- Murugan, A. K., & Alzahrani, A. S. (2021). SARS-CoV-2: emerging role in the pathogenesis of various thyroid diseases. *Journal of Inflammation Research*, 14, 6191.
- Ahmad, N., Aleysae, N. A., Sobaihi, M., Naitah, N., Rasol, M. A., Al-Kouatli, A. A., . & Alzahrani, A. S. (2022). A single-centre study of genetic mutations, audiology, echocardiogram and pulmonary function in Saudi children with osteogenesis imperfecta. *Journal of Pediatric Endocrinology and Metabolism*, 35(3), 355-362.
- Mukhtar, N., Aljamei, H., Aljomaiah, A., Moria, Y., & Alzahrani, A. S. (2021). Natural course of the American Thyroid Association response to therapy statuses (dynamic risk stratification) in differentiated thyroid cancer. *European thyroid journal*, 10(3), 198-207.
- Qattan, A., Al-Tweigeri, T., Alkhayal, W., Suleman, K., Tulbah, A., & Amer, S. (2021). Clinical Identification of Dysregulated Circulating microRNAs and Their Implication in Drug Response in Triple Negative Breast Cancer (TNBC) by Target Gene Network and Meta-Analysis. *Genes*, 12(4), 549.
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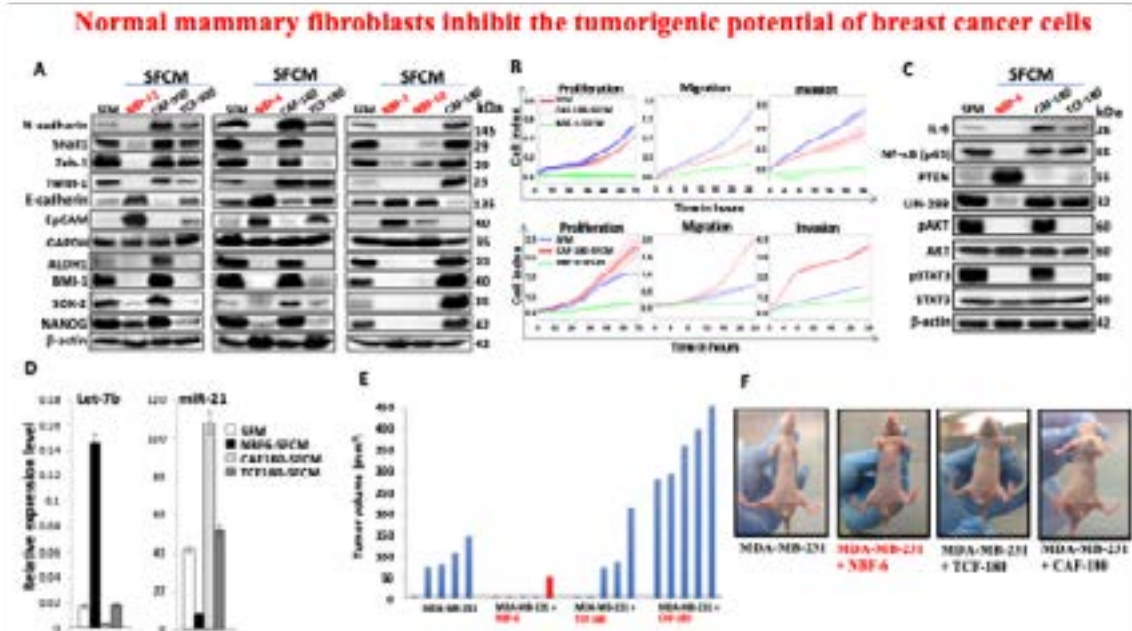


Figure 1. NBF, Normal breast fibroblast; SFCM, Serum-Free conditioned medium; SFM, Serum-free

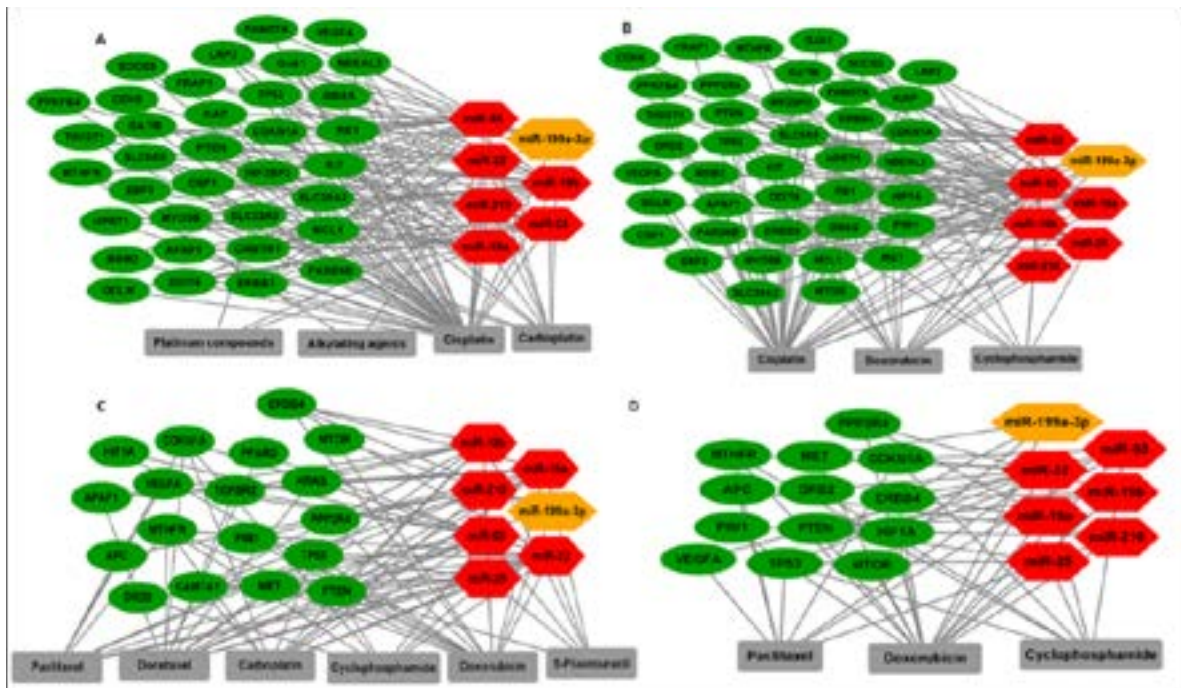


Figure 2. Interactions among different drug combinations for TNBC therapy with significantly upregulated miRNAs (red), downregulated miRNAs (orange), and their target genes (green). [Copyright (2021) reprinted and adapted with permission from Dr.Amal Qattan. 2021 Apr 9;12(4):549. doi: 10.3390/genes12040549. PMID: 33918859. (PI). PUBKFHRC# 2215099].

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Molecular Biomedicine Program

www.kfshrc.edu.sa

The objective of Molecular Biomedicine Program is to investigate molecular mechanisms of diseases and develop necessary tools with potential translational outcome in therapy or in medical biotechnology.

The program currently focuses on a medically important family of genes associated with

regulating mRNA stability and translation which are perturbed as a result of disease.

The program has a unique and internationally well-known research platform which is applicable to several chronic disease conditions that impact the health care in Saudi Arabia including inflammatory, infectious, and cancer diseases.



Khalid S. Abu Khabar, PhD

Staff Names

Full Names	Title
Edward Hitti	Scientist
Fahad Alzoghaibi	Scientist
Norah Alsuhaibani	Scientist
Tala Bakheet	Scientist
Wijdan Alahmadi	Post-Doctoral Fellow
Walid Moghrabi	Technical Specialist
Latifa Mohammed	Technical Specialist
Berkhet Khalifa	Research Associate
Maher Alsaif	Research Assistant
Suhad Alyahya	Research Assistant
Lina Mahmoud Omar	Research Assistant
Nada Almutairi	Research Assistant
Mosaab Doubi	Research Technician
Marisol Sobreviga	Hospital Assistant I

Names of Joints

Full Names	Title
Qamra Alqahtani	Adjunct Scientist

Ongoing Research Projects

Title of the Research	PI	Started From
Are-Genes In Covid19, A Transcriptomic Approach	Khalid Abu Khabar, Edward Hitti	2021 - Ongoing
Dinucleotide frequency in Cancer	Khalid Abu Khabar, Edward Hitti	2021 - Ongoing
Post-transcriptional transcriptomic response to the inhibition of oncogenic RAS signaling,	Khalid Abu Khabar, Edward Hitti	2021 - Ongoing
Post-transcriptional effect of HCQ in COVID19	Khalid Abu Khabar, Edward Hitti	2021 - Ongoing
The mRNA Signature of TTP-HuR-regulated Gene Clusted in Breast Cancer Patients	Khalid Abu Khabar	2019 - Ongoing
AU-Rich Elements Interactome in Cancer	Khalid Abu Khabar	2017 - 2022
Kinome Inhibitors, Cancer Mutants, and Adenylate-Uridylate -Rich Element-Mediated Post-Transcriptional Regulation of Gene Expression	Khalid Abu Khabar	2018 - Ongoing
Pyrimidine 5'-nucleotidase NT5C3A anti-inflammatory signaling pathway and inflammatory diseases in mice	Khalid Abu Khabar	2018 - Ongoing

Publications

- AlQahtani, Q. H., Moghrabi, W. N., AlYahya, S., AlHaj, L., AlSaif, M., Mahmoud, L., . & Khabar, K. S. (2021). Kinome inhibition reveals a role for pololike kinase 1 in targeting posttranscriptional control in cancer. *Molecular Oncology*, 15(8), 2120-2139.
- Al-Matouq, J., Al-Haj, L., Al-Saif, M., & Khabar, K. S. (2021). Post-transcriptional screen of cancer amplified genes identifies ERBB2/Her2 signaling as AU-rich mRNA stability-promoting pathway. *Oncogenesis*, 10(9), 1-11.

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Biostatistics, Epidemiology & Scientific Computing Department

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The Biostatistics Section provides broad-based biostatistical support to clinical and basic science investigators. The section is the principal support mechanism for the Department's "Data Clinic" services through which consultations on any aspect related to biostatistics and biomedical research can be obtained. The biostatisticians in the section engage in a large number of research projects across the General Organization and participate as co-authors on such projects' outcomes.

The Epidemiology Section conducts hospital and community-based epidemiological research to address the distribution of health status in the population and enhance the knowledge of disease occurrence, causation, treatment, and prevention. A diverse epidemiology research staff works to uphold an intellectual environment that facilitates the integration of biological, social, and analytic approaches.

The research includes developing the highest quality epidemiological research to establish preventive measures through traditional, molecular, and clinical epidemiology. Several new projects are initiated annually. The Epidemiology Section scientists and staff lead educational activities as they provide a one-year internship program for epidemiology graduates. The Epi staff are invited as speakers, lecturers on annual basis

to contribute to KFSHRC's patients, employees as well the public's knowledge on health research.

In addition, the Section strives to provide services to the community by giving technical advice and assistance to other institutions.

Overall, the Epidemiology Section aims to promote translational research to fill the gap between epidemiology and clinical and public health applications. These studies have provided the basis for several national public health policy concerns in Saudi Arabia.

Disease Registry is not a matter of technology; rather, it is the result of an intellectual attitude aimed at understanding and improving the principles upon which every medical activity should be based. Therefore, everybody whose work concerns Epilepsy can and should contribute to the advancement of Epileptology and the benefit of millions of human beings suffering from epilepsy.

The first milestone towards this goal in the Kingdom of Saudi Arabia was the establishment of the First Comprehensive Epilepsy Program in The Kingdom in the year 1998 at King Faisal Specialist Hospital and Research Centre. The registry is about collecting data on various items pertaining to the demographic profile of the patient, history, risk factors, medications, diagnostic issues, treatment

Epilepsy Registry Aim:

Capture important information on all epilepsy cases that present to the KFSH&RC-Riyadh facility in order to achieve the following:

- Better understanding of Epilepsy
- Improvement of patient care and better health planning
- Provide a disease specific information network to enhance the managements of research in Saudi Arabia
- Provide an important source of data to enable health care workers to estimate the magnitude and impact of Epilepsy on society and to assess the result of the therapy.

The Computing Services is playing a major role by providing information technology support to the Research Centre which is a research projects oriented institution.

These services include:

- RC Server Management: Manage, monitor and maintain all Research center servers
- End User Support: This includes extending IT support to all the research center users for their computing needs
- In-house Software Development & maintenance: Maintenance of existing software applications designed and developed by the BESC in-house development team

- Third Party Software Evaluation and implementation
- RC Billing Operations support & Reporting
- Database Management and maintenance for research databases
- Data Extraction / Data facilitation
- Manage and facilitate Software Licensing
- Bridging RC-HITA communication / Coordination
- RC Hardware evaluation and requisition
- Lab Operations Support Service
- Consultation Service / Data clinics

Providing REDCap (Research Electronic Data Capture) – A secure web-based application used to build and manage online surveys and databases which serve all KFSHRC Researchers and clinicians.

- It's being used by more than 1400 KFSH&RC users on over 158 projects that are in production and over 1300 other projects that are in development
- It has many features, including:
 - **Online or offline project design**
 - **Availability**
 - **Secure and web-based**
 - **Fast and flexible**
 - **Multi-site access**
 - **Autonomous utilization**
 - **Fully customizable**
 - **Audit trails**
 - **Automated export procedures**



Edward De Vol, PhD

Staff Names

Full Names	Title
Gamal Mohamed, PhD	Senior Scientist
Hala Khalil, PhD	Post Doctoral Fellow
Samia Alhashim	Research Associate
Anwar Alotaibi	Clinical Research Coordinator
Yasmin Altwaijri, PhD	Senior Scientist
Sultan Almubarak, BDS, MD SC, CCRP, PhD	Senior Clinical Scientist/Consultant
Liza Bilal	Technical Specialist
Abdulrahman Bin Muammar	Research Associate
Research Associate	Areej Alfattani
Amani Almeharish	Research Technician
Research Centre Trainee	Mohammed Naseem
Manal Almarzouqi	Clinical Research Coordinator
Abeer Alfirm	Assistant Research Data Manager
Nada Bawyan	Research Technician
Hala Alassiry	Research Technical Assistant
Saleh Al Ageel	Senior Technical Specialist
Bander Alkhudairi, PhD	Post-Doctoral Fellow
Lina Alfantoukh, PhD	Post-Doctoral Fellow
Mansoor Baig	Senior Technical Specialist
Shoukath Raza	Technical Specialist
Yousef Hussain	Research Technician
Ibrahim Bin Olayan	Research Technical Assistant

Granted Patents

- Dr. Yasmim Altwajiri received the Excellence Award for Women given by the Arab League. The award in 2020 was focusing on women in the field of health and medicine. A woman was selected from each country in the Arab League countries. Due to the pandemic, the award was delayed and announced in year 2021.

Ongoing Research Projects

Title of the Research	PI	Started From
The effect of incentives on physicians' responses to an online survey. RAC # 2201249	Hala Khalil	2020 - 2021
A comprehensive integrated multi-omics with network-based analysis for the identification of potential markers for COVID-19 prognosis, diagnosis and therapeutic outcome prediction. RAC # 2200022	Hala Khalil	2021 - Ongoing
Association between ABO Blood Group and COVID-19 Susceptibility in Saudi Population. RAC # 2201131	Hala Khalil	2020 - 2022
Saudi National Mental Health Survey.	Yasmin Al Twajiri	Approval 2009
Ranking Modifiable Risk Factors for Breast Cancer in Saudi Arabia - Population Attributable Risk	Yasmin Altwajiri Rawabi Al sayer (PSMMC)	Approval 2017
Non-Communicable Disease Prevention and Control - Alzheimer's disease in the Kingdom of Saudi Arabia: Population attributable risk. RAC # 2190034	Yasmin Altwajiri Rawabi Al sayer(PSMMC)	Approval 2019
Non-Communicable Disease Prevention and Control - Type 2 Diabetes in the Kingdom of Saudi Arabia: Population attributable risk and a Nomogram	Yasmin Altwajiri Rawabi Al sayer(PSMMC)	Approval 2019
Non-Communicable Disease Prevention and Control - Colorectal Cancer in the Kingdom of Saudi Arabia: Population attributable risk and a Nomogram	Yasmin Altwajiri Rawabi Al sayer(PSMMC)	Approval 2019
The Characteristics of Quality Leadership Style Among Top Management in Government Hospitals of Saudi Arabia	Amani Almeharish	Approval 2020

Ongoing Research Projects

Title of the Research	PI	Started From
Should Vitamin B12 level be checked routinely in patients on Metformin in Primary care patients?	Shoaib Khan	Approval 2019
Mental distress survey in the Saudi Arabia (1) Healthcare workers (2) general population during the COVID-19 pandemic	Yasmin Al Twajjri	2020 - Ongoing
World Mental Health College Survey in Saudi Arabia	Yasmin Al Twajjri	Approval 2020
Primary Care Physicians' Awareness Towards Primary Immunodeficiency in Saudi Arabia	Areej Al Fattani from KFSH&RC - Fatimah Al Rabhan from MOH	Approval 2017
IRBs in Saudi Arabia: functions and operations	Areej Al Fatten	Approval 2019
What researchers think about the roles of their IRBs. An online survey	Areej Al Fatten	Approval 2019
Ten working Strategies of Saudi Arabia to control Covid-19 pandemic	Areej Al Fatten	2020 - Ongoing
Cardiovascular outcomes in HIV-infected as compared to non-HIV-infected Saudis - a single Centre experience	Jameela Edathodu	Approval 2015
Prevalence of non-alcoholic fatty liver disease in Saudi population with psoriasis and/or psoriatic arthritis – A cross sectional study from a tertiary care hospital	Muzamil Chisti	Approval 2020
Translation of PROMIS tools into Arabic	Mona Al Khawajah	Approval 2018
Epidemiology and Natural History of SMA at King Faisal Specialist Hospital and Research Centre (KFSH&RC) in Saudi Arabia, Riyadh: Retrospective and prospective.	Manal AL marzouqi Mohamad AL muhaiza	2018-2022

Ongoing Research Projects

Title of the Research	PI	Started From
A Study On the Efficacy Epilepsy and Safety of Perampanel as Add-on Therapy in Refractory.	Dr. Abdulaziz Alsemari	2019 - 2022
Characteristics of Psychogenic Non-Epileptic Patients-Descriptive study in Riyadh, Saudi Arabia	Manal AL marzouqi	2022- 2024
Characteristics of Psychogenic Non-Epileptic Patients Descriptive study in Riyadh, Saudi Arabia New Research proposal submitted to the Research Committee of Neurosciences Center.	Dr. Abdul Aziz Al-Samri, Saleh Al-Aqil, Raghad Al-Hathal, Hala Al-Assiri, Nada Bawyan	2021 - ongoing
COVID-19 Clinical and Epidemiological Database (CCED)		
An Enquiry into the Relationship between Paediatric Convulsions and On-screen Games	Bander Alkhudairi	

Research Collaboration

- Familial Hypercholesterolemia Prospective Registry
- Cardiac Resynchronization Therapy-Defibrillator (CRT-D) Long-Term Outcome: A Single Center Experience.
- Comparing Saudi Arabian Outcomes with International Benchmarks for Congenital Heart Surgery
- Social life including employment and marital status outcome in post Fontan procedure patients who are 18 years of age or older
- Min invasive cardiac surgery safety and efficacy
- Coronavirus disease-2019 (COVID 19) in heart transplant patients: characteristics and early outcomes
- Mitral Valve Prolapse and Mitral Valve Disjunction Cardiac Magnetic Resonance, Echocardiography Parameters as Predictors of Outcome

Research Collaboration

- Early and Mid-Term Outcome Concerning the Trifecta Aortic Valve Bio-Prosthesis
- An awareness video on Youth Mental Health was created, produced and released in King Saud University internal and media channels as part of the Saudi National Mental Health Survey/Saudi University Student Phase, in collaboration with Harvard University.
- Programming the complex survey questionnaire using Qualtrics, an advanced software for designing and analyzing surveys, as part of the Saudi National Mental Health Survey/Saudi University Student Phase, in collaboration with Harvard University.

Other Achievements

- Dr. Yasmin Altwaijri was invited as a Speaker at the Belgium Embassy to participate in a Webinar on the International Women's Day (One Women Scientist, a Generation of Scientists) on March 8, 2021.
- Dr. Yasmin Altwaijri and the Saudi National Mental Health Survey team members attended the World Mental Health Virtual Meeting from June 30- July 2nd, 2021 at Harvard University.
- Dr. Yasmin Altwaijri participated in the National Mental Health Research Priority Setting Workshop, organized by the Saudi National Institute of Health Research on June 6th and on June 8th 2021 at the Crown Plaza, Digital City, Riyadh.
- Dr. Yasmin Altwaijri participated in the National Mental Health Strategy Workshop, organized by the Saudi National Institute of Health Research on July 13th, 2021 at the Crown Plaza, Digital City, Riyadh.
- Dr. Yasmin Altwaijri participated in the National Mental Health Strategy Workshop for Drug Abuse, organized by the Saudi National Institute of Health Research on September 7th, 2021 at the Crown Plaza, Digital City, Riyadh.
- Dr. Yasmin Altwaijri presented two posters, related to scientific papers on the methodology of the Saudi National Mental Health Survey project, in the virtual World Congress of Epidemiology (WCE) 2021 organized by the International Epidemiological Association, held from September 3-6, 2021. The 2 posters were published in the International Journal of Epidemiology: 1494 Content Analysis and Predicting Survey Refusal: What Are Respondents' Concerns about Face-to-face Mental Health Survey? 1497 Implementing the TRAPD model for the Saudi adaptation of the Composite International Diagnostic Interview 3.0

Other Achievements

- Ms. Lisa Bilal presented as a speaker in the virtual conference on “Family Mental Health” organized by the Saudi National Center for Mental Health Prevention on October 10th, 2021.
- Ms. Areej AlFattani presented a poster related to a recent publication about (Ten public health strategies to control the COVID-19 Pandemic, the Saudi experience) in an international virtual conference BMJ Leaders in Healthcare 2021, 8-11 November 2021.
- Ms. Areej AlFattani presented a lecture on “Research journey” to OB/Gyn residents on 30th September 2021.
- Ms. Areej AlFattani presented a lecture on “Research Methodology” for the Family Medicine on 29th November 2021.
- Ms. Areej AlFattani presented “Foundation of statistics” for the Basic research skills course of Pediatrics carried out on 20th December 2021
- REDCap Session for PNU Interns - 04 March 2021 : Saleh Al Ageel
- REDCap Session for Pharmacy - 31 March 2021: Saleh Al Ageel
- National Data Management Office Workshop for Data Stewards – 21 June 2021
- REDCap introduction session given to the PNU interns at the BESC Department on 21 Sep. 2021 – Saleh Al Ageel.
- Held a REDCap Workshop – Advanced level for KFSHRC on 29 Sep. 2021- Saleh Al Ageel.
- Attend the REDCapCon 2021 for the Administrators was held online Sep. 21-23 2021. – Saleh Al Ageel.
- REDCap session for Family Medicine Residents – 28 Nov. 2021: Saleh Al Ageel
- Special REDCap Lecture (events feature) 27 DEC. 2021 : Saleh Al Ageel
- Trained 3 graduate interns for an average period of 3 months: Mansoor Baig
- Reviewer for ICIMTH 2021 Conference at Greece, Reviewed 4 full papers, 19th ICIMTH, Athens Greece: Mansoor Baig
- Reviewer for EFMI STC Conference in France, reviewed 2 full papers: Mansoor Baig
- Presented at ICIMTH 2021, Greece, on the Past Present and future of clinical registries: Mansoor Baig
- As a Reviewer: Reviewed 4 full papers for Medical Informatics Europe*“MIE2021”conference <https://mie2021.org/en/>: Mansoor Baig
- Reviewed 1 Full paper for the eTELEMED 2021: Mansoor Baig

Publications

- Saleh, R. A., Khalil, H., Alsaleh, M., Almeharish, A., Mohammed, V., Alhumaidan, H., & Saleh, R. (2021). Voluntary and nonvoluntary blood donations among doctors. *Health Science Reports*, 4(4), e377.
- Saleh, R. A., Aleid, M., Saleh, R., Al Semari, A., Alrushud, N., BinJaber, R., . & Khalil, H. (2021). Employment and occupational safety among patients with seizure disorders–findings from a tertiary hospital in Saudi Arabia. *Epilepsy & Behavior*, 122, 108208.
- Alsulaim, T., Alhassan, N., Khalil, H., & Almutlaq, A. (2021). Tocilizumab Effect on Lipid Profile in Correlation to Cardiovascular Events: A Retrospective Cohort Study. *International Journal of Rheumatology*, 2021.
- Othman, M., Alshaalan, M., Khawaji, A., Benkuddah, R., Khalil, H., Alismail, K., . & Alreshoodi, S. (2021). Vertebroplasty Increases the Incidence Of New Vertebral Compression Fractures Compared To Conservative Management. *The Arab Journal of Interventional Radiology*, 5(01), 035-040.
- Abdrabou, A. K., Fakih, R. E., Hashmi, S., Khalil, H., Khafaga, Y. M., Alhayli, S., . & Hanbali, A. (2021). Outcomes of autologous stem cell transplantation for multiple myeloma in Saudi Arabia. *Annals of Saudi Medicine*, 41(4), 198-205
- Edathodu, J., Alamri, M., Alshangiti, K. A., Khalil, H., Alnaghmush, A. S., Albaiz, F., . & Alrajhi, A. A. (2021). Clinical manifestations and treatment outcomes of human brucellosis at a tertiary care center in Saudi Arabia. *Annals of Saudi Medicine*, 41(2), 109-114.
- AlMayouf, S. M., Alrasheedi, A., Alhashimm S., Hashad, S., Khawaja, K., Abdwani, R., & Almutairi, N. (2021). Familial aggregation of juvenile idiopathic arthritis with other autoimmune diseases: Impact on clinical characteristics, disease activity status and disease damage. *International Journal of Rheumatic Diseases*, 24(8), 1080-1085.
- Ajlan, A., Aleid, H., Ali, T. Z., Joharji, H., Almeshari, K., Nazmi, A. M., Shah, Y., Devol, E., Alkortas, D., Alabdulkarim, Z., Broering, D., Alahmadi, I., Ullah, A., Alotaibi, A., & Aljedai, A. (2021). Standard induction with basiliximab versus no induction in low immunological risk kidney transplant recipients: study protocol for a randomized controlled trial. *Trials*, 22(1), 414.
- Alangari, A. S., Knox, S. S., Innes, K. E., Kristjansson, A. L., Wen, S., Bilal, L., . & Altwajiri, Y. A. (2021). Drop out from mental health treatment in the Saudi national mental health survey. *International Journal of Mental Health*, 1-16.
- Hyder, S., Bilal, L., Mneimneh, Z., Naseem, M. T., DeVol, E., Aradati, M., . & Altwajiri, Y. (2021). Content Analysis and Predicting Survey Refusal: What Are Respondents' Concerns about Participating in a Face-to-face Household Mental Health Survey?. *Field Methods*, 33(2), 125-142.

- Nierenberg, A.A., Harris, M.G., Kazdin, A.E., PuacPolanco, V., Sampson, N., Vigo, D.V., Chiu, W.T., Ziobrowski, H.N., Alonso, J., Altwaijri, Y. and Borges, G. (2021). Perceived helpfulness of bipolar disorder treatment: Findings from the World Health Organization World Mental Health Surveys. *Bipolar Disorders*.
- Mneimneh, Z. N., McClain, C., Bruffaerts, R., & Altwaijri, Y. A. (2021). Evaluating survey consent to social media linkage in three international health surveys. *Research in social & administrative pharmacy: RSAP*, 17(6), 1091–1100. <https://doi.org/10.1016/j.sapharm.2020.08.007>
- Hyder, S., Almutlaq, N., Naseem, M. T., Bilal, L., Al-Subaie, A., Al-Habeeb, A., & Altwaijri, Y. (2021). Psychotic Experiences and Alternate Dimensions: A Thematic Analysis Exploring Frameworks of Psychotic Symptoms Among Saudis. *SAGE Open*, 11(3), 21582440211030276.
- Stein, D. J., Kazdin, A. E., Ruscio, A. M., Chiu, W. T., Sampson, N. A., Ziobrowski, H. N., Aguilar-Gaxiola, S., Al-Hamzawi, A., Alonso, J., Altwaijri, Y., Bruffaerts, R., Bunting, B., de Girolamo, G., de Jonge, P., Degenhardt, L., Gureje, O., Haro, J. M., Harris, M. G., Karam, A., Karam, E. G., ... WHO World Mental Health Survey collaborators (2021). Perceived helpfulness of treatment for generalized anxiety disorder: a World Mental Health Surveys report. *BMC psychiatry*, 21(1), 392. <https://doi.org/10.1186/s12888-021-03363-3>
- AlFattani, A., AlMeharish, A., Nasim, M., AlQahtani, K., & AlMudraa, S. (2021). Ten public health strategies to control the Covid-19 pandemic: the Saudi Experience. *IJID Regions*.
- Alsarrani, W. I., Jusoh, A., Alhaseri, A. A., & Almeharish, A. (2021) a literature review study of the relationship between leadership style, leadership behaviour, and leadership traits.
- Almainan, W., Alfattani, A., & Alshareef, T. A. (2021). Breaking bad news to children with chronic kidney disease: A questionnaire-based study and literature review. *International Journal of Pediatrics and Adolescent Medicine*, 8(2), 87-93.
- Aly, M. M., Al-Shoaibi, A. M., Alzahrani, A. J., & Al Fattani, A. (2021). Analysis of the Combined Computed Tomography Findings Improves the Accuracy of Computed Tomography for Detecting Posterior Ligamentous Complex Injury of the Thoracolumbar Spine as Defined by Magnetic Resonance Imaging. *World Neurosurgery*.
- Banjar, H., Ghawi, A., AlMogarri, I., Alhaider, S., Alomran, H., Hejazi, A., . & AlFattani, A. (2021). First report on the prevalence of bacteria in cystic fibrosis patients (CF) in a tertiary care center in Saudi Arabia. *International Journal of Pediatrics and Adolescent Medicine*.

- Aly, M. M., Al-Shoaibi, A. M., Al Fattani, A., & AlJuzair, A. H. (2021). Diagnostic Value of Various Morphological Features of Horizontal and Vertical Laminar Fractures for Posterior Ligamentous Complex Injury of the Thoracolumbar Spine as Defined by Magnetic Resonance Imaging. *World Neurosurgery*, 153, e290-e299.
- Aly, M. M., Al-Shoaibi, A. M., Al-Aithan, A., AlJuzair, A. H., Almasoudi, T., AlFattani, A., & Eldawoody, H. (2021). Can vertical laminar fracture further discriminate fracture severity between thoracolumbar AO type A3 and A4 fractures? *World Neurosurgery*.
- Abolkhair, A. B., El-Kabbani, A. O., Al-Mulhem, A., AlFattani, A. A., Al-Hammadi, A., Alghamdi, H., . & Terkawi, A. S. (2021). Psychometric and accuracy comparison of three commonly used questionnaires for the diagnosis of neuropathic pain. *Saudi Journal of Anaesthesia*, 15(4), 409.
- AlRuwalli, N., Zaidan, F., AlFattani, A., & Alenazi, S. (2021). Urgent need to standardize labelling of acetaminophen-paediatric liquid drug products in Saudi Arabia. *International Journal of Pediatrics and Adolescent Medicine*.
- Als fouk, B. A., Almarzouqi, M. R., Als fouk, A. A., Alageel, S., & Alsemari, A. (2021). Antiseizure medications use during pregnancy and congenital malformations: A retrospective study in Saudi Arabia. *Saudi Pharmaceutical Journal*, 29(9), 939-945.
- Almarzouqi, M., Alageel, S., Almeharish, A., & Alsemari, A. (2021). Marital status among patients with epilepsy in Saudi Arabia. *Epilepsy & Behavior*, 126, 108452.
- Als fouk, B. A., Almarzouqi, M. R., Alageel, S., Als fouk, A. A., & Alsemari, A. (2022). Patterns of antiseizure medication prescription in pregnancy and maternal complications in women with epilepsy: A retrospective study in Saudi Arabia. *Saudi Pharmaceutical Journal*, 30(3), 205-211.

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Environmental Health Program

www.kfshrc.edu.sa

The Environmental Health Program (EHP) focuses on monitoring and assessing environmental pollutants that have a potential impact on the general population, emphasizing children and women.

The EHP research activities concentrate on three interactive areas:

- Biomonitoring Studies
- Exposure Risk Assessment
- Biochemical Toxicology.

In addition, the program continues collaborating

productively with our clinical colleagues to promote public awareness of the implications of our research findings for improved clinical management.

We also offer opportunities for both in-house training and collaborations with local academic institutions.

This report describes the progress of our ongoing projects, identifying the 2020-2021 significant accomplishments.

A handwritten signature in blue ink that reads "Iman A." with a stylized flourish at the end.

Iman Al-Saleh

Staff Names

Full Names	Title
Iman Al-Saleh	Principal Scientist
Ghofran Alqudaihi	Postdoctoral Fellow
Rola Elkhatib	Research Associate
Reem Alrouqi	Research Assistant
Hissah Alnuwaysir	Research Technical Assistant
Reem Alghamdi	Research Technical Assistant
Norah Alobaid	Research Technical Assistant
Njoud Alrshoud	Research Technical Assistant

Ongoing Research Projects

Title of the Research	PI	Started From
The potential association between exposure to environmental pollutants and metabolic syndrome and its subcategories. RAC # 2210010		2021-2023
The association between body burden of cadmium, lead, mercury, arsenic and selenium and risk of osteoporosis among women: A cross-sectional study. RAC # 2210007		2021-2023
The role of exposure to endocrine-disrupting chemicals Bisphenol A and Phthalates in precocious puberty. RAC # 2210016		2021-2023
Fetal exposure to toxic metals from intrauterine blood transfusions and its impact on neurodevelopmental outcomes. RAC # 2200007		2020-2023
Metal contents in colorectal tissues and their role in promoting Aberrant Crypt Foci and altering DNA methylation. RAC # 2200005		2020-2023

Ongoing Research Projects

Title of the Research	PI	Started From
Essential metals and vitamins levels in patients exposed to COVID-19 and their potential associations with the disease severity. RAC # 2200025		2020-2021
Exposure of preterm neonates receiving total parenteral nutrition to toxic metals and phthalates and their potential associations to autism spectrum disorders. RAC # 2191092		2020-2023
Assessing the potential genotoxic effect of styrene exposure after drinking hot beverages in Styrofoam cups. RAC # 2150028		2021-2023
Maternal Exposure to Plasticizers (Phthalates and Bisphenol A) and its link to Autism Spectrum Disorders: A prospective cohort study. RAC # 2180005		2019-2023

Publications

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- Al-Saleh, I. (2022). The relationship between urinary phthalate metabolites and polycystic ovary syndrome in women undergoing in vitro fertilization: Nested case-control study. *Chemosphere*, 286, 131495.
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Department of Infection & Immunity

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During 2021, our research focused on R&D to develop detection assays and surveillance systems to monitor SARS-CoV-2. Scientists in the department developed several in-house assays to track the virus and to overcome the shortages of lab supplies.

The Department has successfully established COVID-19 Genomic and Epidemiological Surveillance System in KFSH&RC. In addition, we have established a microbial sequencing facility that is able to study microbiome, metagenomics

for unknown infections and microbial identification which will improve our patients' standard of care.

The Department is serving KFSH&RC in Riyadh, Jeddah and Madinah. Also, Immunocompromised Host unit provides an outstanding opportunity to advance health care for Immunocompromised patients through translational and clinical research in an integrated scientific and clinical research setting.

A handwritten signature in blue ink that reads "Ahmed A." with a stylized, cursive font.

Ahmed Al-Qahtani, PhD

Staff Names

Full Names	Title
Ahmed Al-Qahtani	Principal Scientist
Fatimah Alhamlan	Scientist
Maha Almozaini	Scientist
Alwaleed Alaidan	Post-Doctoral Fellow
Ibtihaj Alsharif	Research Associate
Marie F. Fe Bohol	Research Assistant
Mashael Alsaeedi	Research Assistant
Saltana Alhowaiti	Research Technician
Maureene Delos Reyes	Hospital Assistant I
Michael Laya	Technical Assistant
Layla Alharbi	SCDP
Madain Alsanea	Research Technical Assistant
Basma Alahideb	Research Technician
Maha Alabdulkareem	Research Assistant

Ongoing Research Projects

Title of the Research	PI	Started From
Epidemiology, Clinical Manifestation and Infection Control of SARS-CoV-2 Infected Cases in Saudi Arabia. RAC # 2201047	Fatimah S. Alhamlan	2020-Ongoing
Metagenomic Next-Generation Sequencing to Identify SARS-CoV-2 Co-Infections and its Impact on Disease Severity and Case. RAC# 2200009	Fatimah S. Alhamlan	2020-Ongoing
Comparison of SARS-CoV-2 Viral Load and Prolonged Viral Shedding in Asymptomatic and Symptomatic Patients. RAC # 2200014	Fatimah S. Alhamlan	2020-Ongoing
Understanding the Role of Surfactant protein SP-A and SP-D in Normal and Preterm Labor. RAC # 2190017	Fatimah S. Alhamlan	2019- Ongoing

Ongoing Research Projects

Title of the Research	PI	Started From
The role of SAMHD1 in HIV-2 (Vpx) gene expression and its relation to HIV-2 pathogenesis. RAC# 2130003	Maha Almozaini	
Lymphoma in HIV-Infected Patients in Saudi Arabia, Genetic Polymorphism RAC# 2180020	Maha Almozaini	
The immunological response of MERSCoV infected patients in ICU. RAC# 2180024	Maha Almozaini	
Survey to be conducted to assess the Knowledge, attitudes and awareness of HIV/AIDS. RAC# 2181184	Maha Almozaini	

Research Collaboration

- At KFSH&RC, ICH established collaboration with the Department of Medicine (Riyadh and Jeddah), Transplant Program and Oncology.
- At a regional level, ICH established collaboration with Alfaisal university, KSU, ARAMCO, MOH and SCDC.
- At an International research collaboration with prestigious institutes in the field, such as;
 1. Transplant Infectious Diseases and Compromised Host Program, Mass General Transplant Center at Harvard Medical School.
 2. Ragon institute (MGH, Harvard & MIT) for HIV research.
 3. Imperial College School of Medicine and Technology, London, UK.
 4. Brunel University, West London, UK.
 5. New York University School of Medicine.
- KAUST [Developing and validating SARS-CoV-2 in-house detection assays]
- Alfaisal University [Developing rapid diagnostic platforms for the detection of emerging viruses in KSA using biosensors]
- KSU [Supervising graduate students working on COVID19 and Sexual Transmitted Infections]
- Public Health Authority [COVID19 related services and research]
- KFSH&RC Jeddah, Organ Transplant Center [COVID19 research on immunocompromised patients]
- KFSH&RC Madinah [COVID19 related services]
- MOH [Human Papillomavirus research]

Other Achievements

- Supervising one post-graduate students (MS.c degree) from Alfaisal University, Riyadh. He successfully defended his thesis in November 2021 Supervised three residents, six trainees and one SCDP students on ICH Research.

Dr. Maha Almozaini

- Dr. Maha Almozaini appointed as a jury member for the L'Oreal UNESCO women in Science, 2021. To support young scientist in the field of medicine and technology.
- Participated in KFSHRC, national and international committees,
 1. Advisory Committee member for COVID-19 Vaccine and diagnostic testing at MOH.
 2. Advisory Committee member for Research and Innovation at MOH
- Participated as a speaker in the following:
 1. "STEM Gender Equality Mission' STEM Ambassador" in collaboration with the Ministry of Higher Education are organising Bulan STEM Kebangsaan, 16th September 2021, Malaysia

2. "HIV/AIDS research efforts at KFSHRC", 27th September 2021, The Research Centre Training & Education

3. "Innovative Assays to Quantify HIV-1 Reservoir and Monitoring Cure Strategies", 14-15 December 2021, Saudi National AIDS Program Conference.

Dr. Maha Almozaini

- Completing the Program for Leadership Development, Executive Education. Harvard Business School. Boston, MA. USA/.

Dr. Fatimah Alhamlan

Publications

- Pantazi, I., Al-Qahtani, A. A., Alhamlan, F. S., Alotheid, H., Matou-Nasri, S., Sourvinos, G., . & Tsatsanis, C. (2021). SARS-CoV-2/ACE2 interaction suppresses IRAK-M expression and promotes pro-inflammatory cytokine production in macrophages. *Frontiers in Immunology*, 2347.
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- AlMarshad, L. K., AlJobair, A. M., Al-Anazi, M. R., Bohol, M. F. F., Wyne, A. H., & Al-Qahtani, A. A. (2021). Association of polymorphisms in genes involved in enamel formation, taste preference and immune response with early childhood caries in Saudi pre-school children. *Saudi journal of biological sciences*, 28(4), 2388-2395.

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Comparative Medicine

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The Mission of the Department of Comparative Medicine's is to support biomedical research and advance patient care through the provision of high quality animal modeling.

Our laboratory animal modeling and care program complies with the established standards of the "Guide for the Care & Use of Laboratory Animals" in accordance with both national and international standards.

The Department strives to produce novel, as well as to refine existing animal models while encouraging the use of alternatives to animal research.

The department research activities focus on two main areas; infertility and reproductive health and organ transplant research utilizing various genomic and phenomic tools.



Abdullah M. Assiri, DVM, PhD

Staff Names

Full Names	Title
Falah Almohanna, DVM, MSc	Scientist
Goran Matic, DVM	Scientist
Nadya Alyacoub, PhD	Scientist
Raed Abu Dawud, PhD	Scientist
Bhavesh Mistry	Associate Scientist
Mohamed Rajab	Research Associate
Hala Albasheer	Research Associate
Mohammed Hazazi, DVM	Veterinarian
Sahar Salem	Research Assistant
Maha Alanazi	Research Assistant
Alanoud Alqassem	Research Assistant
Janalie Narral Losenada	Hospital Assistant I
Juneil Batalla, DVM	Veterinary Technician
Wilfredo Antiquera	Research Technical Assistant
Baltazar Caducio	Research Technical Assistant
Mubarak Alenizi	Research Technical Assistant
Alberto Capuno	Technical Assistant
Talal Alasmari	Technical Assistant
Michael Guittap	Technical Assistant
Mona Saleh	Animal Care Aide

Names of Joints

Full Names	Title
Junaid Kashir, PhD	Adjunct Scientist
Peter Cahusac, PhD	Adjunct Scientist

Ongoing Research Projects

Title of the Research	PI	Started From
Development of Mice Genetic Engineering and Assisted Reproductive Technologies (MGEART)	Dr. Abdullah Assiri	27 December 2015-Ongoing
Investigating Role of PLCZ in Oocytes Activation, Early Embryonic Development and as Biomarker ⁴ for Male Infertility, KACST-NSTIP Grant Fund	Dr. Abdullah Assiri	7 August 2016-Ongoing
Investigating the Role of Dcaf17 Gene in Mice Spermatogenesis	Dr. Abdullah Assiri	17 October 2016-Ongoing
Role of BPTF in the Pathogenesis of Heart Failure	Dr. Abdullah Assiri	10 July 2016-Ongoing
Exploring Role of DNA-Damage Binding Protein 1 (DDB1) in Male Germ Cell Development	Dr. Abdullah Assiri	18 October 2017-Ongoing
Experimental Surgery Training Courses	Experimental Surgery Training Courses	25 January 2016-Ongoing
Breeding and Maintaining the Laboratory Animals at KFSH&RC	Dr. Falah Almohanna	19 February 2019-Ongoing

Other Achievements

- Conducted “6th Bladder Augmentation and Reconstruction Workshop” and “2nd Microsurgery in Infertility Workshop” on 23 October 2021 in collaboration with Urology Department.
- Conducted “OB-GYN Surgical Training” on 30 September 2021 in collaboration with Obstetrics & Gynecology Department and Med Surg Solutions company.
- Conducted “Animal Lab Training: Open and Laparoscopic Skills” on 13 November 2021 in collaboration with Med Surg Solutions company.
- Invited Association for Assessment and Accreditation of Laboratory Animal Care (AAALAC)-International delegates for the KFSH&RC Animal Care and Use Program (ACUP) on 01-02 November 2021.
- The department participated in 4 surgical workshops with 54 participants.
- The department participated in 49 training programs/sessions with 222 participants.
- Dr. Junaid Kashir has been awarded Fellow status by the Royal Society of Biology (FRSB) and Institute of Biomedical Scientist (FIBMS).
- Dr. Peter Cahusac has been awarded Chartered Statistician status by the Royal Statistical Society (UK).

Publications

- Kashir, J., Mistry, B. V., Gumssani, M. A., Rajab, M., Abu-Dawas, R., AlMohanna, F., . & Assiri, A. M. (2021). Advancing male age differentially alters levels and localization patterns of PLCzeta in sperm and testes from different mouse strains. *Asian Journal of Andrology*, 23(2), 178.
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- Khan, M. A., Ashoor, G. A., Shamma, T., Alanazi, F., Altuhami, A., Kazmi, S., . & Clemens Broering, D. (2021). IL-10 Mediated Immunomodulation Limits Subepithelial Fibrosis and Repairs Airway Epithelium in Rejecting Airway Allografts. *Cells*, 10(5), 1248.
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- Al-Jomah, N., Al-Mohanna, F. H., & Aboussekhra, A. (2021). Tocilizumab suppresses the pro-carcinogenic effects of breast cancer-associated fibroblasts through inhibition of the STAT3/AUF1 pathway. *Carcinogenesis*, 42(12), 1439-1448.
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- Al-Yacoub, N., Colak, D., Mahmoud, S. A., Hammonds, M., Muhammed, K., Al-Harazi, O., . & Poizat, C. (2021). Mutation in FBXO32 causes dilated cardiomyopathy through up-regulation of ER-stress mediated apoptosis. *Communications Biology*, 4(1), 1-12.

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Biomedical Physics Department

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Biomedical Physics is a service Department with research activities aiming at enhancing many applications of radiation in medicine and allied health professions.

The objective is to better understand and master this tool in health and diseases and therefore, to improve its beneficial effects and avoid its hazardous potential.

Research focuses on Radiation Oncology, Diagnostic Imaging, Nuclear Medicine, Functional MRI Imaging, Health Physics, Radiation Safety,

Radiation Monitoring of patients and radiation workers, Medical 3D Printing, Gamma-Sterilization of bone grafts and medical devices, Radiobiology, Biodosimetry and Radiation Emergencies.

We foster national and international partnerships with recognized clinical and research institutes in support of quality patient care.

The numerous achievements of the Department reflect the active involvement in clinical and basic research, continuing education and income producing services and activities.



Belal A. Moftah, PhD, FCCPM

Staff Names

Full Names	Title
Refaat Y. Almazrou	Deputy Chairman/Senior Medical Physicist
Dena A. Al-Assailan	Administrative Coordinator II
Nouf A. Salman	Hospital Assistant Ii
Omar Noor	Medical Physicist IV
Shadei F. Alanazi	Senior Medical Dosimetrist
Ghazi Alsbeih	Principal Scientist
Khaled S. Al-Hadyan	Post-Doctoral Fellow
Najla Alharbi	Research Associate
Maha Alghamdi	Research Associate
Sara Bin Judia	Research Technician
Mehenna Arib	Senior Health Physicist
Heba A. Al-Humidan	Health Physicist III
Fareed Mayhoub	Senior Health Physicist
Ibrahim A. Algain	Health Physicist Ii
Celestino Lagarde	Health Physics Technician
Shiema H. Alshora	Health Physics Technician
Akram Al-Mousa	Senior Technical Specialist
Saad Bin Jamaan	Research Assistant
Jonathan Antonio	Gamma Facility Operator
Rafat S. Mohtasib	Scientist
Abdullah M. Almujaally	Post-Doctoral Fellow
Ahmed M. Masawi	Medical Physicist Ii
Ghadeer M. Nazer	Lead Medical Dosimetrist
Osama T. Hassad	Senior Medical Dosimetrist
Afrah I. Alsomali	Medical Physicist IV
Arwa A. Helmi	Medical Dosimetrist

Staff Names

Full Names	Title
Jazleen A. Abdulmajeed	Medical Dosimetrist
Noor M. Ghassal	Senior Medical Dosimetrist
Camelia Constantinescu	Medical Physicist I
Saad Ibrahim O. Aldelaijan	Medical Physicist li
Habib A. Alsaleh	Medical Physicist
Md Abdullah Alkafi	Medical Physicist I
Mamoun Z. Shehadeh	Medical Physicist I
Mohammad N. Hussain	Medical Physicist li
Ahmad M. Nobah	Medical Physicist I
Faisal S. Alzorkany	Medical Physicist li
Hind A. Alselham	Medical Physicist IV
Khaled M. Alqahtani	Medical Physics Technician II
Musaab A. Aljuraid	Medical Physics Technician I
Mervat A. Alharbi	Medical Physics Technician I
Rikka Maureen Santos	Research Assistant
Eman Elsaiedy	Health Physics technician
Waleed Al-Najjar	Adjunct Principal Scientist/Senior Chief Medical Physicist
Noor N. Bin Aydan	Health Physics Technician (RC Grant)
Sara S. Alhazani	Research Technical Assistant (RC Grant)
Hesham R. Alhamdan	Medical Physics Technician II (RC Grant)

Names of Joints

Full Names	Title
Rafat Mohtasib	Adjunct Assistant Professor
Ghazi Alsbeih	Adjunct Associate Professor
Ahmed Masawi	Adjunct Lecturer

Ongoing Research Projects

Title of the Research	PI	Started From
Evaluation of Decontamination and Reuse of N95 Masks, and its 3D-Printed Equivalent, Using Chemical and Radiation Sterilization Procedures	Khaled Alhadyan	2020 - Ongoing
Induction and repair kinetics of the unstable dicentric chromosome aberrations following fractionated irradiation exposure	Ghazi Alsbeih	2021 - Ongoing
Study the effect of a small molecule inhibitor of PDL-1 immune checkpoint on breast cancer cell lines	Ghazi Alsbeih	2020 - Ongoing
3D Gel Dosimetry	Akram Almousa	2020 - Ongoing
Deep Learning-Based Synthetic-CT Generation for Applications in Radiotherapy and Radiology	Habib Alsaleh	2021 - Ongoing
Optimization of Head and Neck MR Imaging for Radiotherapy Treatment Planning Simulation using 3D Printed Immobilization Devices.	Habib Alsaleh	2021 - Ongoing
Establishment of A Local Diagnostic Reference level for Abdomen Computed Tomography Examination	Almujally, Abdullah	2022 - Ongoing
Assessment of sensitivity and specificity of Cardiac SPECT in detecting CAD in comparison to coronary angiography	Almujally, Abdullah	2022 - Ongoing
AID-PORTS: AI-Driven Personalized Optimized Radiation Therapy System		2021 – 2024
Applying for the ISO9001 (Quality Management System) & 13485 (Medical Device lab) certifications for the biomedical physics 3D Printing Lab as a requirement from the Saudi FDA's registration.		

Ongoing Research Projects

Title of the Research	PI	Started From
Characterization of an extrapolation chamber for the dosimetry of the SSDL's reference diagnostic radiology X-ray beams: In-House Research Program for External Graduate Students Research. Saudi Master Student from University of Freiburg – Germany –		Jan 2021 – Dec 2021
Shielding Calculation of Nuclear Medicine Therapy Rooms. In-House Research Program for External Graduate Students Research. Saudi Master Student from Umm Al Qura University – Makkah AlMukarramah - Saudi Arabia		Aug 2021 – Apr 2022
Development of a motorized system for the setup of the reference x-ray beam qualities at KFSHRC Secondary Standard Dosimetry Laboratory. Project realized in collaboration with students from the University of Tabuk.		Feb 2021 – Dec 2021
“Characterization of glass-based thermoluminescent dosimeters in X-ray and Gamma beams”. Work performed in the framework of a Ph.D. Thesis for a student from King Abdulaziz University – Jeddah – Saudi Arabia		2021 - Ongoing
Measurements of Neutron Produce by Linac using Neutron Detector. Al-Imam University – Saudi Arabia	Dr. Ghada Khouqeer Dr. Ibrahim Idris Suliman	2021 - Ongoing
Revision of Established Local Diagnostic Reference Levels (DRLs) for general radiography, computed tomography, and mammography.	Omar Noor	2021 - Ongoing

External Grant Funding

Title of the Research	PI	Started From
King Abdulaziz City for Science & Technology (KACST; # 5-2001-558-0005). Budget 350,000 SAR. RAC# 2200047		
Deep Learning Based Synthetic-CT Generation for Applications in Radiotherapy and Radiology.	Habib Alsaleh	2021 - Ongoing
Optimization of Head and Neck MR Imaging for Radiotherapy Treatment Planning Simulation using 3D Printed Immobilization Devices.	Habib Alsaleh	2021 - Ongoing

Research Collaboration

- IAEA Research Agreement No: 22255/ R0: Cytogenetic Dosimetry to Biomonitor Occupational Doses Received by Radiation Workers under IAEA Coordinated Research Project (CRP) "E35010": Application of Biological Dosimetry Methods in Radiation Oncology, Nuclear Medicine, Diagnostic and Interventional Radiology (MEDBIODOSE). PI: Ghazi Alsbeih. CO-I: Belal Mofteh, Krishna Mishra, Khaled Al-Hadyan. From 10 July 2017 to 09 July 2021 (Due to the COVID-19 pandemic, it was extended to 2023).
- Dr. Habib Alsaleh has an International Collaboration with the University of Wisconsin in Madison for the Development of Artificial Neural Network (ANN) datasets for Applications in Radiology and Radiation Therapy
- Dr. Saad Aldelaijan is collaborating with McGill University, Faculty of Medicine and Health Sciences (Dr Slobodan Devic) and the Dana-Farber/Brigham and Women's Cancer Center, Harvard Medical School (Dr Ivan Buzurovic) to optimize high-resolution dosimetry for the development of quality assurance tools for hybrid image-guided brachytherapy.
- Participation of the SSDL in the Regional Technical Cooperation project, RAS6095. This project entitled "Establishment of Regional network of SSDL's calibration, quality management system, and auditing" is a regional project aiming at supporting ARASIA in maintaining Secondary Standard Dosimetry Laboratories and establishing calibration services for diagnostic radiology and neutron levels. Dr. Mehenna Arib, has been nominated as a counterpart of Saudi Arabia for this project.
- Collaboration with the Saudi Food and Drug Authority for the establishment of a National Diagnostic Reference Levels (NDRL) for General Radiography and Mammography. King Faisal Specialist Hospital and Research Centre play a vital role in this initiative. In the process, it was proven that all diagnostic protocols are within international standards.

Other Achievements

- Dr. Ghazi Alsbeih: Member of the ISO/TC 85/ and represented Saudi Arabia (SASO) in the International Organization for Standardization (ISO); attended 2 meetings, reviewed and voted on 10 ISO/TC 85/SC2 “Radiological Protection” and Biological and Physical Retrospective Dosimetry” documents in 2021.
- Dr. Ghazi Alsbeih: 3 MSc students 2 from Munich Universities, Germany, and 1 from KSU have completed their re-search work at the Radiation Biology Section and Secondary Standard Dosimetry and successfully defended their thesis in 2021.
- Dr. Ghazi Alsbeih attended: Research Coordination Meeting (RCM) Project (CRP) E35010, virtual, International Atomic Energy Agency (IAEA) Vienna, 8 – 12/2/2021. EURADOS AM2021 and WG9-WG11 (Experimental campaign in the Mevion facility in Maastricht), virtual 26/01/2021. IAEA – WHO Webinar “EPR-Medical: Medical management and response”, Incident and Emergency Centre (IEC/IAEA) and Radiation and Health Unit (RAD/WHO), 19/04/2021, Geneva / Vienna
- Dr. Ghazi Alsbeih: Continue work on the establishment of a reference dose-response calibration curve for cyto-genetic dicentric chromosome aberrations to estimate radiation doses received in suspected accidental radiation exposures.
- Dr. Habib Alsaleh: Scientific Committee member, coordinator, and speaker for ICRM 2022
- On February 8, 2021, Dr. Saad Aldelaijan was awarded The Leslie A. Geddes Prize for Excellence in Biomedical Engineering by McGill University, Canada for the excellence of the thesis submitted the preceding year.
- On March 6, 2021, Dr. Saad Aldelaijan was named a Distinguished Reviewer of the American Association of Physicists in Medicine’s Official Journal: Medical Physics for 2021
- On May 20, 2021, Dr. Saad Aldelaijan became a diplomat of The American Board of Radiology (ABR) in the field of Therapeutic Medical Physics.
- On August 24, 2021, Dr. Saad Aldelaijan was assigned as an affiliate member of the Gerald Bronfman Department of Oncology, Faculty of Medicine and Health Sciences, McGill University, Canada.
- On November 7, 2021, Dr. Saad Aldelaijan was awarded The Young Scientist Award by the Middle East Federation of Organizations of Medical Physics during the International Day of Medical Physics celebration held in Doha, Qatar. The award aims to recognize significant contributions of young scientists’ work in Medical Physics.
- Establishing Biomedical Physics 3D Printing Lab under the Emerging Technologies Unit.
- 13th African Organization for Research and Training in Cancer (AORTIC) International Conference on Cancer in Africa. November 5th – 10th, 2021 Title: Radiation Knowledge: A Quality Improvement Platform in Radiation Oncology

Other Achievements

- 12th Muscat International Oncology Conference, October 17 – 18, 2021 (Online) Title: 3D Printing Applications in Radiation Oncology.
- Virtual 2021 MEFOMP Medical Physics Conference, 5 – 7 April 2021 (Online) Title: “NEMA Acceptance Testing Procedures of PET Scanners”.
- XXV Brazilian Congress of Medical Physics, April 2021. Title: Radiation Knowledge - Global Educational Platform for Radiation Therapy
- Installation of the Neutron irradiation facility purchased in the framework of the Transformation project “MOH385-31 - Integrated biomedical physics center. Component 2: National Centre for Radiation Dosimetry. De-cember 2021
- Upgrading of the X-ray system in the framework of the Transformation project “MOH385-31 - Integrated biomedica-l physics center. Component 2: National Centre for Radiation Dosimetry. December 2021
- Upgrading of the SSDL calibration software by adding the automatic generation of the calibration worksheets for survey meters, personal dosimeters, contamination monitors, neutron detectors and light-sounding detectors, from the data of the service request form. In addition, the printing feature was added to automatically print the calibration certificates.
- Application for the ISO9001 (Quality Management System) certification & ISO 17025 accreditation (Competence of Testing and Calibration Laboratories) for the Secondary Standard Dosimetry Laboratory (SSDL).
- Upgrading of the SSDL calibration software by adding the automatic generation of the calibration worksheets for survey meters, personal dosimeters, contamination monitors, neutron detectors and light-sounding detectors, from the data of the service request form. In addition, the printing feature was added to automatically print the calibration certificates.
- Organization of Four (04) Online Medical Radiation Safety Courses for RSOs, in March, April, October and Decem-ber 2021, with an overall attendance of around 150 participants. The course is licensed by the NRRC
- Participation in the First Forum on Radiation Protection and Safety in Research, Industry, and Medicine held at KAUST on April 1, 2021, with an oral talk on “The International Measurement Chain and its role in promoting the Radiation Protection and safety in Research, Industry and Medicine” Presented by Dr. Mehenna Arib
- Participation to SSDL head in the organization of the “1st national meeting on new radiotherapy modalities” – Al-giers - Algeria 3-5 October 2021. Invited talk titled “The TRS 483 code of practice for the dosimetry of small fields: The challenge for the SSDLs to calibrate small volume ionization chambers”

Other Achievements

- Lectures were given in the framework of the RC SEMINAR SERIES 2021 "The KFSHRC's Secondary Standard Dosimetry Laboratory Calibration and measurement capabilities: A challenge for the Region" 15 Nov. 2021
- Organization of two online training courses for GULFMET:
 1. "Ionizing Radiation Laboratories and Quality Management System based on ISO/IEC 17025:2017 standard" - 02-03 Nov 2021
 2. "Radiation Protection Calibration according to ISO 4037-2019" Nov. 16- 17,2021
- Conducted 4 Medical Radiation Safety Officer Training Courses that were conducted as hybrid events. More than 100 participants joined these courses and 60 CME hours were accredited by the Saudi Commission for Health Specialties. These courses are approved and licensed by National Radiological Regulatory Commission (NRRC).
- AIMazrou, Refaat, MEFOMP 2021 Virtual Conference: Expanding Knowledge and meeting Challenges (2021).

Publications

- Alfuraih, A. M., Alotaiby, S. A., Alsaadi, M. J., Bukhari, H. A., Aldhebaib, A. M., & Mohtasib, R. S. (2021). Predictive value and refer-ence ranges of anogenital distance for determining fetal gender in the first trimester. *Saudi Medical Journal*, 42(10), 1057-1064.
- Albazi, B. A., Albaz, N., Alqahtani, N., Salih, A., & Mohtasab, R. (2021). Is the Portable Chest Radiographic More Reliable to Reveal Covid19 in Highly Suspicion Patient before Real-Time Reverse Transcription Polymerase Chain Reaction (RT-PCR) Test?. *Interna-tional Journal of Innovative Research in Medical Science (IJIRMS)*, 6(03).
- Mohtasib, R. S., Alshamiri, K., Jobeir, A., Ambu-Saidi, F. M., Masawi, A., Alabdulaziz, L., & Hussain, F. B. (2021). Sonographic measurements for spleen size in healthy Saudi children and correlation with body parameters. *Annals of Saudi Medicine*, 41(1), 14-23.
- Mohtasib, R. S., Alghamdi, J. S., Baz, S. M., Aljoudi, H. F., Masawi, A. M., & Jobeir, A. A. (2021). Developing fMRI protocol for clinical use Comparison of 6 Arabic paradigms for brain language mapping in native Arabic speakers. *Neurosciences Journal*, 26(1), 45-55.
- Al-Hadyan, K., Alsbeih, G., Al-Harbi, N., Judia, S. B., Al-Ghamdi, M., Almousa, A., . & Alhmaid, R. (2021). Effect of gamma irradiation on filtering facepiece respirators and SARS-CoV-2 detection. *Scientific reports*, 11(1), 1-11.
- Alsbeih, G. A., Al-Harbi, N. M., Judia, S. S. B., Al-Ghamdi, M. M., Al-Ghamdi, S. M., Moftah, B. A., & Alhmaid, R. S. (2021). Filtration efficiency of face masks and veils during COVID-19 pandemic. *Kuwait Journal of Science*.
- Al-Hadyan, K., Alsbeih, G., Nobah, A., Lindstrom, J., Falatah, S., Faran, N., . & Alhmaid, R. (2021). In-house filtration efficiency as-sessment of vapor hydrogen peroxide decontaminated filtering facepiece respirators (FFRs). *International journal of environmental research and public health*, 18(13), 7169.
- Alsbeih, G., Al-Harbi, N., Ismail, S., & Story, M. (2021). Impaired DNA Repair Fidelity in a Breast Cancer Patient With Adverse Reactions to Radiotherapy. *Frontiers in Public Health*, 568.
- Al-Romaih, K., Alsharif, I., Bakheet, R., Mahmoud, L., Alharbi, N., Judia, S. B., . & Al-Mozaini, M. (2021). Full-in-house method (FinHM) for SARS-COV-2 automated viral RNA extraction, followed by in-house 'primer-probe'based RT-qPCR detection; low cost mass testing. *Am. J. Intern. Med*, 9, 1-10.

- Al-Hadyan, K., Alsbeih, G., Nobah, A., Lindstrom, J., Falatah, S., Faran, N., . & Alhmaid, R. (2021). In-house filtration efficiency as-sessment of vapor hydrogen peroxide decontaminated filtering facepiece respirators (FFRs). *International journal of environmen-tal research and public health*, 18(13), 7169.
- Giles, W. M., Cullom, E. T., Laryea, O. A. O., Nobah, A., Alves, V. G., Yin, F. F., . & Adamson, J. D. (2021). Radiosurgery treatment planning using conformal arc informed volumetric modulated arc therapy. *Medical Dosimetry*, 46(1), 3-12.
- AlMazrou, R. (2021). Medical Physics Profession in the Kingdom of Saudi Arabia, *Medical Physics International Journal*, 9(1).
- AlMazrou, Refaat. (2021). *Medical Physics During the Covid-19 Pandemic, Global Perspective in Clinical Practice, Education and Research: 978-0-367-69375-6*, Chapter 9 of the Book.

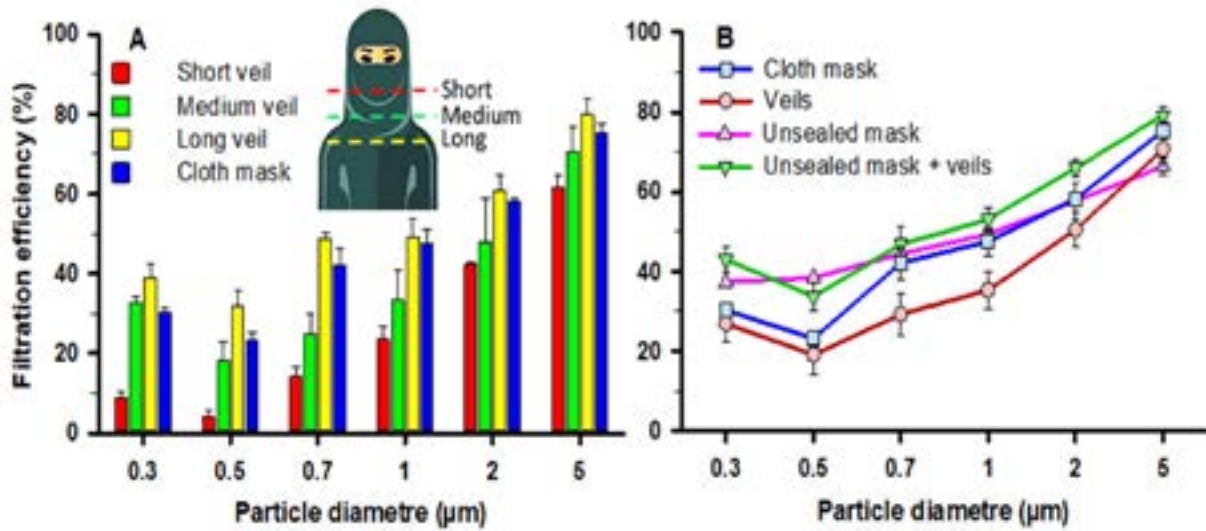


Figure 3. Filtration efficiency (FE) of unsealed surgical masks, veil and cloth masks. A. FE of short, medium and long veils and cotton mask. B. FE of unsealed single tie-on, average of 3 veils and cotton masks. All masks and veils were applied to FE evaluation for different particle sizes (0.3-5 µm). Symbols represent the mean and error bars indicate the standard error. (From Alhadyan et al. Kuwait J.Sci., Special Issue. 2021).

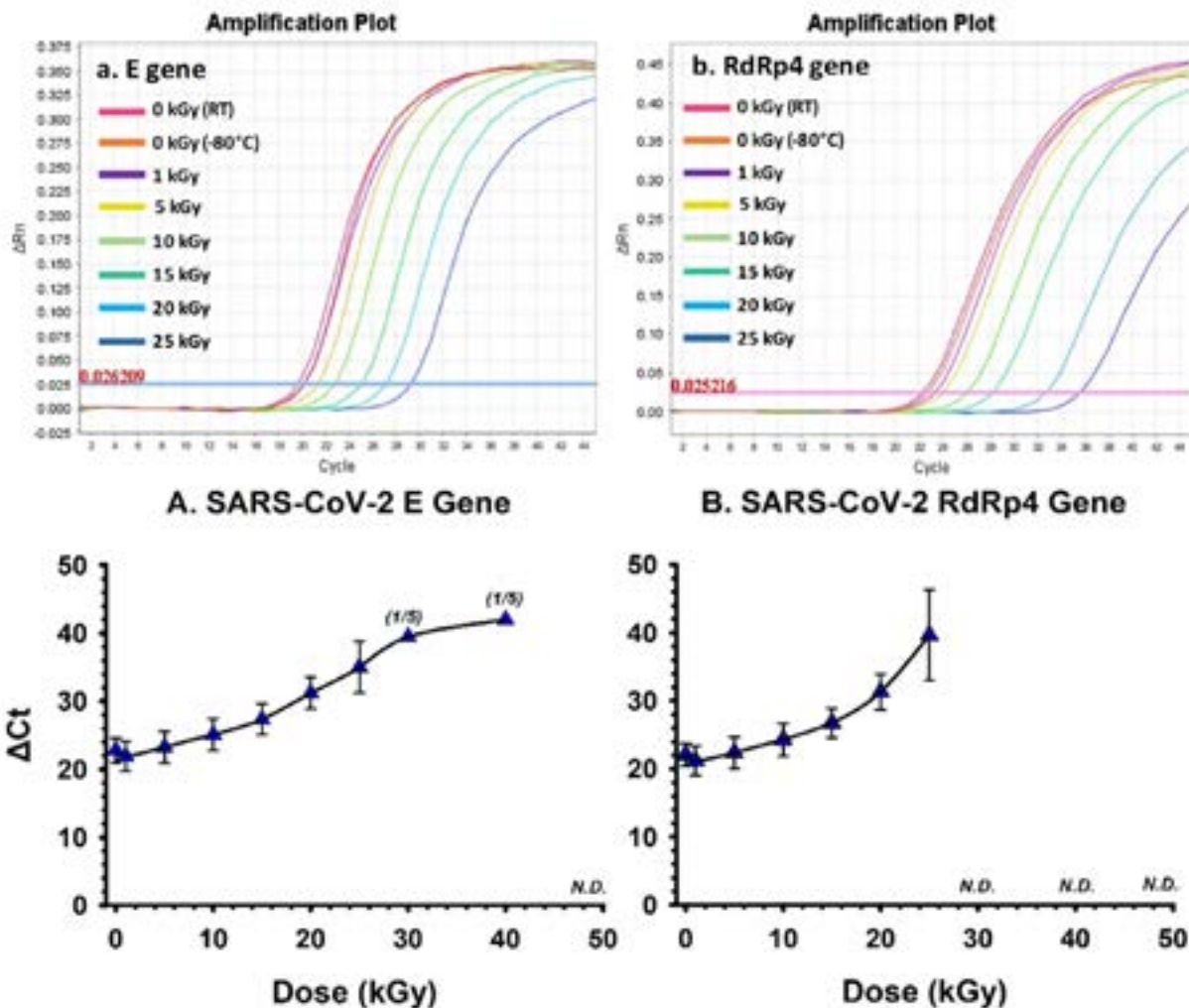


Figure 2. Delta Ct values of SARS-CoV-2 RNA samples Irradiated with gamma Irradiation. Five samples were treated with 1, 5, 10, 15, 20, 25, 30, 40 and 50 kGy. Detection of SARS-CoV-2 RNA was performed using RT-qPCR based on both E (a) and RdRp4 genes (b). Statistically, both genes showed an overall significant ($P<0.001$) increase in ΔC_t values with increased doses of gamma radiation. Pairwise comparison for E gene (0 kGy vs. 15, 20, 25, 30 and 40 kGy) were significant ($P<0.001$). Pairwise comparison for RdRp4 gene (0 kGy vs. 20 and 25 kGy) were significant ($P<0.001$). 1/5: one sample out of 5 was detected. N.D.: not detected. Symbols represent the mean and error bars Indicate the standard deviation. (From Alhadyan et al. Sci Rep. 2021).

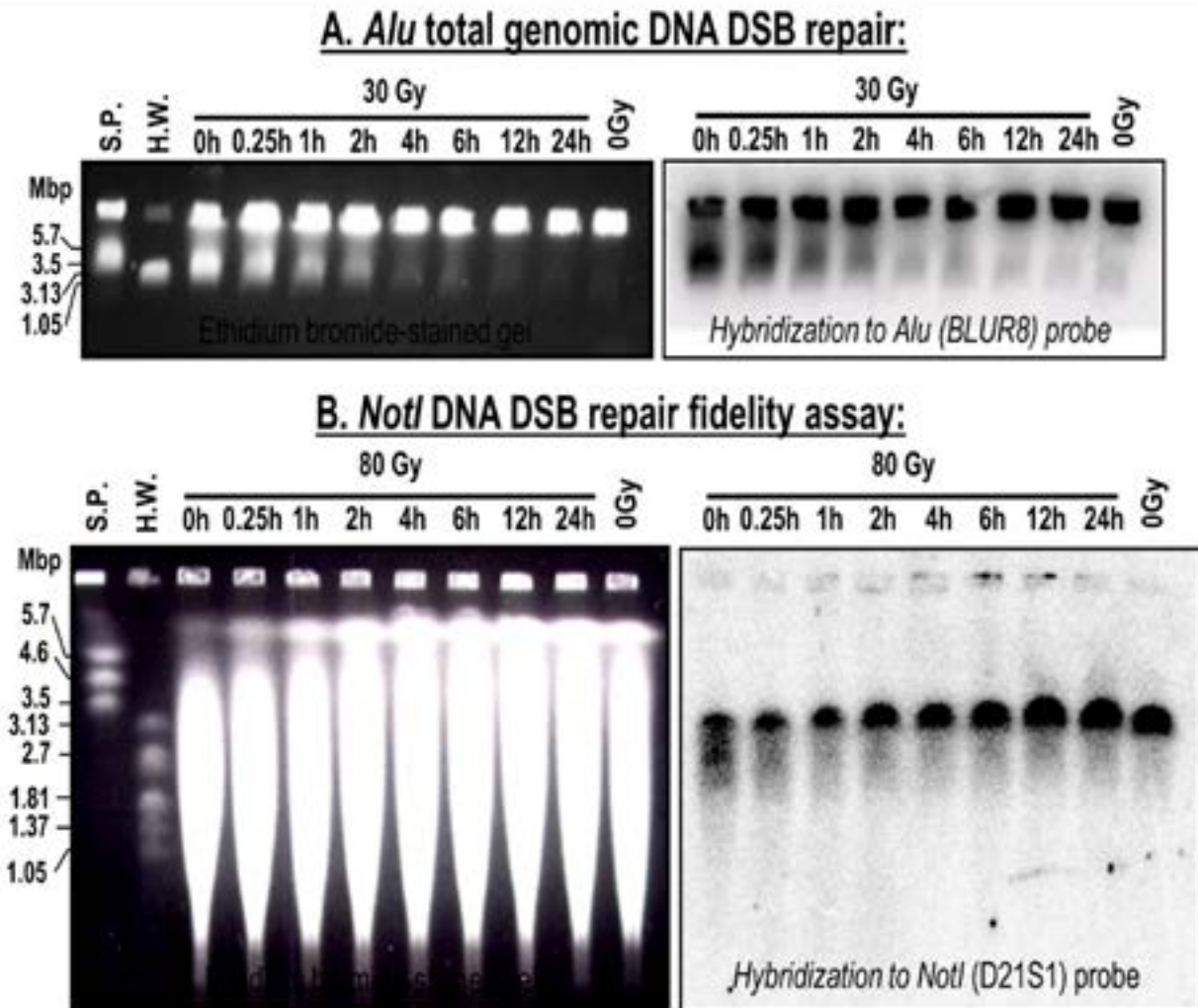


Figure 1. Representative ethidium bromide-stained gels and corresponding membranes hybridized to *Alu* repetitive sequence in whole genome (BLURB probe; A) or specific *NotI* fragments located on chromosome 21 (D21S1 probe; B). Bulk rejoining of DSBs in genomic DNA and DSB repair fidelity in a 3.2-Mbp DNA fragment. Data from NC cell strain. S.P. (*S. pombe*) and H.W. (*H. wingei*) are DNA size standards. (From Alsbeih et al. *Front Public Health*. 2021)

ANNUAL REPORT 2021

Center For Autism Research

www.kfshrc.edu.sa

The organization for Autism Research had an enriched experience from last year.

The center has pursued offering patients' virtual sessions. It also succeeded in delivering services via technology in the areas of behavioral and speech therapy interventions, workshops, and training programs.

A total of 8227 (new cases, trainees and sessions) been conducted by a multidisciplinary panel. The center has performed important online activities to get a more accurate and in-depth understanding of the causes of Autism, which has been added

to the list of accomplishments. Board Certified Behavior Analysis (BCBA) offers Registered Behavior Technician (RBT) training. Furthermore, Neuropsychology and Cognitive Rehabilitation training programs been offered distinguished high-standard programs to healthcare providers dealing with pediatric, adolescent, and adult cases in the field.

As for translation, the most highlighted CFAR translation (the WPS published book "Sensory Integration and the Child 25th Anniversary Edition).

A handwritten signature in blue ink that reads "Hesham A." The signature is written in a cursive, flowing style.

Dr. Hesham Alsdhalaan

Staff Names

Full Names	Title
Hesham Aldhalaan, MD	Director
Marei Al Enazi	Operations Manager
Eiman Alismail	Consultant Psychologist
Alanoud Alsaud	Senior Neuropsychology Technologist
Maha Alfuaim	Psychologist
Hanin Alanazi	Psychologist
Ahmad Eid	Speech Language Pathologist Consultant
Norah Alghusun	Senior Speech Language Pathologist
Sahar Alhamdan	Speech and Language Pathologist
Mashail Alaqel	Special Educationist
Sarah Aljaser	Special Educationist
Sarah Alharbi	Special Educationist
Sultan Al Hussein	Occupational Therapist
Seham Almutairi	Occupational Therapist
Hana Al Arifi	Software and System Developer
Elham Elsobky	Software and System Developer
Reem Al Abdulaziz	Software and System Developer Assistant
Amal Bin Muhaymid	Administrative Coordinator I
Maryam Al Sherooqi	Administrative Coordinator II
Ghaidaaa Al Enazi	Translator
Julieta Bautista	Senior Hospital Assistant
Luzviminpa Trajeco	Senior Hospital Assistant
Shaima Al Jubaily	Administrative Coordinator I
Yara Al Salloum	Administrative Coordinator I
Abdulaziz Al Enazi	Receptionist
Mohammed Ibrahim	Tea Boy

Names of Joints

Full Names	Title
Ayman Alhazmi, MD	Developmental and Pediatric Consultant
Katelyn Craig	Senior BCBA
Sultan Alfawaz	Pediatric Occupational Therapy Consultant
Ahmed Gomaa	Senior Special Educationist
Yara Aljahlan	Senior Speech Language Pathologist
Noura Alobaid	Research Technical Assistant
Reem Alghamdi	Research Technical Assistant

Granted Patents

- Training Parents in Saudi Arabia to teach Toilet Skills to Children with Autism via Telehealth Technology RAC# 22021248
- Reply To New Proposal" (Using The Virtual Reality Vr Machine To Employ Applied Behavioral Analysis Aba Interventions Among Children With Autism) RAC#2201185
- BHCOE full accreditation. The purpose of this document is to provide feedback regarding the application of quality standards in the use of Applied Behavior Analysis (ABA)

Other Achievements

- Dr. Eiman Alismail has presented at the 48th Annual Convention; Boston, MA; 2022
- Sensory Integration and the Child Book by Anna Jean Ayres. Translated by CFAR

Translator: Ghaidaa Alenazi

Publications

- Alrofaidi, A., Alghamdi, R., Alharbi, M., Algothmi, K., Farsi, R., Alburae, N., . & Alhazmi, S. (2021). Association Between RAS-Like Proto-Oncogene B (RALB) Gene Expression and Methylation Levels in Saudi Autistic Children. *International Journal of Pharmaceutical and Phytopharmacological Research (eIJPPR)*, 11(1), 173-176.
- Al-Saleh, I., Elkhatib, R., Alrushud, N., Alnuwaysir, H., Alnemer, M., Aldhalaan, H., . & Alkhenizan, A. (2021). Potential health risks of maternal phthalate exposure during the first trimester- The Saudi Early Autism and Environment Study (SEAES). *Environmental Research*, 195, 110882.
- Alotaibi, A. M., Craig, K. A., Alshareef, T. M., AlQathmi, E. S., Aman, S. M., Aldhalaan, H. M., & Oandasani, C. L. (2021). Sociodemographic, clinical characteristics, and service utilization of young children diagnosed with autism spectrum disorder at a research center in Saudi Arabia. *Saudi Medical Journal*, 42(8), 878-885.
- Aldhalaan, H., AlBakheet, A., AlRuways, S., AlMutairi, N., AlNakiyah, M., AlGhofaili, R., . & Kaya, N. (2021). A Novel GEMIN4 Variant in a Consanguineous Family Leads to Neurodevelopmental Impairment with Severe Microcephaly, Spastic Quadriplegia, Epilepsy, and Cataracts. *Genes*, 13(1), 92.
- Neuser, s., Brechmann, B., Heimer, G., Brosse, I., Schubert, S., O'Grady, L., ...& Ebrahimi-Fakhari, D. (2021) Clinical, neuroimaging, and molecular spectrum intellectual disability. *Human Mutation*, 42(6), 762-776.
- Shamseldin, H. E., AlAbdi, L., Maddirevula, S., Alsaif, H. S., Alzahrani, F., Ewida, N., . & Alkuraya, F. S. (2021). Lethal variants in humans: lessons learned from a large molecular autopsy cohort. *Genome medicine*, 13(1), 1-11.

ANNUAL REPORT 2021

Department of Cell Biology

www.kfshrc.edu.sa

The Department of Cell Biology is now in its 11th year of existence. The main research focus is on the temporal and spatial relationship between extracellular stimuli and intracellular second messenger generation. Stimulus response coupling is studied in a number of research settings namely innate immune responses, xeno- and allogenic interactions, nucleo-cytoplasmic signaling, and aberrant signaling in diseases such as cardiovascular disease, lung fibrosis, diabetes and adipogenesis.

Our scientists continue to obtain external research funding, foster collaborative research and provide state-of-the-art training and mentorship of Saudi Nationals at the pre- and post-doctoral level.

The Department of Cell Biology comprises of three main sections:

- Xenotransplantation and Innate Immunity
- Diabetes Research Unit
- Cell Imaging & Molecular signaling

1. XENOTRANSPLANTATION RESEARCH.

Head: Futwan Al Mohanna PhD, FRSB FRSC

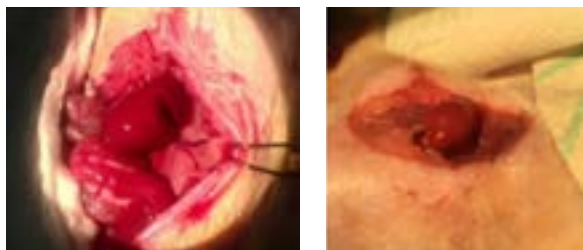
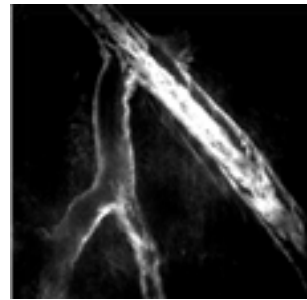
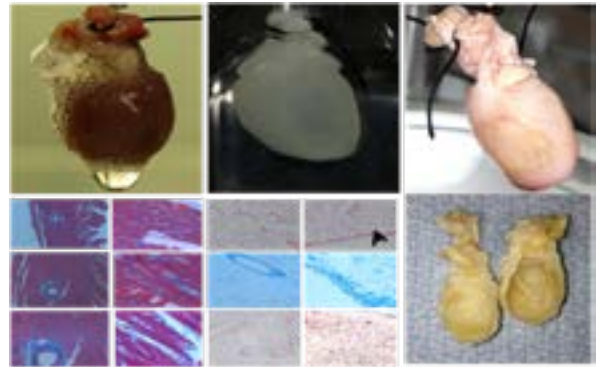
Xenotransplantation provides an alternative to

donor transplantation for patients with end-stage organ failure however there are still issues with tissue compatibility, immunological and rejection reactions to overcome. In recent years, tissue engineering has evolved with the use of synthetic or natural polymer scaffolds; but compared to those, biological scaffolds show more promising results in terms of integration, survival and cell regeneration.

One of the projects in this Department is the establishment of a biological scaffold using a rat model by decellularizing the heart resulting in a cell-free scaffold with a preserved extracellular matrix protein content and intact vasculature. Proteomic analysis was used to characterize the essential growth factors and molecules required to optimize the growth of new embryonic stem cells seeded onto the scaffold, which will replace the damaged tissue.

Once the allogenic xenograft model had been established, human endothelial, fibroblast and induced pluripotent stem cell-generating cardiac cells were used in order to recellularize the rat heart scaffold and examine the functionality of the hybrid organ, representing a further step towards

A further area of Departmental research is the characterization of surgically-produced animal models of heart disease which are comparable with human pathologies in order to test the effect of various treatment modalities, as well as establishing the future directions for innovations in cardiovascular and thoracic surgery. This includes aortic or pulmonary artery banding techniques for the pressure-overload, myocardial infarction or ischemic perfusion models of the left ventricle, and osmotic pump implantation for delivery of pharmaceuticals. Using an ovine reversible model of reversible heart failure, we have identified unique gene signatures at every stage of the process



Xenotransplantation

Use patented KFSHRC technology to generate transgenic animal model for xenotransplantation.

Mechanisms of Heart Failure

Translational application into reaching a new, simple and accessible therapeutic modality to target individuals with AMI especially those cannot access standard facilities for the treatment of AMI and those who are unable to receive standard treatments.

Tissue engineering and STEM cell research

- Decellularization of animals hearts to generate acellular scaffold
- Reprogramming of human skin cells into Stem Cells
- Differentiation of stem cells to cardiac cells
- Recellularization on the scaffold with human cells.



2. DIABETES RESEARCH

Head: Katharine Collison PhD, FRSC FRSB

The Diabetes Research Unit was formed in 2007 and focuses on the contribution dietary factors identified during a Saudi Dietary survey towards the development of prediabetes and Nonalcoholic Fatty Liver Disease (NAFLD) using small animal models, as well as testing the therapeutic potential of a number of phytonutrients towards combating these diseases.

Additionally, individuals with diabetes and obesity are burdened with higher rates of depression, anxiety and cognitive decline linked to aberrant CNS insulin signaling, and there is also growing interest in the impact of the mammalian microbiome on glucocentric physiology as well as behavior. Rodent animal models are used to study the etiology, pathology and treatment of these conditions and we have chosen this approach to study the effect of various phytonutrients

on ameliorating prediabetes, obesity and the accompanying behavioral deficits as well as microbiome dysbiosis, including the compounds Diindolylmethane, Green Tea Polyphenols and glutathione precursors N-Acetyl Cysteine and Glycine.

In terms of developmental research, we have looked at the contribution of NMDA receptors in the development of Diabetes using a neonatal exposure developmental study; and a further area of research involved contrasting the well-established C57Bl/6J mouse model with a less well-characterized KK/HIJ model in terms of characterization of physiology and behavioral differences between the strains. During the course of our work we have established one of the foremost animal behavioral research suites in the country, which could lend itself to drug testing if maintained as a Unit.

3. CELL IMAGING AND MOLECULAR SIGNALLING

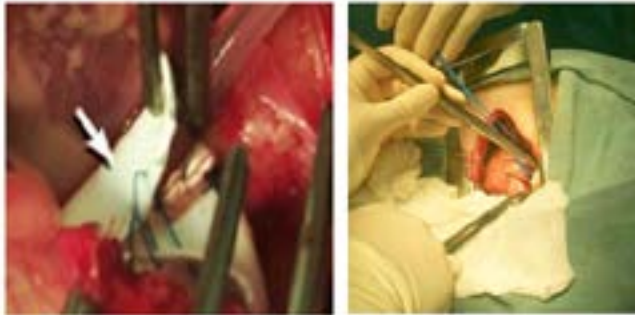
Head: Futwan Al Mohanna PhD, FRSB, FRSC

This is an integrated technology-based approach to the functional study of molecular signaling and cellular imaging. We provide technical expertise in cell biology to many researchers within and without the Research Center. A number of imaging technologies are available in this facility, including:

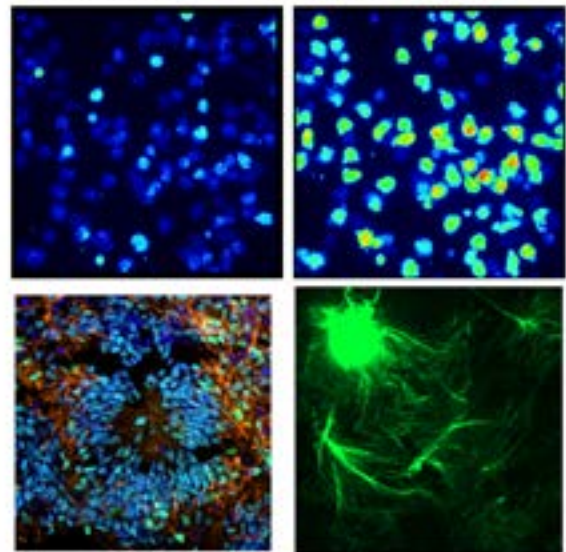
- Intracellular ion-imaging microscopy and real-time live cell confocal imaging microscopy.
- Quantitative intracellular ion analysis and imaging using Axio vision, CLSM and Cell Sense imaging analysis software.

Mechanism of Heart Failure

Translational application into reaching a new, simple and accessible therapeutic modality to target individuals with AMI especially those cannot access standard facilities for the treatment of AMI and those who are unable to receive standard treatments.



Intracellular calcium transients Stimulus response coupling in human neutrophils



Skin cells reprogrammed (iPS)
derived cortical progenitor
cells

Stimulus induced reticula in
human neutrophils

Futwan A.

Futwan Al Mohanna PhD, FRSB, FRSC

Staff Names

Full Names	Title
Futwan Al Mohanna PhD, FRSB FRSC	Principal Scientist
Camelia Touzinte, BSc	Hospital Assistant I
Mohammed A M Quttainah, MD	Clinical Scientist / Associate Consultant
Reem Al- Hijailan, PhD	Post-Doctoral Fellow
Somaya Alqattan, MSc	Research Assistant
Katharine Collison, PhD, FRSC FRSB	Principal Scientist
Soad Salih, MSc	Technical Specialist
Angela Inglis, BSc	Technical Specialist
Mariajennifer Thiam, BSc	Research Technician
Rosario Ubungen, BSc	Research Technician
Princess Joie Mata, BSc	Research Assistant
Sarah Farooq, BSc	Research Technician
Hussein Alhindas, DVM, MSc	Assistant Scientist
Vineesh Raveendran, PhD	Associate Scientist
Azizah Alanazi, MSc	Research Associate
Rana Alrabiah, MSc	Research Associate
Sarah Alnassar, MSc	Research Assistant

Names of Joints

Full Names	Title
Walter Conca	Adjunct Clinical Scientist
Abdullah Al-Shawaf, PhD	Adjunct Scientist

Ongoing Research Projects

Title of the Research	PI	Period
A disease in a dish: Establishment of human induced stem cells from skin fibroblasts of normal controls and Patients with pulmonary fibrosis to investigate the role of calcium in the development of the disease	Reem Al- Hijailan	48 Months
Inflammatory Modulator Protein Vaccinia Virus Complement Control Protein (VCP): Potential therapeutic in CVD. Establishing a protocol for purifying large quantities of Secreted VCP, and characterization of the purified VCP, to explore its mode of action and its use in xenograft prevention	Futwan Al Mohanna Kate S. Collison Soad Mohamed Salih Azizah Al-Anazi	
Effects of Vaccinia Virus Complement Control Protein (VCP) on Acute Myocardial Infarction	Mohammed Quttainah, MD	
Arabian camel IgA cDNA synthesis using Rabid Amplification of cDNA ends (RACE), reveals co-expression of single domain heavy chain and conventional IgA	Walter Conca	
Effect of SARS-CoV-2 Recombinant Spike Protein on Neutrophil Activation	Futwan Al Mohanna Kate S. Collison Soad Mohamed Salih	
Role of Vaccinia Virus Complement Control Protein (VCP) in Preventing Concanavalin-A Induced Hepatitis in Rats.	Hussein Alhindas	
Characterization of cortical neurons derived pluripotent stem cells of patients with autism.	Futwan Al Mohanna	36 Months
The Role of Immunoglobulin A in the Pathogenesis of Middle East Respiratory Syndrome.	Walter Conca	36 Months
Effect of Glutathione Precursor Treatment on High Fat Diet-induced Metabolic and Behavioral Deficits.	Kate S. Collison	

Research Collaboration

- Department of Tissue Engineering and Regenerative Medicine, University Hospital Würzburg, 97070 Würzburg, Germany
- Heart Centre, King Faisal Specialist Hospital & Research Centre, Riyadh 11211, Saudi Arabia
- Biosciences, College of Health, Medicine and Life Sciences, Brunel University London, Uxbridge, United Kingdom.
- Department of Comparative Medicine, King Faisal Specialist Hospital & Research Centre, Riyadh 11211, Saudi Arabia.

Other Achievements

- Significantly advancing our understanding of the transcriptional control of progressive heart failure using a reversible ovine model in which Echocardiography was used to identify distinct clinical differences between the progressive stages of hypertrophy, dilatation, and failure. We identified distinct subsets of gene transcripts at each stage of failure as well as a unique pattern of gene expression in the recovery stage that was comparable with the control stage, with a well-noted improvement in left ventricular function. The use of RNA-Seq identified genes that may be potentially involved in the etiology of progressive stages of heart failure, and that may provide future targets for its management.
- Advances in Heart Failure treatment: despite remarkable progress in organ transplantation during the past decades, there remain many challenges in regenerative medicine such as limited long-term biocompatibility and biofunctionality of implants, shortage of organ donation and immune rejection of the engraft. An attractive option is in the use of stem cell therapy, where stem cells are injected into a defect region thus supplying immediate functional and nutritional support in the damaged area via the controllable and persistent localization of cells. We have recently optimized a working protocol whereby human-induced pluripotent-stem-cell-derived cardiomyocytes in co-culture with fibroblasts and mesenchymal stem cells transferred the scaffold into a vascularized cardiac patch which exhibits spontaneous contractility for over 16 weeks. The customized decellularization protocol based on sodium dodecyl sulfate renders a step towards a preclinical evaluation of the scaffolds.
- In the field of therapeutic intervention for the debilitating disease of pulmonary fibrosis, and in a continuation of previous pioneering research published in 2019, we have instigate the generation of GMP-grade S100A3 and S100A13 peptides as a treatment modality with potential for future Phase II clinical trials.

Other Achievements

- In the field of Diabetes research we have continued to examine the nutrigenomic potential of phytonutrients such as Diindolylmethane, and the glutathione precursors N-AcetylCysteine and Glycine.
- Our collaborative research in the field of innate immunity and host defense has identified complement-independent Factor H-dependent molecular mechanism in the regulation of response to influenza A infections.
- Cloning and characterization of tear-fluid IgA from camel as a target for mucosal immunity towards MERs-CoV infection.
- The use of S100A13 in the diagnosis and treatment of lung fibrosis. "Atypical-Associated-Mutation-Binding-Protein S100A13. Al Mutairy EA, Khalid M and AlMohanna F. U.S. Application Ref:517559US Serial Number 62/746,058.
- Method for treating pulmonary fibrosis using S100A3 protein. Al Mutairy EA, Khalid M and AlMohanna F. Application Ref:513629US US Serial Number 16/155,371.

Publications

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ANNUAL REPORT 2021

Human Cancer Genomic Research

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Human Cancer Genomic Research (HCGR) laboratory is actively involved in identifying dysregulation in various genes and signaling pathways in those cancer that are more prevalent in the Kingdom of Saudi Arabia, such as Papillary Thyroid Carcinoma, Colorectal carcinoma, Breast Cancer and Epithelial Ovarian Carcinoma. The researchers at HCGR continue to pursue these challenges by performing translational studies to identify molecular and genetic variations that may play a role in pathogenesis of these cancers.

Once these molecular and genetic variations are identified, intensive data analysis using clinical history is done to determine the role of these alterations in the pathogenesis of cancers. Targeting these identified molecular and genetic alterations using either molecular inhibitors,

small interference RNA (siRNA) or antibodies are also performed to identify genes that can be therapeutically targeted for the improvement of cancer therapy.

As a part of the ICGC-ARGO project, we continue to identify new genomic drivers in thyroid cancer, to help improve understanding and clinical management of this disease in Saudi Arabia.

The Consortium is dedicated to generate high-quality genomic data on more than 25,000 tumors for up to 50 types of cancer that are of clinical and societal importance across the globe. Therefore, the main mission of HCGR is to design better strategies to diagnose, prognosticate and treat neoplasm that are specifically relevant to Saudi Arabia.



Khawla S. Al-Kuraya, MD, FCAP

Staff Names

Full Names	Title
Dr. Abdul Khalid Siraj	Deputy Director Senior Scientist
Dr. Rong Bu	Scientist
Dr. Sandeep Kumar Parvatha Reddy	Scientist
Dr. Pratheeshkumar Poyil	Associate Scientist
Syed Zeeshan Qadri	Research Associate
Hassan Al Dossari	Research Technician
Padmanaban Annaiyappanaidu	Research Technician
Saeeda Ahmed	Research Assistant
Thangavel Saravanan	Research Assistant
Maha Al-Rasheed	Research Associate
Wael Haqawi	Research Assistant
Khadija Al Obaisi	Research Assistant
Saad Al Odaib	Administrative Coordinator
Myra Maningas	Hospital Assistant
Jecyl Dela Fuente	Hospital Assistant

Ongoing Research Projects

Title of the Research	PI	Started From
Analysis of clinic-pathological characteristics and associations in Saudi Papillary Thyroid Cancer. RAC #2211 168	Khawla Al-Kuraya, MD, FCAP	2021 - 2022
The prognostic significance of ZNF677 in Saudi papillary thyroid cancer patients – A pilot study RAC #2210 012	Khawla Al-Kuraya, MD, FCAP	2021 - Ongoing
Identification of molecular signatures and evolutionary history of Saudi epithelial ovarian cancer using next generation sequencing technology RAC #2190 015	Khawla Al-Kuraya, MD, FCAP	2021 - 2022
Identification of molecular signatures and evolutionary history of Saudi colorectal cancer using next generation sequencing technology RAC #2190 016	Khawla Al-Kuraya, MD, FCAP	2021 - 2022
The prognostic significance of SMAD4 in Saudi colorectal cancers RAC#2170 025	Khawla Al-Kuraya, MD, FCAP	2021 - 2022
Prognostic significance of molecular and genetic alterations in Saudi Arabian breast cancers RAC#2140 008	Khawla Al-Kuraya, MD, FCAP	2021 - 2022
Identifying molecular signature of thyroid cancer using next-generation sequencing technology based on International Cancer Genome Consortium (ICGC) guidelines RAC#2110 031	Khawla Al-Kuraya, MD, FCAP	02/2021 - 12/2021

Research Collaboration

- Dr. Khawla Al-Kuraya was invited as a visiting Professor of Medicine at Dana Farber Cancer Institute in Boston, Massachusetts, USA, Division of Medical Oncology, Dana Farber Cancer Institute

Other Achievements

- Presented our scientific work at the American Society of Investigative Pathology on April 27-30, 2021 as a poster presentation titled "PD-L1 expression is associated with deficient mismatch repair and poor prognosis in Middle Eastern colorectal cancers".
- Presented our scientific work at the Korean Society of Medical Oncology (virtual) on September 2-3, 2021 as a poster presentation titled "Microscopic Extrathyroidal Extension Results in Increased Rate of Tumor Recurrence and is an Independent Predictor of Patient's Outcome in Middle Eastern Papillary Thyroid Carcinoma".
- Presented our scientific work at the AACR-NCI-EORTC Virtual International Conference on Molecular Targets and Cancer Therapeutics on October 7-10, 2021 as a poster presentation titled "Male Sex is an Independent Predictor of Recurrence-Free Survival in Middle Eastern Papillary Thyroid Carcinoma".
- Presented eight (8) posters of our on-going research study in the AACR Virtual Annual Meeting II on April 10-15 and May 17-21, 2021.

Publications

- Siraj, A. K., Masoodi, T., Bu, R., Parvathareddy, S. K., Iqbal, K., Azam, S., . & Al-Kuraya, K. S. (2021). Prevalence of germline TP53 mutation among early onset middle eastern breast cancer patients. *Hereditary Cancer in Clinical Practice*, 19(1), 1-9.
- Parvathareddy, S. K., Siraj, A. K., Qadri, Z., DeVera, F., Siddiqui, K., Al-Sobhi, S. S., . & Al-Kuraya, K. S. (2021). Microscopic extrathyroidal extension results in increased rate of tumor recurrence and is an independent predictor of patient's outcome in middle eastern papillary thyroid carcinoma. *Frontiers in Oncology*, 5134.
- Siraj, A. K., Parvathareddy, S. K., Siraj, N., Al-Obaisi, K., Aldughaiter, S. M., AlManea, H. M., . & Al-Kuraya, K. S. (2021). Loss of ZNF677 expression is a predictive biomarker for lymph node metastasis in Middle Eastern Colorectal Cancer. *Scientific reports*, 11(1), 1-11.
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- Siraj,A.K.,Parvathareddy,S.K.,Pratheeshkumar, P., Divya, S. P., Al-Sobhi, S. S., Al-Dayel, F., & Al-Kuraya, K. S. (2021). PD-L1 is an independent prognostic marker in Middle Eastern PTC and its expression is upregulated by BRAFV600E mutation. *Cancers*, 13(3), 555.

- Al-Kuraya, K. S., Siraj, A. K., Parvathareddy, S. K., Ahmed, S., Benito, A., & Iqbal, K. (2021). PD-L1 protein expression in Middle Eastern breast cancer predicts favorable outcome in triple negative breast cancer. *Cancer Research*, 81(13_Supplement), 3190-3190.
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- Pratheeshkumar, P., Siraj, A. K., Divya, S. P., Parvathareddy, S. K., Alobaisi, K., Al-Sobhi, S. S., Al-Dayel, F., & Al-Kuraya, K. S. (2021). CHD4 Predicts Aggressiveness in PTC Patients and Promotes Cancer Stemness and EMT in PTC Cells. *International journal of molecular sciences*, 22(2), 504.

ANNUAL REPORT 2021

Cyclotron & Radiopharma- ceuticals Department

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The Cyclotron and Radiopharmaceuticals Department (C&RD) practically functions as a radiopharmaceuticals manufacturing facility and performs two unique functions in the Research Center: **Radiopharmaceuticals manufacturing; and Radiotracer and Cyclotron Research.**

The main aim of C&RD is to provide diagnostic and therapeutic precision radiopharmaceutical products that are manufactured by employing the highest Good Manufacturing Practice (GMP) quality standards, and to make the Kingdom of Saudi Arabia self-sufficient in all its radiopharmaceutical requirements. In addition, to translate precision radiopharmaceuticals research from bench to the bed-side.

The C&R Department holds an unparalleled position within the Research Centre, and indeed in the entire region. Uniqueness of this Department comes from its function of manufacturing a wide range of radiopharmaceuticals that are indispensable tools for diagnostic medical imaging and radiotherapy. Among these are the specialty products that are manufactured only in a cyclotron (a particle accelerator), which offer the safe diagnosis of a number of serious, life-threatening diseases including cancer.

The Department operates three (3) cyclotrons with a comprehensive manufacturing program and also engages in hypothesis driven research in developing radiotracers designed specifically for probing biochemical and physiological processes

at the molecular level. These molecules hold a great promise in the design of new precision radiopharmaceuticals for diagnosis and treatment of various diseases.

An overwhelming mission of the C&R Department is to make the Kingdom self-sufficient in all its radiopharmaceutical needs. Therefore, several new products are added at regular intervals. As a result, some 50 nuclear medicine centers in the Kingdom and abroad rely upon products manufactured in the C&R production facility. An obvious requirement for pharmaceutical manufacturing is the adherence to the national and international GMP guidelines.

C&R Department's manufacturing protocols are not only designed to adhere to the regulatory requirements but also follow the ISO 9001:2015 Quality Management System for further quality enhancement. On the research and development front, achievements include not only the customary extramural research grant funds and a large number of international publications and presentations, but also the production and quality assurance protocols for new radiotracers, and indigenously fabricated complex devices for manufacturing radioisotopes and radiopharmaceuticals. The exceptional R&D efforts are ultimately leading towards ever more comprehensive radioisotope and radiopharmaceuticals manufacturing within the C&R Department and also resulting in significant cost saving for the Hospital.



Ibrahim Al Jammaz, PHD, FRSC

Staff Names

Full Names	Title
Ibrahim Jammaz M Aljammaz	Chairman,Cyclotron and Radiopharmaceuticals
Subhani Mohammad Okarvi	Senior Scientist
Mohammed Hussain Alqahtani	Senior Scientist
Ahmed Ali Alghaith	Senior Technical Specialist
Salam Khalil Nimer Rahma	Senior Technical Specialist
Marsood Ahmad	Senior Technical Specialist
Omar Khadeir Alshammari	Senior Technical Specialist
Surendra Nakka	Radiochemist I
Sonny O Wahab	Quality Control Chemist I
John Fulton Schneider	Cyclotron Machinist
Hanan Abdulaziz Alzabin	Technical Specialist
Abdulrahman Abdullah Alomar	Radiochemist II
Hussein Salim Aldossari	Radiochemist II
Ahmed Saud Abdullah Alobaysi	Radiochemist II
Mohammed Feraih Alenizi	Radiochemist II
Lafi Mussabih Alenizi	Radiochemist II
Amr Mohamed Ibrahim Hendy	Cyclotron Engineer II
Barakat Mohamed Alkenani	Radiopharmacist II
Mohammad Maddad M Alsubiey	Radiochemist II
Basem A Alotaibi	Radiochemist II
Nura Abdulrahman Katu	Quality Control Chemist II
Mula Manohara Babu	Cyclotron Engineer III

Staff Names

Full Names	Title
Yousif Hassan Ali Almalki	Research Assistant
Qassem Abdu Ali Alakkam	Research Assistant
Abdullah Ali Saleh Alswelh	Quality Control Chemist Iii
Yellareddy Yerram	Radiochemist Iii
Ammar Saad Alnajjar	Radiopharmacist Iii
Mohammed Khalid Fahad Bin Tafla	Radiochemist Iii
Celestina Esguerra Macatuno	Radiochemist Iii
Shaden Abdulrahman Abdulaziz Alhazaa	Research Technician
Nasser Abdo Ali Akkam	Cyclotron Engineer Technician
Hadeel Hamdi Abbas Mutwali	Research Technician
Abdulrahman Sulaiman Abdulrahman Alsaab	Cyclotron Engineer Technician
Khlef Shwehan M Alenze	Research Technician
Jhonna Ladoray Canicosa	Hospital Assistant I
Mohammad Abbas Nabi Jan Mansour	Cyclotron Machinist Technician
Najla Saeed Khalil Almutairi	Hospital Assistant I
Shaikha Ali Saeed Alyami	Research Technician
Nawaf Khalid Salam Bamasoud	Research Technical Assistant
Abdullah Almalki	Technical Asst. Research Centre

Names of Joints

Full Names	Title
Nourah Al-Hokbani, PhD	Adjunct Scientist

Granted Patents

- Patent application in the field of Nanomedicine for a new Nano silica material for the separation of medical radioisotopes. These isotopes are the mother lead-201 and the daughter thallium-201 used for heart imaging. Application# 032021-01068

Ongoing Research Projects

Title of the Research	PI	Started From
Production and Utilization of Positron Emitters Copper-64 for Medical Applications	AlJammaz	2021 - ongoing
Synthesis and Preclinical Evaluation of Novel Mucin1 Peptides Carrier and It's Folate Hybrid Peptide for Dual Targeting of Ovarian Cancer Diagnosis	AlJammaz	2021 - ongoing
Separation of radioactive thallium from radioactive lead using silicon nanoparticles containing amide chelating group.	AlJammaz	2021 - ongoing
Production of Gallium-68 Radioisotope Using Cyclotron and Labeling with Emerging Biomolecules.	AlJammaz	2021 - ongoing
Production of Zirconium-89 and the Development and Evaluation of Zr-89 Labeled Radiopharmaceuticals.	Per	2021 - ongoing
Development of Theranostic PET Radiopharmaceutical for Management of Prostate Cancer: 68 GA/177 LU-PSMA Peptide Analogs.	Okarvi - AlJammaz	2021 - ongoing
Development of radiopharmaceuticals for cancer management.	AlJammaz	2021 - ongoing
Development of Precision Radiopharmaceuticals for the Management of Cancer in Saudi Arabia.	AlJammaz	2021 - ongoing
Approach for full automation of the radiosynthesis of N-succinimidyl 4-[18F]-fluorobenzoate (S[18F]FB) as a labelling intermediate for fluorine-18 radiotracers.	Mohammed AlQahtani	2020 - ongoing
Therapeutic Radiopharmaceuticals labeled with new emerging radionuclides.	Okarvi	2021 - ongoing

External Grant Funding

Title of the Research

Production and Utilization of Positron Emitters Copper-64 for Medical Applications, (IAEA).
Production and quality control of electroplated ^{64}Ni target plate to withstand high current (200 uA) and suitable for routine production was developed. New [^{64}Cu]-APSC, NOTA based Cu-chelates and new ^{64}Cu -labeled peptides (e.g. folate, MUC1, PSMA) for preclinical applications in different cancers were synthesized and characterized as a potential imaging/therapy for various cancers.

Production of Gallium-68 Radioisotope Using Cyclotron and Labeling with Emerging Biomolecules, (IAEA). Production and quality control of Gallium-68 by cyclotron was achieved for the first time in Saudi Arabia using solid target. ^{68}Ga -DOTATATE and -PSMA peptide-based radiopharmaceuticals were validated for routine use in PET centers for cancer imaging.

Production of Zirconium-89 and the Development and Evaluation of Zr-89 Labeled Radiopharmaceuticals, (IAEA). Production and quality control of Zirconium-89 by cyclotron was achieved. New [^{89}Zr]-DFR-rhodamine radiotracer was synthesized for preclinical applications as a myocardial perfusion imaging agent.

Development of radiopharmaceuticals for cancer managements, (KACST).
Variety of radiopharmaceuticals were developed using Copper-64, Technetium-99m, Gallium-68 and Lutetium-177 theranostic isotopes.

Research Collaboration

- Development of radiopharmaceuticals for cancer managements, (King Saud University). Variety of radiopharmaceuticals were developed using Copper-64, Technetium-99m, Gallium-68 and Lutetium-177 theranostic isotopes.
- Production and Utilization of Positron Emitters Copper-64 for Medical Applications, (International Atomic Energy Agency). Production and quality control of electroplated ^{64}Ni target plate to withstand high current (200 uA) and suitable for routine production was developed. New [^{64}Cu]-APSC, NOTA based Cu-chelates and new ^{64}Cu -labeled peptides (e.g. folate, MUC1, PSMA) for preclinical applications in different cancers were synthesized and characterized as a potential imaging/therapy for various cancers.
- Production of Gallium-68 Radioisotope Using Cyclotron and Labeling with Emerging Biomolecules, (International Atomic Energy Agency). Production and quality control of Gallium-68 by cyclotron was achieved for the first time in Saudi Arabia using solid target. ^{68}Ga -DOTATATE and -PSMA peptide based radiopharmaceuticals were validated for routine use in PET centers for cancer imaging.
- Production of Zirconium-89 and the Development and Evaluation of Zr-89 Labeled Radiopharmaceuticals, (International Atomic Energy Agency). Production and quality control of Zirconium-89 by cyclotron was achieved. New [^{89}Zr]-DFR-rhodamine radiotracer was synthesized for preclinical applications as a myocardial perfusion imaging agent.

Other Achievements

- Approval of the International Technical Cooperation Project entitled "Good Manufacturing Practice (GMP) of Radiopharmaceuticals and Cyclotron Facilities in Saudi Arabia" by the International Atomic Energy Agency, AlJammaz, PI)
- Achieving the Quality Management System objectives of radioisotopes production:
 1. Customer satisfaction of 96.7%
 2. Processes control of 100%
 3. Quality Specifications Achieved by 99.7%
- Successful production and distribution of more than 28 thousand radiopharmaceutical unit doses, generating revenues of nearly 44 million Saudi Riyals.
- Production of Gallium-68 for the first time in the Kingdom of Saudi Arabia using Zinc-68 solid target, this may eliminate the import of this radioisotope from abroad.
- The oral presentation entitled Synthesis, Radiolabeling, and Biological Evaluation of ^{68}Ga -Mucin1 and Its Folate Hybrid Peptide Conjugates for the Diagnosis of Ovarian Cancer was selected as a top rated presentation at the European Nuclear Medicine and Molecular Imaging 2021.

Other Achievements

- Introduction of three new radiopharmaceuticals for the first time in Saudi Arabia for routine use namely:
 1. Gallium-68 FAPI for the diagnosis of tumor microenvironment,
 2. Fluorine-18 PSMA for the diagnosis of prostate cancer and
 3. Fluorine-18 Estradiol for first time in the Kingdom for the diagnosis of breast cancer.
- Graduation of two supervised students, one PhD student from School of Pharmacy and one MSc student from School of Science at King Saud University.
- Upgrade of the CS-30 Cyclotron old safety system to a new system with high reliability. This result in a significant saving for the hospital (~ 500 thousand SAR) as if it was purchased externally. This gives us the ability to maintain, and upgrade the system without any extra cost.

Publications

- Al Jammaz, I., Al-Otaibi, B., Al-Malki, Y., Abousekhrah, A., & Okarvi, S. M. (2021). Fast Fluorine-18 labeling and preclinical evaluation of novel Mucin1 and its Folate hybrid peptide conjugate for targeting breast carcinoma. *EJNMMI Radiopharmacy and Chemistry*, 6(1), 1-17.
- Semlali, A., Contant, C., Al-Otaibi, B., Al-Jammaz, I., & Chandad, F. (2021). The curcumin analog (PAC) suppressed cell survival and induced apoptosis and autophagy in oral cancer cells. *Scientific Reports*, 11(1), 1-15.
- Alzimami, K., Alanazi, S., Gannam, M., Alanazi, A., Aljamaz, I., Alyanbawi, S., & Sassi, S. (2021). Evaluation of the Small-animal Nano Scan PET/CT System using 89Zr. *Current Medical Imaging*, 17(2), 296-305.
- Zou, M., BinEssa, H. A., Al-Malki, Y. H., Al-Yahya, S., Al-Alwan, M., Al-Jammaz, I., & Shi, Y. (2021). β -Catenin Attenuation Inhibits Tumor Growth and Promotes Differentiation in a BRAFV600E-Driven Thyroid Cancer Animal Model β -Catenin Promotes Thyroid Cancer Growth. *Molecular Cancer Therapeutics*, 20(9), 1603-1613.
- Alhabardi, S., Radwan, H., Alotaibi, B., Almalki, Y., Elzayat, E., Shinwari, Z., & Aljammaz, I. (2021). Synthesis, Radiolabeling, and Biological Evaluation of ^{68}Ga -Mucin1 and Its Folate Hybrid Peptide Conjugates for the Diagnosis of Ovarian Cancer. *Journal of Chemistry*, 2021.
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- Okarvi, S. et al. (2021) Therapeutic Radiopharmaceuticals Labelled with Copper-67, Rhenium-186 and Scandium-47. *IAEA-TECDOC-1945*.
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- Mukhtar, N. N., Abouzied, M. E. D. M., Alqahtani, M. H., & Hammami, M. M. (2021). Misleading localization by ^{18}F -fluorocholine PET/CT in familial hypocalciuric hypercalcemia type-3: a case report. *BMC Endocrine Disorders*, 21(1), 1-8.

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Research Centre - Jeddah

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The Research Centre at KFSH&RC-Jeddah strives to bridge the gap between Clinicians and Scientifics in order to develop lines of Research that will improve patient care, move forward the understanding of disease process and allow innovation.

- The mission of the RC Department at KFSH&RC in Jeddah is to facilitate and support research efforts throughout the organization that are dedicated to the advancement of science by leveraging research findings to improve clinical outcomes and optimize healthcare provision. The RC strives to empower medical personnel to provide the highest level of specialized healthcare in an integrated educational and research setting.
- Clinical Research Department is dedicated to advancing high quality clinical research and to support clinical researchers with a variety of relevant services and assist them in their efforts. The availability of shared resources is part of the commitment to interdisciplinary research.

The Department shall function through two sections namely: Clinical Research Coordinators Section and Research Affairs Section.

1. Clinical Research Coordinators and Research Affairs Sections are poised to assist the organization with all of its research consulting needs and to help improve compliance and enhance operations.
 2. Clinical trials would require ethical and scientific implementation according to Good Clinical Practice, a standard for the implementation of clinical trials for pharmaceuticals, or the ethical guidelines for medical studies with human subjects.
- The Research laboratories responsible for extract and process the received samples for all approved basic and clinical research projects by using basic and advanced techniques.
 - o Core Facility: handle and process all the samples (DNA / RNA extraction, PCR, RT-PCR, Gel Electrophoresis).
 - o Other research techniques will be adopted as the department grows in staffing and skills accordingly.



Dr. Mohammed Bayoumy

Staff Names

Full Names	Title
Lubna Alsalmi	Clinical Research Coordinator
Eman Bawazeer	Clinical Research Coordinator
Sawsan Bassi	Clinical Research Coordinator
Haneen Alomar	Asst. Clinical Research Coordinator
Rawan Alsaadi	Asst. Clinical Research Coordinator
Donya Bahussain	Asst. Clinical Research Coordinator
Nada Alzahrani	Asst. Clinical Research Coordinator
Yousef Hawsawi	Associate Scientist
Turki Sobahy	Research Associate
Mohammed Baghdadi	Research Assistant
Samar Zailaie	Research Technician
Hawazin Abdulbagi	Statistical Analyst
Emily Heaphy	Senior Clinical Epidemiologist
Sharla Piluden	Hospital Assistant I
Mohammed Bayoumy	Acting Deputy Director Of Research Centre-J

Ongoing Research Projects

Title of the Research	PI	Period
The accuracy of silent scan mra in the assessment of cerebrovascular disorders; compared to TOF-MRA, CE-MRA and DSA.	Ghouth Waggass	6 months
Protective effect of vitamin d on the liver of male wistar rats fed with a high-fat diet and the proposed underlying mechanisms	Mohammed Baghdadi	2 Years
Improving the standardization and the quality of HLA typing by using fully automated technologies	Ashraf Dada	Exempt
Product observational study protocol reveal study: prospective characterization of asthma patients treated with dupilumab in real-world setting	Sultan Alandijani	54 months
Outcome of telemedicine follow up for COVID-19 patients in KFSHRC-J	Imran Khalid	7 months
Successful use of alteplase for management of mechanical mitral valve thrombosis in pediatric age group (single center experience)	Mohamed Mashaly	17.5 Years
Randomized, double-blind, double dummy, parallel group, multicenter 24 to 52 week variable length study to assess the efficacy and safety of budesonide, glycopyrronium, and formoterol fumarate metered dose inhaler (mdi) relative to budesonide and formoterol fumarate mdi and symbicort® pressurized mdi in adult and adolescent participants with inadequately controlled asthma (logos)	Sultan Alandijani	2 Years
Effect of body mass factors on setup displacement in gynae tumors and subsequent impact on PTV margins.	Zaheeda Mulla	1 Years
Multicenter study of the incidence and causes of rivaroxaban related major bleeding in Saudi Arabia	Zekra Aljehani	88 months
Hereditary vitamin d resistant rickets genotype-phenotype correlation and experience of clinical management. Single centre experience	Noman Ahmad	12 Years

Ongoing Research Projects

Title of the Research	PI	Started From
Outcome of relapsed acute lymphoblastic leukemia in children: single center experience	Hasan Altrabolsi	17 Years
Establishment of bio-bank center at the research center-Jeddah	Yousef Hawsawi	5 Years
Quality of life in children with tracheostomy and how it impacts on their quality of voice.	Firas Abi Sheffah	10 Years
Percutaneous coronary intervention in post cardiomy infants and young children	Ahmed Elmahrouk	10 Years
Modified blalock taussig shunt vs patent ductus arteriosus stent for palliation of infants with duct dependent pulmonary blood flow	Riad Abou Zahr	12 Years
Evaluating the amount of intravenous fluid administration in critically ill patients requiring fluid de-resuscitation.	Reham Alharbi	2 Years
Impact of donation on perceived and actual health outcomes in living kidney donors in the western region of the kingdom of Saudi Arabia	Emily Heaphy	25 Months
An observational audit of the surgical complications of pancreaticoduodenectomy, at King Faisal Specialist Hospital And Research Centre, Jeddah - 01 October 2019 – 30 September 2021	Mohammed Mirghani	2 Years
Impact of Jacie accreditation on HSCT patient safety from healthcare provider's perception	Ahlam Almasari	6 Months
Outcome of pediatric medulloblastoma based on molecular study	Ibraheem Abosoudah	1 Year

Ongoing Research Projects

Title of the Research	PI	Started From
Assessment of the low density lipoprotein cholesterol treatment gap in patients with established coronary artery disease	Omer Elamin	7 Years
The effect of incorporating an online training program in dietetics internship during COVID-19 pandemic	Hala Alansari	1 Year
Postoperative complications in esophageal atresia/tracheoesophageal fistula repair, two institutions experience	Wafaa Alharbi	12 Months
The impact of COVID-19 pandemic on the service of surgical oncology.	Mohammed Mirghani	29 Months
Systemic infections caused by ralstonia species in hospital settings; epidemiology, risk factors and drug susceptibility, a multi-center retrospective cohort from saudi arabia.	Abeer Al Shukairi	3 Years
Does medication adherence information improve medication adherence among hajj pilgrims? A randomized controlled trial	Ahmad Alzahrani	7 Days
The diagnostic accuracy of 3T multiparametric mri for prostate cancer detection using prostate imaging reporting and data system (Pi-Rads) version 2.1	Syed Mosharraf	25 Months
Drug resistance in acute leukemia (dral): co inhibition of multiple signaling pathways in acute leukemia and targeting PI3K/AKT/MTOR axis and the BCL2-family to achieve synergistic killing of acute myeloid leukemia cells	Naif Aljohani	1 Year
Epidemiology of cancer among renal transplant recipients. A five years follow up study in Jeddah	Yasir Alfi	2 Years

Ongoing Research Projects

Title of the Research	PI	Started From
Retrospective analysis and outcome of memokath stent in kfsh-rc jeddah	Islam junaid	7 Years
To assess the efficacy of early administration of energy enriched and protein enriched formula in post cardiac repair infants: a randomized controlled trial, comparative study	Abrar shirbini	10 Months
The impact of Covid-19 pandemic on the adherence of anti-retroviral treatment among people living with HIV	Hatun labban	5 Month
Impact of the pretransplant protein intake optimization on the hematopoietic stem-cell transplantation outcomes	Shaza agou	6 Month
End of life care discussions with families of critically ill patients in the icu; a prospective observational study	Imran khalid	2 Years
Outcome of icu patients who have a tracheostomy procedure- a 5 year experience in a muslim population	Imran khalid	1 Year
Anemia diagnostic system utilizing artificial intelligence	Wejdan alqurashi	1 Year
Adrenalectomies: retrospective analysis of perioperative data and outcomes in kfsh-rc, jeddah	Adel alammari	10 Years
Nursing research capacity building at a tertiary hospital in Jeddah, Saudi Arabia	Jennifer de beer	12 Months
Outcome of icu patients who have cpr in icu with and without vasopressor agents, including high dose vasopressor agent dosages	Imran khalid	2 Years

Ongoing Research Projects

Title of the Research	PI	Started From
Assessing current analgesia and sedation weaning practices in adult critically ill patients	Namareq aldardeer	3 Months
Palliative care perspective among physicians from other specialties	Amani alzahrani	8 Months
Beta lactam antibiotic dose adjustment for critically ill patients with sepsis and acute kidney injury: a prospective observational study	Namareq aldardeer	7 Months
Staff experience comparing their experience, behavior and coping strategies pre and post vaccine during covid-19 outbreak at kfshrc-j	Imran khalid	1 Years
Thoracoscopic procedures in children: single center experience.	Alharbi, wafaa	10 Years
Incremental values for perfusion spect/ct in detection of pe in covid-19 patients with deteriorating respiratory functions. Pilot study.	Elzeftawy, hossam	25 Months
Evaluation of prognostic and predictive markers in triple negative breast cancer patients: impact on survival outcome	Mohammed baghdadi	2 Years
Transhepatic hemodialysis catheter for end-stage vascular access: feasibility, functionality and outcome at kfshrc-jeddah experience	tSaeed alghamdi	10 Years
Central line-associated bloodstream infection in pediatric patients in the era of multi-drug resistance organisms: report from a tertiary center	Dawood yusef	5 Years
Clinical utility of integrated genomic and epigenetic approach to elucidate the architecture of familial autism spectrum disorders	Iman Abumansour	30 Months

Ongoing Research Projects

Title of the Research	PI	Started From
The role of the il-6 inhibitor tocilizumab among mechanically ventilated patients with coronavirus disease 2019 (COVID-19): a retrospective cohort study.	Yahya mahzari	8 Months
Global symplicity registry (GSR) denervation findings in real world (define) is referred to as the gsr define study	Omer elamin	5 Years
Evaluation of safety and efficacy of COVID-19 vaccination in patients with hiv at a tertiary hospital in saudi arabia	Ahmed alotaibi	1 Years
Predictive variables of poor outcome in multiple ventricular septal defects repair	Abdullah alshehri	6 Years
Efficacy and safety of two different regimens of rituximab therapy in children with nephrotic syndrome. Retrospective study	Naffaa alharbi	11 Years
The impact of implementation nasal methicillin-resistant staphylococcus aureus (MRSA) pcr screening on duration of anti-mrsa agents	Waleed alghamdi	8 Months
The effect of broad-spectrum antibiotic de-escalation on critically ill patient outcome	Namareq aldardeer	31 Months
Patients characteristics and treatment outcomes of primary biliary cholangitis disease in arab countries	Mohammad mawardi	30 Years
Ceftazidime/avibactam (CAZ-AVI) vs polymyxin-based regimens for the treatment of carbapenem-resistant enterobacteriaceae (CRE)	Mohammed al musawi	5 Years
To establish an imaging protocol. For hypofractionation of breast radiotherapy during COVID-19, by assessing the effect of bmi on patient setup reproducibility	Zaheeda Mulla	12 Months

Ongoing Research Projects

Title of the Research	PI	Started From
The safety and efficacy of modifying the admission protocol to the epilepsy monitoring unit (EMU) in response to the COVID-19 pandemic	Fawzi babbain	2 Years
Telemedicine-based medical care compared to in-person medical care for warfarin follow-up: a retrospective comparative study	Fahad alkhuzae	17 Months
The effectiveness of ceftolozane-tazobactam versus colistin in the treatment of multi-drug resistant pseudomonas aeruginosa bacteremia	Muna islami	3 Years
The use of wearable technology in providing assistive solutions for cognitive and emotional wellness	Noor habib	12 Months
Association between patients` quality of life in palliative care and burden on their caregivers	Haneen alharbi	3 Months
Quality of life- physical and functional frailty among elderly with colorectal cancer. A cross sectional study	Syed abdul zubair	7 Months
The impact of auc/mic ratio-guided versus trough monitoring on vancomycin dosing in pediatric patients.	Lamia alzhairani	6 Months
Incidence and consequences of infectious complications following kidney transplantation: a retrospective study	Yasir alfi	6 Years
Lateral violence at a tertiary hospital in saudi arabia.	Jennifer de beer	1 Years
Mycophenolate and pregnancy risk: a multicenter saudi retrospective cohort study	Muna islami	69 Months
Whole exome sequencing in childhood epilepsy	Iman abumansour	3 Years

Ongoing Research Projects

Title of the Research	PI	Started From
Outcome of COVID19 in patients with osteogenesis imperfecta: a retrospective multi-center study	Abeer al shukairi	1 Years
Simultaneous bilateral total knee arthroplasty experience and clinical outcomes at a tertiary care center in western saudi arabia	Habib al etani	11.5 Years
The difference in nutrition knowledge among adult kidney patients: pre-transplant in saudi arabia: rCT	Jumanah albar	1 Year
Outcome of pediatric high-risk neuroblastoma with autologous stem cell transplant - a single center experience	Yousef alatawi	18 Years
Rapid bioelectronic sensor for detection of SARS-CO-V 2 virus and other pathogens	Ashraf dada	2 Years
Ssessment of analgesics and sedatives in mechanically ventilated patients with COVID-19	Namareq aldardeer	1 Year
Saudi ms-hsct single center experience	Ahlam almasari	5 Years
A phase iii randomized study of nivolumab (Opdivo) plus avd or brentuximab vedotin (adcetris) plus avd in patients (age >=12 years) with newly diagnosed advanced stage classical hodgkin lymphoma (Swog study)	Reyad dada	7 Years
Glycemic control in children with type 1 diabetes mellitus and parents' satisfaction: efficacy of monthly virtual clinic.	Wafa alawbathani	18 Months
The impact of the duration of last seizure before the admission to epilepsy monitoring unit (EMU) on identifying the seizure onset zone	Fawzi babtain	1 Year

Research Collaboration

- In 2021 approximately a total of 25 study agreements were submitted from collaborators/ sponsors, 7 out of 25 are funded mainly by Pharmaceutical Companies, as (Merck Sharp & Dohme Idea Gmbh, Novartis, Sanofi, Astrazeneca, Takeda, New Bridge Pharmaceuticals, Medtronic) and (1) by Charitable Association Sanad
- **National:** King Abdul-Aziz University Hospital, Center of Excellence in Genomic Medicine Research at KAAU, King Fahad Hospital, King Khalid University Hospital, King Abdullah University for Science and Technology, National Guard Hospital, King Saud University Medical City, Umm Al-Qura University, King Abdullah Medical City, Albaha University-
- **International:** South Africa Witwatersrand University, Wilkes University, Witwatersrand University, Netherland University of Groningen

Publications

- Zailaie, S. A., Siddiqui, J. J., Al Saadi, R. M., Anbari, D. M., S. Alomari, A., & Cupler, E. J. (2021). Serum based miRNA as a diagnostic biomarker for multiple sclerosis: a systematic review and meta-analysis. *Immunological Investigations*, 51(4), 947-962.
- Theyab, A., Algahtani, M., Alsharif, K. F., Hawsawi, Y. M., Alghamdi, A., Alghamdi, A., & Akinwale, J. (2021). New insight into the mechanism of granulocyte colony-stimulating factor (G-CSF) that induces the mobilization of neutrophils. *Hematology*, 26(1), 628-636.
- Adiga, U., Adiga, S., Nandit, P. B., Manjeera, L., Rao, A., Ghilan, A. K. M., & Mundugaru, R. (2021). A cross-sectional study on the association of single nucleotide polymorphism of leptin receptor (Gln223Arg) and insulin resistance in gestational diabetes mellitus. *Journal of King Saud University-Science*, 34(1), 101662.
- El-Kattawy, A. M., Algezawy, O., Alfaifi, M. Y., Noseer, E. A., Hawsawi, Y. M., Alzahrani, O. R., & El-Magd, M. A. (2021). Therapeutic potential of camel milk exosomes against HepaRG cells with potent apoptotic, anti-inflammatory, and anti-angiogenesis effects for colostrum exosomes. *Biomedicine & Pharmacotherapy*, 143, 112220.
- Alzahrani, F. A., Shait Mohammed, M. R., Alkarim, S., Azhar, E. I., El-Magd, M. A., Hawsawi, Y., & Khan, M. I. (2021). Untargeted metabolic profiling of extracellular vesicles of sars-cov-2-infected patients shows presence of potent anti-inflammatory metabolites. *International journal of molecular sciences*, 22(19), 10467.
- Alsohime, F., Almaghamsi, T., Basha, T. A., Alardati, H., Alghamdi, M., & Hawsawi, Y. M. (2021). Unusual prominent pulmonary involvement in a homozygous PRF1 gene variant in a female patient. *Journal of clinical immunology*, 41(1), 217-220.





Medical Affairs





ANNUAL REPORT 2021

Medicine Department

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The Department of Medicine at King Faisal Specialist Hospital & Research Centre (KFSH&RC) continues to produce high caliber research projects. Research in areas of disease pathology, management, and prevention are part of the department commitment in conducting research proposals. The information generated has to undergo a peer-review process and organize in a format focused on improving patient care.

The department is actively doing clinical and scientific research and supports the participation of the young researchers (students, residents and fellows) in major departmental research activities. A number of research projects were submitted and approved by RAC and >100 publications in peer-reviewed journals were published for the last 3 years. Most of the abstracts were also presented to various national and international conferences.

A handwritten signature in blue ink that reads "Mohammed A." The signature is written in a cursive, flowing style.

Mohammed Alsunaid, MD

Staff Names

Full Names	Title
Jawaher Alotaibi	Consultant
Abdulrahman Alrajhi	Consultant
Abdallah Mobeireek	Consultant
Reem Almaghrabi	Consultant
Abdullah Aldalaan	Consultant
Ali Alzahrani	Consultant
Abdullah Alhokail	Consultant
Magid Mohammed	Consultant
Jameela Edathodu	Consultant
Rand Arnaout	Consultant
Muhammad Imran Butt	Consultant
Quaid Nadri	Consultant
Muneerah Albugami	Consultant
Faisal Abaalkhail	Consultant
Hussein Raef	Consultant
Moria Yosra	Consultant
Fahad Alsohaibani	Consultant
Abdullah Almutlaq	Consultant
Maged Hussein	Consultant
Hasan Alraye	Consultant

Ongoing Research Projects

Title of the Research	PI	Started From
The Role of F-18 Fluorodeoxyglucose Fused Positron Emission Tomography and Computed Tomography (18F-FDG PET/CT) in the Initial Evaluation and Recurrence of Differentiated Thyroid Carcinoma and its Correlation with the Underlying Genetic Alterations.	Ali Alzahrani	2021 - Ongoing
Elucidating the role of noncodingRNAs (ncRNAs) in thyroid cancer; PI CO-INVESTIGATOR	Ali Alzahrani	2021 - Ongoing
A Randomized, Double-Blind, Double Dummy, Parallel Group, Multicenter 24 To 52 Week Variable Length Study To Assess The Efficacy And Safety Of Budesonide, Glycopyrronium, And Formoterol Fumarate Metered Dose Inhaler (Mdi) Relative To Budesonide And Formoterol Fumarate Mdi And Symbicort® Pressurized Mdi In Adult And Adolescent Participants With Inadequately Controlled Asthma (Logos)	Zeitouni, Mohamed	2021 - Ongoing
Challenges facing Undergraduate Medical Education in Ambulatory Care Clinics at Tertiary Care Hospitals.	Fahad Alsohaibani	2021 - Ongoing
Outcomes of Non-Tuberculosis Mycobacteria (NTM) in Adult Patients at a Tertiary Care Hospital in Saudi Arabia.	Abdullah Almohaizeie	2021 - Ongoing
A 10-year non-interventional registry of patients with FGF23-related hypophosphatemic rickets and osteomalacia in GCC.	Afaf Alsagheir, Ali Alzahrani	2021 - Ongoing
Mentorship During the COVID-19 Pandemic	Muhannad Hawari	2021 - Ongoing
Long-Term Efficacy of Intra-gastric Balloon for the Treatment of Obesity; a Systematic Review and Meta-analysis.	Musthafa Peedikayil	2021 - Ongoing

Ongoing Research Projects

Title of the Research	PI	Started From
Patients Characteristics and Treatment Outcomes of Primary Biliary Cholangitis Disease in Arab Countries.	Faisal Aba Alkhail	2021 – Ongoing
Prevalence and Clinical characteristics of Mucormycosis in Saudi Arabia.	Abdullah Almohaizeie	2021 – Ongoing
Prevalence and Impact of Medical Diseases on in vitro Fertilization (IVF) Outcome.	Mashaal Aldeery	2021 – Ongoing
Genetic variations associated with diabetic nephropathy in Saudi population.	Saeed Alghamdi, Ali Alzahrani	2021 – Ongoing
A prospective, randomized, double-blind, multicenter, placebo-controlled, parallel group, adaptive Phase 3 study with open-label extension to evaluate efficacy and safety of macitentan 75 mg in inoperable or persistent/recurrent chronic thromboembolic pulmonary hypertension.	Abdullah Aldalaan	2021 – Ongoing
Per-Oral-Endoscopic-Myotomy for the Treatment of Achalasia; Single Centre Experience from Saudi Arabia.	Abdulrahman Alfadda	2021 – Ongoing
Prevalence of tunneled dialysis catheter associated right atrial thrombus in Saudi Arabia.	Muhammad Ubaid Ullah	2021 – Ongoing
Survey amongst clinicians to determine different standard dose Short Synacthen test protocols being practiced in the Kingdom of Saudi Arabia.	Muhammad Butt	2021 – Ongoing
Discussions on the End of Life Care for patients with COVID-19 in Saudi Arabia.	Abdallah Mobeireek	2021 – Ongoing

Research Collaboration

- Genetic variations associated with diabetic nephropathy in Saudi population.
- Challenges facing Undergraduate Medical Education in Ambulatory Care Clinics at Tertiary Care Hospitals.
- A Randomized, Double-Blind, Double Dummy, Parallel Group, Multicenter 24 To 52 Week Variable Length Study To Assess The Efficacy And Safety Of Budesonide, Glycopyrronium, And Formoterol Fumarate Metered Dose Inhaler (Mdi) Relative To Budesonide And Formoterol Fumarate Mdi And Symbicort® Pressurized Mdi In Adult And Adolescent Participants With Inadequately Controlled Asthma (Logos)
- Treatment with Grazoprevir/Elbasvir in Post-kidney Transplant Patients with Hepatitis C Virus Genotype 4 Infection.
- Proteomics Profiling to Distinguish DOCK8 Deficiency From Atopic Dermatitis.
- Clinical course and outcomes of COVID19 in hematopoietic cell transplant patients, a regional report from the Middle East.
- Empiric vs screening based use of isoniazid for tuberculosis prophylaxis: Safety and effectiveness in lung transplant recipients in Saudi Arabia.
- Full-in-house method (FinHM) for SARS-COV-2 automated viral RNA extraction, followed by in-house 'primer-probe' based RT-qPCR detection; low cost mass testing.
- COVID-19 Convalescent Plasma Study Group. (2021). Safety and efficacy of convalescent plasma for severe COVID-19: interim report of a multicenter phase II study from Saudi Arabia.

Other Achievements

- A novel claudin-10 mutation with a unique mechanism in two unrelated families with HELIX syndrome. Ali Alzahrani, MD 1st place Alrajhi Awards 2021 Consultant Category
- Lenvatinib-induced multiorgan adverse events in Hurthle cell thyroid cancer: A case report. Muhammad Imran Butt, MD 2nd place Alrajhi Awards 2021 Consultant Category
- Clinical manifestations and treatment outcomes of human brucellosis at a tertiary care center in Saudi Arabia. Jameela Edathodu, MD 3rd place Alrajhi Awards 2021 Consultant Category
- Seroprevalence of SARS-CoV-2 antibodies in healthcare workers at a tertiary care hospital in Riyadh, Saudi Arabia Osama Alsagheir, MD 1st place Alrajhi Awards 2021 Trainee Category
- Efficacy of urso-deoxy cholic acid for primary biliary cholangitis; a study from a tertiary care centre in Saudi Arabia Ahmed Alwabel, MD 1st place Alrajhi Awards 2021 Trainee Category

Publications

- AlShehry, N., Zaidi, S. Z. A., AlAskar, A., Al Odayani, A., Alotaibi, J. M., AlSagheir, A., . & KSA COVID-19 Convalescent Plasma Study Group. (2021). Safety and efficacy of convalescent plasma for severe COVID-19: interim report of a multicenter phase II study from Saudi Arabia. *Saudi Journal of Medicine & Medical Sciences*, 9(1), 16.
- Al-Mozaini, M., Alrahbeni, T., Dirar, Q., Alotibi, J., & Alrajhi, A. (2021). HIV in the Kingdom of Saudi Arabia: can we change the way we deal with co-infections. *Infection and Drug Resistance*, 14, 111.
- Aldalaan, A. M., Saleemi, S. A., Weheba, I., Abdelsayed, A., Aleid, M. M., Alzubi, F., . & Alharbi, N. (2021). Pulmonary hypertension in Saudi Arabia: first data from the SAUDIPH registry with a focus on pulmonary arterial hypertension. *Respirology*, 26(1), 92-101.
- Weheba, I., Abdelsayed, A., Alrajhi, A. A., Al-Thawadi, S. I., & Mobeireek, A. (2021). Nocardiosis at an organ transplant center in Saudi Arabia: 15 years' experience. *Journal of Global Infectious Diseases*, 13(1), 7.
- Alissa, D., AlMaghrabi, R., Nizami, I., Saleh, A., Al Shamrani, A., Alangari, N., . & Korayem, G. B. (2021). Nebulized Amphotericin B Dosing Regimen for Aspergillus Prevention After Lung Transplant. *Experimental and Clinical Transplantation: Official Journal of the Middle East Society for Organ Transplantation*, 19(1), 58-63.
- Al-Romaih, K., Alsharif, I., Bakheet, R., Mahmoud, L., Alharbi, N., Judia, S. B., . & Al-Mozaini, M. (2021). Full-in-house method (FinHM) for SARS-COV-2 automated viral RNA extraction, followed by in-house 'primer-probe'based RT-qPCR detection; low cost mass testing. *Am. J. Intern. Med*, 9, 1-10.
- Alzahrani, A. S., Mukhtar, N., Aljomaiah, A., Aljamei, H., Bakhsh, A., Alsudani, N., . & Sulaiman, O. (2021). The impact of COVID-19 viral infection on the hypothalamic-pituitary-adrenal axis. *Endocrine Practice*, 27(2), 83-89.
- Al-Mozaini, M., Alzahrani, A., Alsharif, I., Shinwari, Z., Halim, M., Alhokail, A., . & Alaiya, A. (2021). Quantitative proteomics analysis reveals unique but overlapping protein signatures in HIV infections. *Journal of Infection and Public Health*, 14(6), 795-802.
- Alzahrani, A. S., Hussein, M., Alswailem, M., Mouna, A., Albalawi, L., Moria, Y., . & Dasouki, M. (2021). A novel claudin-10 mutation with a unique mechanism in two unrelated families with HELIX syndrome. *Kidney International*, 100(2), 415-429.
- Conca, W., Alabdely, M., Albaiz, F., Foster, M. W., Alamri, M., Alkaff, M., . & Almaghrabi, R. S. (2021). Serum β 2-microglobulin levels in Coronavirus disease 2019 (Covid-19): Another prognosticator of disease severity?. *PLoS One*, 16(3), e0247758.
- Edathodu, J., Alamri, M., Alshangiti, K. A., Alfagyh, N. S., Alnaghmush, A. S., Albaiz, F., . & Alrajhi, A. A. (2021). Clinical manifestations and treatment outcomes of human brucellosis at a tertiary care center in Saudi Arabia. *Annals of Saudi Medicine*, 41(2), 109-114.

- Korayem, G. B., Alissa, D. A., AlSuhaibani, N. I., AlSwaiem, G. S., AlShammari, M. A., Yaqoob, I., . & Almaghrabi, R. S. (2021). Empiric vs screeningbased use of isoniazid for tuberculosis prophylaxis: Safety and effectiveness in lung transplant recipients in Saudi Arabia. *Transplant Infectious Disease*, 23(2), e13473.
- Almaghrabi, R. S., Nizami, I., Alameer, R., Alshehri, N., Almohaizeie, A., Alrajhi, A. A., & Omrani, A. S. (2021). Successful Use of Rifamycin-Sparing Regimens for the Treatment of Active Tuberculosis in Lung Transplant Recipients. *Experimental and Clinical Transplantation: Official Journal of the Middle East Society for Organ Transplantation*.
- El Fakih, R., Haroon, A., Alfraih, F., Al-Khabori, M. K., Alzahrani, M., Alhurajji, A., . & Aljurf, M. (2021). Clinical course and outcomes of COVID19 in hematopoietic cell transplant patients, a regional report from the Middle East. *Bone Marrow Transplantation*, 56(9), 2144-2151.
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- Alzahrani, A. S., Alswaiem, M., Abbas, B. B., Qasem, E., Alsagheir, A., Al Shidhani, A., . & Shi, Y. (2021). A unique genotype of pseudohypoaldosteronism type 1b in a highly consanguineous population. *Journal of the Endocrine Society*, 5(8), bvab095.
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- Murugan, A. K., & Alzahrani, A. S. (2021). SARS-CoV-2 plays a pivotal role in inducing hyperthyroidism of Graves' disease. *Endocrine*, 73(2), 243-254.

- Zou, M., BinEssa, H. A., Al-Malki, Y. H., Al-Yahya, S., Al-Alwan, M., Al-Jammaz, I., . & Shi, Y. (2021). β -Catenin Attenuation Inhibits Tumor Growth and Promotes Differentiation in a BRAFV600E-Driven Thyroid Cancer Animal Model β -Catenin Promotes Thyroid Cancer Growth. *Molecular Cancer Therapeutics*, 20(9), 1603-1613.
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- Alzahrani, A. S., Albalawi, L., Mazi, S., Mukhtar, N., Aljamei, H., Moria, Y., . & Tuttle, R. M. (2021). How Does The AJCC/TNM Staging System Eighth Edition Perform in Thyroid Cancer at A Major Middle Eastern Medical Center?. *Endocrine Practice*, 27(6), 607-613.
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ANNUAL REPORT 2021

Department of Anesthesiology

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The KFSH&RC main Anesthesiology Department consists of around 50 consultants, ~16 assistants, 24 Fellows and 34 residents. Note, this response is only for KFSHRC Anesthesia. The anesthesia section working under OTC should report separately or be included in OTC return.

Dedicated research staff are Dr Andrew Norris, Chairman and Mr Mohamed Nagy, Research Assistant, relevant primary investigators.

A weekly research meeting is conducted to:

- Monitoring the progress of existing projects and identifying and implementing necessary actions to maintain progress
- Liaising with lead investigators to identify and meet their needs and support.
- Maintaining an audit trail of activity and publications
- Managing submissions to ORA and other bodies
- Identifying and assessing new research proposals

Current Research activities include the following

RAC approved research projects:

- RAC 219 1197 Efficacy of platelet rich plasma versus ultrasound treatment (RAC...)
- RAC 219 1310 A prospective partially blind placebo controlled randomized trial of dexmedetomidine versus midazolam
- RAC 2201 281 Eadyn
- The ENCORE study (RAC 221 1087) is a prospective multi-national observational study looking at cancer outcomes and association with Anesthesia techniques.

We have several small retrospective studies, prospective observational studies, and case reports at various stages.

We are interested to develop formal collaboration agreements and joint projects with entities in the UK (primarily the University of Nottingham) and US Army Institute of Surgical Research.

We would welcome internal and external grant competitions to access funds and drive up the standards of research proposals



Andrew Norris

Staff Names

Full Names	Title
Andrew Norris	Chairman
Raed Alsatli	Consultant
Usama Mahfouz	Consultant
Abdullah Aboalkhair	Consultant
Hani Alghamdi	Consultant
Amer Majeed	Consultant
Mayyan Mubarak	Research Assistant
Mamdouh Haddara	Consultant
Abdullah Alraffa	Consultant
Reema Alsaigh	Consultant
Aljazi Alrashid	Associate Consultant
Iftikhar Ahmad	Consultant
Dean Turina	Consultant
Ganesh Sivasankara	Consultant
Osamah Arafah	Consultant
Mohamad Nagy	Research Assistant
Ahmed Almandhari	Fellow
Amani Basnawi	Fellow
Arif Hasan	Consultant

Ongoing Research Projects

Title of the Research	PI	Started From
A Partially Double-Blinded, Randomized, Controlled, Placebo-Controlled Study, a Phase III Trial of Safety and Efficacy of Premedication with Dexmedetomidine and Midazolam in Pediatric Patients. RAC #2191310	Dr. Lars Engborg	2019 – 2022
The effects of anesthetic techniques on time to start of adjuvant chemotherapy, and early and late outcomes following surgery for colorectal cancer: A prospective, multicenter, international, observational, pragmatic study. RAC#2211087	Dr. Abdullah Aboalkhair	2021 – 2022
Anesthesia considerations in pediatric pancreatectomy: a retrospective case series over five years. RAC#: 2211240	Dr. Osamah Arafah	2021 – 2022
A Comparison Study between efficacy of Plate-Rich Plasma (PRP) and Extra-Corporeal Shock Wave Therapy in patient with Plantar Fasciitis, A Prospective Randomized Controlled Study. RAC # 2191197	Dr. Hani AlGhamdi	2021 - 2023
Impact of tranexamic acid use on perioperative blood transfusion in pediatric cranioplasty: a retrospective review. RAC#:2211214	Dr. Usama Mahfouz	2021 – 2022
Comparison between Stroke Volume Variation and Dynamic Arterial Elastance (EADYN) protocols of Goal-Directed Fluid Therapy in Major Laparotomies. RAC #2201281	Dr. Hossam Wissa Nakhla Beshara	2021 – 2022
Anesthesia considerations in pediatric pancreatectomy: a retrospective case series over five years. RAC #: 2211240	Dr. Osamah Arafah	2021 – 2022

Research Collaboration

- RAC # 2211087: The effects of anesthetic techniques on time to start of adjuvant chemotherapy, and early and late outcomes following surgery for colorectal cancer: A prospective, multicenter, international, observational, pragmatic study (ENCORE) in collaboration with European Society of Anesthesiology and Intensive Care Clinical Trial Network (ESAIC CTN)

Publications

- Gillen, K. M., Mubarak, M., Park, C., Ponath, G., Zhang, S., Dimov, A., . & Pitt, D. (2021). QSM is an imaging biomarker for chronic glial activation in multiple sclerosis lesions. *annals of Clinical and Translational Neurology*, 8(4), 877-886.
- Alsatli, R.A. (2020). Cardiovascular complications related to COVID-19 disease. *Anesthesia, Essays and Researches*, 14(3), 359.
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ANNUAL REPORT 2021

Department of Urology

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Several Urological diseases were the focus of research in the Department of Urology in 2021. Some projects were ongoing from previous years, while new ones were added. The disease burden in our clinical practice is challenging and includes tertiary level conditions such as tumors of the kidney, urothelium, prostate, and testes. Nonmalignant conditions of high priority in our practice are lower urinary tract dysfunction and reconstruction, male factor infertility, and erectile dysfunction.

Covid-19 pandemic was the subject of four publications dealing with surgical patients' perioperative outcomes published in the British Journal of Surgery. Prostate cancer has increased in our patient population because of better

patient and referring physician awareness of the disease. Prostate cancer was the subject of several projects studying their genetics, novel diagnostic approaches and robotic prostatectomy. These resulted were published in the Journal of Endourology and Saudi Medical Journal.

Reconstructive urology research included application of cell saver to reduce blood transfusion. Other publications reported on the treatment of renal cell cancer, pediatric urology, and resident training. As a tertiary care service, the department of urology encounters rare and unique cases that enrich the international literature and have a teaching impact. These unique cases were reported in multiple international and local peer reviewed journals.

A handwritten signature in blue ink that reads "Waleed A." The signature is fluid and cursive, with a large initial 'W' and a distinct 'A'.

Prof. Waleed Altaweel, MD, FRCSC, MMM

Staff Names

Full Names	Title
Mohammed Alotaibi	Consultant
Sultan Alkhateeb	Consultant
Hassan Alzahrani	Consultant
Naif Alhathal	Consultant
Mohammad Alomar	Consultant
Said Kattan	Consultant
Danny Rabah	Consultant
Naif Alqarni	Consultant
Ahmad Alshammari	Consultant
Fahad Alyami	Consultant
Raouf Seyam	Assistant Consultant
Alaa Hammad	Assistant Consultant
Tariq Alotaibi	Specialist Physician
Mohammed Alshayie	Specialist Physician
Hammam Mandourah	Fellow
Anas Alhassan	Fellow
Abdulaziz Aljurayyad	Fellow
Abdullah Alrumaih	Fellow
Bassam Almatrafi	Fellow
Hazem Alsufyani	Fellow
Moayid Fallatah	Resident
Ali Alkahtani	Resident
Alhasan Abduldaem	Resident
Sultan Almaiman	Resident

Staff Names

Full Names	Title
Laila Alessa	Resident
Faris Alanazi	Resident
Bashaer Albalushi	Resident
Mishal Alammar	Resident
Omar Alfahaid	Resident
Turki Alhumaid	Resident
Mahmood Alabbasi	Resident
Abdullah Alhussain	Resident
Ibrahim Abunohaiah	Resident
Abdullah Aldhafyan	Administrative Coordinator
Barbara Jolene Neri	Senior Hospital Assistant
Ruaa Agagi	Hospital Assistant
Areej Alsuwaida	Urology Research Coordinator

Names of Joints

Full Names	Title
Waleed Altaweel	Adjunct Professor
Mohammed Alotaibi	Adjunct Professor
Naif Alhathal	Adjunct Professor
Said Kattan	Adjunct Professor
Hassan Alzahrani	Adjunct Associate Professor
Raouf Seyam	Adjunct Associate Professor
Alaa Hammad	Adjunct Associate Professor
Sultan Alkhateeb	Adjunct Assistant Professor
Naif Alqarni	Adjunct Assistant Professor

Ongoing Research Projects

Title of the Research	PI	Started From
The Value of Screening and Early Detection of Carcinoma of the Prostate in Saudi Arabia	Danny Rabah	2012
Follow Up Cases Ajer Radical Orchiectomy for Testicular Cancer in KFSH&RC	Mohammed Alotaibi	2019
Molecular Profiling for Prostate Cancer	Sultan Alkhateeb	2018
Urology Data Registry	Waleed Altaweel	2019
Trimodal Therapy Versus Radical Cystectomy for Muscle Invasive Bladder Cancer; Which is A Better Choice? KFSH&RC Experience	Waleed Altaweel, Mohammed Alotaibi	2019
Complications of Proximal Hypospadias Repair in One Stage Versus Two Stage Technique	Ahmad Alshammari, Ameen Bashareef	2019
Early Effect of Sleeve Gastrectomy on the Semen Parameters in Morbid Obese Patients	Maha Aleid	2019
Presentation Outcome of Patients with Renal Masses Treated in King Faisal Specialist Hospital	Mohammed Alotaibi, Raouf Seyam	2016
The Impact of Donor Robotic Partial Hepatectomy on Sexual Function in Sexually Active Men: A Prospective Study	Raouf Seyam	2018

Ongoing Research Projects

Full Names	PI	Started From
The Management of Chromophobe Renal Cell Carcinoma in King Faisal Specialist Hospital & Research Centre	Waleed Altaweel, Raouf Seyam	2018
The Association of Renal Cell Carcinoma with Gastrointestinal Stromal Tumors: King Faisal Specialist Hospital and Research Centre Experience	Waleed Altaweel, Raouf Seyam	2018
Novel Epidemiological and Computational Genomic Approaches to Explore the Missing Heritability of Primary and Metastatic Prostate Cancer	Sultan Alkhateeb	2020
Clinical Safety and Diagnostic Efficacy of Multiparametric Magnetic Resonance Imaging and Ultrasound (MPMRI-US) Fusion Targeted and Systematic Transperineal Prostate Biopsy: The Preliminary Experience of First 100 Cases	Sultan Alkhateeb	2019
Trends In The Surgical Managment Of Renal Cell Carcinoma In A Contemporary Tertiary Care Setting	Sultan Alkhateeb	2018
Histological Changes in Corpus Cavernosa After Patching of Tunica Albuginea Defect with Tachosil, Polypropylene Mesh, or Vicryl Mesh: A Pilot Study in the Rat and Baboon Penis	Raouf Seyam, Said Kattan	2021

Research Collaboration

- The Value of Screening and Early Detection of Carcinoma of the Prostate in Saudi Arabia
- Follow Up Cases After Radical Orchiectomy for Testicular Cancer in KFSH&RC
- Molecular Profiling for Prostate Cancer
- Urology Data Registry
- Trimodal Therapy Versus Radical Cystectomy for Muscle Invasive Bladder Cancer; Which is A Better Choice? KFSH&RC Experience
- Complications of Proximal Hypospadias Repair in One Stage Versus Two Stage Technique
- Early Effect of Sleeve Gastrectomy on the Semen Parameters in Morbid Obese Patients
- Presentation Outcome of Patients with Renal Masses Treated in King Faisal Specialist Hospital
- The Impact of Donor Robotic Partial Hepatectomy on Sexual Function in Sexually Active Men: A Prospective Study
- The Management of Chromophobe Renal Cell Carcinoma in King Faisal Specialist Hospital & Research Centre
- The Association of Renal Cell Carcinoma with Gastrointestinal Stromal Tumors: King Faisal Specialist Hospital and Research Centre Experience
- Novel Epidemiological and Computational Genomic Approaches to Explore the Missing Heritability of Primary and Metastatic Prostate Cancer
- Clinical Safety and Diagnostic Efficacy of Multiparametric Magnetic Resonance Imaging and Ultrasound (MPMRI-US) Fusion Targeted and Systematic Transperineal Prostate Biopsy: The Preliminary Experience of First 100 Cases
- Trends In The Surgical Management Of Renal Cell Carcinoma In A Contemporary Tertiary Care Setting
- Histological Changes in Corpus Cavernosa After Patching of Tunica Albuginea Defect with Tachosil, Polypropylene Mesh, or Vicryl Mesh: A Pilot Study in the Rat and Baboon Penis

Other Achievements

- The Mock OSCE Urology Exam, KFSH&RC. Riyadh, Saudi Arabia, 18 November 2021.
- The 6th Bladder Augmentation and Reconstruction Workshop. Animal Lab, Comparative Medicine Department, KFSH&RC, Riyadh, Saudi Arabia, 23 October 2021.
- 2nd Microsurgery in Infertility Workshop. Animal Lab, Comparative Medicine Department, KFSH&RC, Riyadh, Saudi Arabia, 23 October 2021.

Publications

- Al-Gonaim, A., Alfraidi, O. B., Alotaibi, T., Al-Hussain, T., & Alkhateeb, S. S. (2021). Urethral clear cell carcinoma—Case report and review of literature. *Urology Case Reports*, 38, 101659.
- Algarni, A. M., Junejo, N. N., Alkhateeb, S. S., & Al-Hussain, T. O. (2021). Testicular fibroma: A case report and literature review. *Urology Annals*, 13(3), 308.
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- Alomar, M. A., Alghamdi, O. S., Alghafees, M. A., Alhamidi, R. A., Abduldaem, A. M., & Aljohani, M. M. (2021). Clinical Application of a Two-Step Percutaneous Nephrolithotomy in a Patient With Severe Kyphoscoliosis and a Malrotated Kidney. *Cureus*, 13(8).
- Alqarni, N., Alanazi, A., Afaddagh, A., Eldahshan, S., Alshayie, M., & Alshammari, A. (2021). Renal cell carcinoma in a duplex kidney in pediatric. *Urology Annals*, 13(3), 320.
- Almaiman, S. S., Alfraidi, O. B., & Alhathal, N. K. (2022). Fulminant corporal infection induced by Fournier gangrene: A case report with unusual presentation. *Urology Case Reports*, 40, 101942.
- Gacaferi, H., Collaborative, G., & COVIDSurg Collaborative. (2021). Timing of surgery following SARSCoV2 infection: an international prospective cohort study. *Anaesthesia*, 76(6).
- COVIDSurg Collaborative, GlobalSurg Collaborative, Nepogodiev, D., Simoes, J. F., Li, E., Picciochi, M., & Pellino, G. (2022). SARSCoV2 infection and venous thromboembolism after surgery: an international prospective cohort study. *Anaesthesia*, 77(1), 28-39.
- COVIDSurg Collaborative, GlobalSurg Collaborative, Nepogodiev, D., Simoes, J. F., Li, E., Picciochi, M., & Pellino, G. (2021). Effects of preoperative isolation on postoperative pulmonary complications after elective surgery: an international prospective cohort study. *Anaesthesia*, 76(11), 1454-1464.
- COVIDSurg Collaborative, GlobalSurg Collaborative. (2021). SARS-CoV-2 vaccination modelling for safe surgery to save lives: data from an international prospective cohort study. *British Journal of Surgery*, 108(9), 1056-1063.
- Junejo, N. N., Alkhateeb, S. S., Alrumayyan, M. F., Alkhatib, K. Y., Alzahrani, H. M., Alotaibi, M. F., & Altaweel, W. M. (2021). Trends in the surgical management of renal cell carcinoma in a contemporary tertiary care setting. *Urology Annals*, 13(2), 111.
- Mehmood, S., Alothman, K. I., Alwehaibi, A., & Alhashim, S. M. (2021). Diagnostic efficacy and safety of transperineal prostate targeted and systematic biopsy: The preliminary experience of first 100 cases. *Archivio Italiano di Urologia e Andrologia*, 93(2), 127-131.
- Rabah, D., Al-Taweel, W., Khan, F., Arafa, M., Mehmood, S., Mokhtar, A., & Farhat, K. (2021). Transperineal versus transrectal multiparametric magnetic resonance imaging fusion targeted prostate biopsy. *Saudi Medical Journal*, 42(6), 649-655.

- Altaweel, W.,Mehmood SH., & Seyam, R. (2021). Intraoperative cell salvage transfusion in patients undergoing posterior urethroplasty: its efficacy of reducing allogeneic blood transfusion, safety, and cost. In press. *Urology Annals*.
- Azhar, R. A., Aldousari, S., Alghamdi, M. M., Alotaibi, M. F., Alkhateeb, S. S., Nassir, A. M., . & Rabah, D. (2021). Robot-Assisted Radical Prostatectomy in Low-Volume Regions: Should It Be Abandoned or Adopted? A Multi-Institutional Outcome Study. *Journal of Endourology*, 35(7), 1013-1019.
- Al-Zahrani, M. A., Alkhamees, M., Almutairi, S., Aljuhayman, A., & Alkhateeb, S. (2021). Impact of COVID-19 on urology practice in Saudi Arabia. *Risk Management and Healthcare Policy*, 14, 1379.
- Alkhamees, M. A., Almutairi, S. A., Aljuhayman, A. M., Alkanhal, H., Alenezi, S. H., Almuhaideb, M., & Alkhateeb, S. S. (2021). Evaluation of the urology residency training program in Saudi Arabia: A cross-sectional study. *Urology Annals*, 13(4), 367.
- Raheem, A. A., Banihani, O., Abasher, A., Alotay, A., Alyami, F. A., Alsaad, T. A., . & Alshammari, A. (2021). Pediatric urology surgical practice in the time of COVID-19: Results from tertiary Saudi Arabia hospitals. *Urology Annals*, 13(4), 397.
- Altaweel, W., & Seyam, R. (2019). Sexual Dysfunction and Fertility in Neurogenic Lower Urinary Tract Dysfunction. *Neurourology*, 457-478.
- Altaweel,W.(2021)PharmacologyinNeurogenic Lower Urinary Tract. (Book Chapter). In press.

ANNUAL REPORT 2021

Heart Centre

www.kfshrc.edu.sa

The Heart Centre is committed to excellence in patient care, teaching and research.

Its mandate includes research on the challenges of cardiovascular diseases facing the people of Saudi Arabia and its objective is to increase scientific knowledge of cardiovascular diseases, including their epidemiology, risk factors, prevention, detection, diagnosis, treatment and prognosis, and to initiate cardiovascular, evidence-based programs.

In 2021, the Heart Centre had 19 approved/ ongoing research projects. These projects included prospective studies, retrospective records review

and analysis, registries, interventional, diagnostic research, and basic research.

The Heart Centre had 11 retrospective studies, 8 prospective studies, out of these studies 1 is sponsored. All sections of the Heart Centre had research proposals and in 2021 the Heart Centre submitted 22 Publications.

The Heart Centre continues to develop its Strategic Research Plan which is designed to develop and sustain significant, internationally acknowledged research in several thematic areas relevant to the high incidence of cardiovascular diseases in the Kingdom.



Andre Rudiger Simon, MD

Staff Names

Full Names	Title
Hani Al Sergani, MD	Deputy Director, Heart Centre
Olga Vriza, MD	Consultant, Adult Cardiology
Bahaa M. Fadel, MD	Consultant, Adult Cardiology
Domenico Galzerano, MD	Consultant, Adult Cardiology
Bandar Al Amro, MD	Consultant, Adult Cardiology
Dania Mohty, MD	Consultant, Adult Cardiology
Mohammed Al Admawi, MD	Consultant, Adult Cardiology
Bandar Al Ghamdi, MD	Consultant, Adult Cardiology
Fareed Khouqeer, MD	Consultant, Cardiac Surgery
Mohammed Al Habdan, MD	Consultant, Pediatric Cardiology
Waleed Manea, MD	Consultant, Pediatric Cardiology
Fadel Al Fadley, MD	Senior Consultant, Pediatric Cardiology
Tahir Mohamed, MD	Consultant, Adult Cardiology
Dimpna Albert Brotons, MD	Consultant, Pediatric Cardiology
Ziad Dahdouh, MD	Consultant, Adult Cardiology
Naji AlKholaf, MD	Consultant, Adult Cardiology
Feras Khaliel, MD	Consultant, Cardiac Surgery
Ghassan Siblani, MD	Consultant, Pediatric Cardiology
Andrea Rossi Zadra, MD	Consultant Intensive
Suleiman Kharabsheh, MD	Consultant Cardiology
Zohair AlHalees, MD	Senior Consultant

Staff Names

Full Names	Title
Jehad AlBuraiki,MD	Consultant Cardiology
Aly AlSanei,MD	Senior Consultant
Ali AlEnazy,MD	Consultant Cardiology
Fadl Emula.MD	Consultant Cardiology
Maie AlShahid,MD	Consultant Cardiology
Muhammad Shahzad,MD	Consultant Cardiology

Names of Joints

Full Names	Title
Nadiyah AlRuwaili	Clinical Research Coordinator
Muneerah AlNofe	Assistant Clinical Research Coordinator
Batol Allehyani	Assistant Clinical Research Coordinator

Ongoing Research Projects

Title of the Research	PI	Period
COVID-19 in Adults with Congenital Heart Disease.	Fadl Mulla MD	1 year
Signal Processed Surface ECG for Early Detection of Cardiac Dysfunction in Cardio-oncology patients.	Bandar AlGhamdi MD	5 years
Utility of Digoxin in children with Dilated Cardiomyopathy and depressed left ventricle function.	Dimpna Calila Albert Brotons MD	5 years
SyncAV Post-Market Trial.	Bandar AlGhamdi MD	5 years
Outcome of blood glucose variability and control after Coronary Artery Bypass Grafting.	Mohammed Laimoud MD	1 year
Coronavirus disease-2019 (COVID 19) in heart transplant patients: characteristics and early outcomes.	Mohammed Al Kasab MD	1 year
A registry of Spontaneous coronary artery dissection (SCAD).	Mohammed Laimoud MD	1 year
Patterns of Presentation and Management of Acute Coronary Syndrome in King Faisal Specialist Hospital and Research Centre during the Covid-19 Pandemic.	Abdalkareem Alallaf MD	1 year
“Severity of Functional Tricuspid Regurgitation. Anatomic Characteristics and Prognostic Implications in Heart Failure and Pulmonary Hypertension”.	Olga Vriza MD	5 years
Incidence of in-stent restenosis and thrombosis in patients with end stage renal disease on dialysis Proposal.	Tahir Mohamed MD	1 year

Ongoing Research Projects

Title of the Research	PI	Period
Potential role and therapeutic targeting of Repetitive Elements In Ageing associated Cardiovascular Disease	Olga Vriza MD	5 years
Cardiac Disease in Patients with Mucopolysaccharidosis type VI: The Effect of Bone Marrow Transplantation vs Enzyme Replacement Therapy on echocardiographic parameters.	Abdullah Alhuzaimi MD	1 year
Stress-Induced Cardiomyopathy (SC) or Takotsubo: A KFSH&RC experience.	Olga Vriza MD	5 years
The Incidence of Readmission with Treated Rejection After Heart Transplant.	Fareed Khouqeer, MD	1 year
Incidence and outcome of Transient and Permanent Complete Heart Block after Open Heart Surgery for Congenital Heart Diseases.	Muhammad Shahzad MD.	1 year
Perception of Undergraduate Nurses on Clinical Placement in King Faisal Specialist Hospital & Research Centre.	Fadl E Moh Fadl Elmula MD	5 years
Woolly hair palmoplantar keratoderma cardiac abnormalities: Naxos and Naxos-like Syndrome.	Dimpna Calila Albert Brotons MD	5 years
Knowledge, skills, and compliance of nurses on Central Line-Associated Bloodstream Infection in Cardiovascular Department King Faisal Hospital & Research Centre	Yasser Alheraish MD	1 year
Prevalence and outcome of post-cardiac surgery chylothorax in children.	Muhammad Shahzad MD	1 year

Research Collaboration

- “Severity of Functional Tricuspid Regurgitation. Anatomic Characteristics and Prognostic Implications in Heart Failure and Pulmonary Hypertension”, Olga Vriza MD,(Prof Stefano Ghio, San Matteo Hospital, Pavia, Italy)

External Grant Funding

Title of the Research	PI	Started From
SyncAV Post-Market Trial, SPONSOR: Abbott	Bandar AlGhamdi, MD	2021 - Ongoing

Other Achievements

- First time in the Kingdom we used the CardioMems device in 2 Heart Failure patients, the device allows us to remotely monitor the PA pressure which is an early indicator of the onset of worsening heart failure. These early changes can often be addressed through simple adjustments to care, such as titration of medications, most often without requiring an appointment with the patient.
- For the first time at KFSH&RC we inserted a BiVentricular Berlin Heart which is providing complete cardiac support in a 6-year-old female patient. The Berlin Heart is a life-saving device while the patient is on the waiting list for a heart transplant.
- In the Cardiac Cath Lab for the first time we performed a Transcatheter Mitral Valve Implantation with the new Tendyne Valve for 2 female patients (80yo F and 54yo F).
- Cardiac Cath Lab received 2 accreditations through ACE (Accreditation for Cardiovascular Excellence)
 1. Cardiac Catheterization Percutaneous Coronary Intervention
 2. Electrophysiology
- Amyloidosis-Middle East Virtual Preceptorship – 26-27 November 2021 – virtual interactive meeting with expert presentations and collaborative workshops to raise awareness of cardiac amyloidosis, sharing experiences and facilitating collaboration between clinicians. <https://www.afmecapreceptorship.com/landing>

Publications

- Ferrara, F., Gargani, L., Contaldi, C., Agoston, G., Argiento, P., Armstrong, W. F., . & Bossone, E. (2021). A multicentric quality-control study of exercise Doppler echocardiography of the right heart and the pulmonary circulation. The RIGHT Heart International NETwork (RIGHT-NET). *Cardiovascular Ultrasound*, 19(1), 1-11.
- Vríz, O., Palatini, P., Mos, L., AlSergani, H., Vendramin, I., Livi, U., . & Magne, J. (2021). Augmentation index predicts mortality in patients with aortic stenosis: an echo-tracking study. *The International Journal of Cardiovascular Imaging*, 37(5), 1659-1668.
- Ferrara, F., Gargani, L., Naeije, R., Rudski, L., Armstrong, W. F., Wierzbowska-Drabik, K., . & Bossone, E. (2021). Feasibility of semi-recumbent bicycle exercise Doppler echocardiography for the evaluation of the right heart and pulmonary circulation unit in different clinical conditions: the RIGHT heart international NETwork (RIGHT-NET). *The International Journal of Cardiovascular Imaging*, 37(7), 2151-2167.
- Al-Ghamdi, B., Aldosary, F., Aljumaah, S. A., Alkhatib, K., & Emmanuel, S. (2021). The Effects of Ramadan fasting on Heart Transplant Recipients. *J Cardiol Cardiovasc Res*, 2(2), 1-8.
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- Fadel, B. M., Mohty, D., Alassas, K., & Alhalees, Z. (2021). The role of transcatheter approaches for the treatment of pulmonary homograft dysfunction. *Annals of Cardiothoracic Surgery*, 10(4), 521.
- Fadel, B. M., Pibarot, P., Kazzi, B. E., Al-Admawi, M., Galzerano, D., Alhumaid, M., . & Mohty, D. (2021). Spectral doppler interrogation of the pulmonary veins for the diagnosis of cardiac disorders: a comprehensive review. *Journal of the American Society of Echocardiography*, 34(3), 223-236.
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- Laimoud, M., Saad, E., & Koussayer, S. (2021). Acute vascular complications of femoral veno-arterial ECMO: a single-centre retrospective study. *The Egyptian Heart Journal*, 73(1), 1-9.
- Dahdouh, Z., & Sibli, G. (2021). Percutaneous Management of a Mechanical Complication Post Mitral Valve Surgery in a Child. *The Journal of Invasive Cardiology*, 33(3), E229-E229.
- PERGOLA, V., DI SALVO, G., DI MICHELE, S., ELMAHI, I., SEEMI, S., GALZERANO, D., . & AL SERGANI, R. (2020). Gerbode defect, Ebstein anomaly and Wolff-Parkinson-White in patient with Down Syndrome. Never say never.... *Gazzetta Medica Italiana-Archivio per le Scienze Mediche*, 179(12), 675-8.

- Saba, S., Al Sergani, A., Vrız, O., Kholaf, N., Ramzan, K., Jawad Shah, S., . & Di Salvo, G. (2021). Echocardiographic features and behavior of cardiac structural abnormalities in mucopolysaccharidosis. *European Heart Journal-Cardiovascular Imaging*, 22(Supplement_1), jeaa356-086.
- Veldtman, G., Possner, M., Mohty, D., Issa, Z., Alsaleh, M., AlMarzoog, A. T., . & Vrız, O. (2021). Atrial function in the Fontan circulation: comparison with invasively assessed systemic ventricular filling pressure. *The International Journal of Cardiovascular Imaging*, 37(9), 2651-2660.
- Krimly, A., Jain, C. C., Egbe, A., Alzahrani, A., Al Najashi, K., Albert-Brotons, D., & Veldtman, G. R. (2021). The pulmonary vascular bed in patients with functionally univentricular physiology and a Fontan circulation. *Cardiology in the Young*, 31(8), 1241-1250.
- Daoulah, A., Hersi, A. S., Al-Faifi, S. M., Alasmari, A., Aljohar, A., Balghith, M., . & Lotfi, A. (2021). STEMI and COVID-19 pandemic in Saudi Arabia. *Current problems in cardiology*, 46(3), 100656.
- Dahdouh, Z., Salem, E., & Mohamed, T. (2021). Spontaneous Coronary Artery Dissection Post Partum. *The Journal of Invasive Cardiology*, 33(4), E316-E316.
- Mohamed, T. I., Binzaid, A. A., Almasood, A., Baqal, O. J., Dahdouh, Z., Belhaj, K., . & Al-Sergani, H. S. (2021). Transcatheter mitral valve-in-valve implantation for failed bioprosthesis. *Turk Kardiyol Dern Ars*, 49(1), 22-28.
- Daoulah, A., Alasmari, A., Hersi, A. S., Alshehri, M., Al Garni, T., Abuelatta, R., . & Lotfi, A. (2021). Percutaneous Coronary Intervention Vs Coronary Artery Bypass Surgery for Unprotected Left Main Coronary Disease: G-LM Registry. *Current Problems in Cardiology*, 101002.
- Alsomali, A., Eltayeb, A., Aldosari, S., AlShahid, M., AlSanei, A., AlEnazy, A., & Vrız, O. (2022). Recurrence of left ventricular pseudoaneurysm after multiple mitral valve replacements. *Monaldi Archives for Chest Disease*, 92(2).
- Bossone, E., Cademartiri, F., AlSergani, H., Chianese, S., Mehta, R., Capone, V., . & Mehta, R. H. (2021). Preoperative Assessment and Management of Cardiovascular Risk in Patients Undergoing Non-Cardiac Surgery: Implementing a Systematic Stepwise Approach during the COVID-19 Pandemic Era. *Journal of cardiovascular development and disease*, 8(10), 126.
- Qabha, H., Alanazi, T., Khouqeer, M., Dawary, M., & Khouqeer, F. (2021). A surgical approach of an unusual variant of complete atrioventricular defect; A case report. *The Cardiothoracic Surgeon*, 29(1), 1-6.

ANNUAL REPORT 2021

Department of Dentistry

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Research has high value to society, it plays a significant role in advancing the dental profession, providing important information about oral diseases, risk factors, and discovering which treatments are most effective for patients and improving the oral health.

In Dental department we do encourage conducting researches to build a base of scientific and clinical knowledge that leads to using the existing treatments in the best possible ways.

Research in the Department of Dentistry focuses on preventing and treating oral diseases and contributing to improving human oral health.

Among the fields in which we conduct research are oral health, biomaterials, cancer and craniofacial anomalies.



Dr. Abdullah Al Barkheel

Staff Names

Full Names	Title
Abdullah Rashid Albarkheel	Chairman, Dentistry (Consultant)
Khalid Hammad Nasser Alzoman	Consultant, Section Head, Periodontics
Aziza Johar Mohamed Aljohar	Consultant, Pediatric Dentistry
Sarah Zohair Yousif Alhalees	Consultant, Restorative Dentistry
Talal Dimachki	Consultant, General Dentistry
Mohammad Yassir Tabbaa	Consultant, Orthodontics
Rajaa Abdullah Nasser Alsanea	Consultant, Endodontics
Saud Abdulaziz Almojaly	Consultant, General Dentistry
Badar Mohamad Abdullah Alshammari	Consultant, Endodontics
Mohammed Nasser Alghazi	Consultant, General Dentistry
Abdulelah Mohammed Abdulaziz Algabbani	Consultant, General Dentistry
Fahad Salman Saad Bin Saleh	Consultant, Restorative Dentistry
Haifa Abdulghani Ibrahim Alkhodier	Consultant, Pediatric Dentistry
Mohammad Abdulaziz Kamaan Alqahtani	Consultant, General Dentistry
Muayad Mohammed Fahad Alfuraih	Consultant, Prosthodontics
Zikra Abdulrahman Alkhayal	Consultant, Pediatric Dentistry
Zaina Haif Mohammed Alqahtani	Associate Consultant, Pediatric Dentistry
Nomahn Humayun	Consultant, Periodontics
Neda Almojel	Associate Consultant, Prosthodontics
Antonio Palma	Consultant, Maxillofacial Surgery

Ongoing Research Projects

Title of the Research	PI
Relationship of Daily Wear of Eyeglasses with Susceptibility to Coronavirus Disease 2019 (COVID-19): A Cross- Sectional.	Dr. Abdullah R Albarkheel
The Effect of Stress Caused by Covid-19 on Non-Syndromic Orofacial Clefts Among Saudi Arabia: A Cross-Sectional Study	Dr. Aziza AlJohar
Assessing Social Media Engagement in relation to Oral Hygiene Awareness in Saudi Arabia.	Nomahn Humayun
Patient's acceptance of the virtual clinic during and after COVID 19: a cross sectional study in Saudi Arabia.	Dr. Sultan AlMubarak
Dental economics and cost differentials at a tertiary academic medical center.	Dr. Rajaa AlSanea
Comparison of Internal and Marginal Fit of Zirconia Crown Copings Using Different Dental Zirconia generations.	Dr. Saud Almojaly
Prevalence of First Carpometacarpal Joint Osteoarthritis and Carpal Tunnel Syndrome among Dentists in Saudi Arabia.	Dr. Haifa Alkhodier
Oral Manifestations of X-Linked Hypophosphatemic Rickets in Saudi Children	Dr. Aziza AlJohar
Assessment of dental hygienist role in breast cancer patient receiving chemotherapy and assessment of Oral Health Quality of Life of Breast Cancer Patients in Saudi Arabia	Dr. Mohammed AlGhazi

Ongoing Research Projects

Title of the Research	PI
Parents Knowledge and Awareness of Orthodontics and Orthodontic Treatment in Saudi Arabia	Dr. Mohammad Y Tabbaa
The Effect of Blood Contamination on the Microleakage of Several Restorative Materials; Non-Interventional studies	Dr. Muayad AlFuraih
Registry of Cleft Lip/Palate and Craniofacial Anomalies	Dr. Aziza Al-Johar

Publications

- Alkhayal, Z., Shinwari, Z., Gaafar, A., & Alaiya, A. (2020). Proteomic Profiling of the First Human Dental Pulp Mesenchymal Stem/Stromal Cells from Carbonic Anhydrase II Deficiency Osteopetrosis Patients. *International journal of molecular sciences*, 22(1), 380.
- Aljohar, A., Alwakeel, H., & Palma, A. (2021). Multiple natal Teeth in a oneweekold baby: A Case report. *Clinical Case Reports*, 9(3), 1292.
- Alhussain, A., Alkhayal, Z., Ayas, M., & Abed, H. (2022). Prevalence and risk factors of oral mucositis in paediatric patients undergoing haematopoietic stem cell transplantation. *Oral Diseases*, 28(3), 657-669.
- Alhowaish, L., Aljohar, A., Arafa, M., Almarshed, L., Binrabbaa, R., & Albabtain, S. (2020). Referral patterns of paediatricians and general medical practitioners to paediatric dental clinics and oral health knowledge in Riyadh, Saudi Arabia: A cross-sectional survey.
- AlMojel, N., AbdulAzees, P. A., Lamb, E. M., & Amaechi, B. T. (2021). Determining growth inhibition of *Candida albicans* biofilm on denture materials after application of an organoselenium-containing dental sealant. *The Journal of Prosthetic Dentistry*.
- Alqahtani, M. A., Almosa, N. A., Alsaif, K. A., Alsaif, N. M., & Aljaser, Y. J. (2021). Effect of topical fluoride application and diode laser-irradiation on white spot lesions of human enamel. *The Saudi Dental Journal*, 33(8), 937-943.
- Al Suwyed, A. S., Al Zoman, K. H., Robert, A. A., Al-Nowaiser, A. M., Alabdely, M. H., & Al Mubarak, S. (2021). The silent epidemic of common oral diseases among the Arab population: An emerging health problem. *Journal of Family Medicine and Primary Care*, 10(8), 2768.

ANNUAL REPORT 2021

Department of Emergency Medicine

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The department is actively involved in research with limited resources at present.

DEM has been more progressive in research for the last two years.



Dr. Tawfik Alabdullah

Staff Names

Full Names	Title
Muhammad Nauman Qureshi	DR

Ongoing Research Projects

Title of the Research	PI
Comparison of iv ketamine with standard analgesia for treatment of vaso-occlusive crisis in sickle cell disease.	Dr. Muhammad Qureshi
Diagnostic accuracy of ct abdomen for acute abdominal conditions.	Dr. Muhammad Qureshi
The impact of outpatient virtual clinics on the Emergency department patients during the COVID-19 pandemic.	Dr. Muhammad Qureshi
Retrospective review of Non ST segment Elevation Acute Coronary Syndrome (NSTEMI-ACS) presenting to the Emergency Department of a major tertiary center in the Kingdom of Saudi Arabia.	Dr. Muhammad Qureshi
Retrospective audit of patients with “sepsis syndrome” in the emergency department of a tertiary care center. Are we making timely interventions for patients presenting with sepsis	Dr. Muhammad Qureshi
How to upgrade a pressurized emergency system; Have we learn lessons from the COVID 19 pandemic	Dr. Muhammad Qureshi

Ongoing Research Projects

Title of the Research	PI
retrospective study to compare pre-hospital and emergency department triage “vitals” to help expedite patients journey within the emergency medicine department and improve ambulance turnaround time; non-interventional studies	Dr. Wagley
Testing the trauma pathway of Emergency Department, not designated to receive trauma	Dr. Muhammad Qureshi
Communication Between Patient And Doctor In The ED	Dr. Abeer Ghawanni
Evolving Impact of COVID 19 on clinical medical evaluation at Alfaisal University	Dr. Pasha
Emergency Department Visits Among Liver transplant patients in Saudi Arabia	Dr. Pasha
Effectiveness of Urine Dipstick Analysis at Diagnosing UTI's in Renal Transplant Recipients	Dr. Pasha
72 hours return in the Emergency department at King Faisal Specialist Hospital and Research Center: A Retrospective Study	Dr. Haifa Alkhodier
Oral Manifestations of X-Linked Hypophosphatemic Rickets in Saudi Children	Dr. Tawfik
Discharge Against Medical Advice and its relation to the length of stay and readmission rates in Emergency Department at KFSHRC	Dr. Abeer Ghawanni

Ongoing Research Projects

Title of the Research	PI
Evaluation of the effectiveness of a midline catheter insertion course in improving procedural skills for emergency physicians and nurses	Dr. Abeer Ghawanni
The Triage Process in King Faisal Specialist Hospital and Research Center (KFSHRC) – Riyadh: A review and analysis	Ferdinand Comia

Publications

- Qureshi, M. N., & Comia, F. A. (2021). Emergency department (ED) staff satisfaction analysis in response to COVID-19 crisis. Did the pandemic bring change in clinical practice and behaviours?. *Trauma*, 6, 1-7.
- Butt, TS., AlShuduki, A., Kalla, M., Amani., Qureshi, MN. (2021). Practice and preferences of endotracheal intubation by emergency and critical care physicians in Riyadh, Kingdom of Saudi Arabia. *Trauma Emerg Care*, 6.
- Abdulmohsen, A. A., Alralji, A., & Nauman, Q. M.(2021). Moving the emergency department of a big tertiary center to a satellite location, during the COVID-19 crisis period: Operational risks and their mitigation.

ANNUAL REPORT 2021

Department of Radiology

www.kfshrc.edu.sa

Department of Radiology at KFSH&RC provides the highest quality of patient care using the state of art technology in diagnostic, interventional and therapeutic procedures.

Each section in the department is actively doing clinical and scientific research activities, often

in collaboration with other departments and institutions across the Kingdom. There are some members who are also presenting abstracts to various national or/and international conferences and submitting publications, case reports to different journals worldwide.



Yusuf Alkadhi, MD

Staff Names

Full Names	Title
Dr Ahmed Fathala	Consultant
Dr Faisal BinHussain	Deputy Chairman/ Head Section
Dr Rawan Benkuddah	Fellow
Dr Abdulaziz AISugair	Consultant
Dr MoheiEldin Abouzied	Consultant/Chairman, Radiology Research Scientific Committee
Dr Ahmed AlMuhaideb	Deputy Chairman/Section Head
Dr Riyadh AlSalloum	Consultant/Director, Nuclear Medicine Fellowship Program
Dr Abdulrahman Khawaji	Consultant
Dr Nayef AlHinti	Fellow
Dr Meshaal AlShaalan	Consultant
Dr Waleed AlThobaity	Consultant/Director, Musculoskeletal Fellowship Program
Dr Khalid AlIsmail	Consultant
Dr Saleh AlReshoodi	Head Section
Dr Maram AlOthman	Associate Consultant
Dr Riham Eida	Associate Consultant
Dr Riyadh AlOkaili	Consultant
Dr Ayman Khushaim	Consultant
Dr Ahmed AlEhaideb	Consultant
Mohammad AlRowaily	RadioPharmaceology Specialist
Sara AlMehemeid	Senior Computed Tomography Technologist
Ibrahim AlKharji	Senior Computed Tomography Technologist
Rashed AlRwais	Senior Computed Tomography Technologist

Names of Joint

Full Names	Title
Dr Faisal BinHussain	Deputy Chairman
Dr MoheieEldin Abouzied	Chairman
Dr Ahmed AlMuhaideb	Deputy Chairman/Section Head
Dr Riyadh AlSalloum	Director
Dr Waleed AlThobaity	Director
Dr Saleh AlReshoodi	Section Head

Ongoing Research Projects

Title of the Research	PI	Period
Circle Of Willis And Major Intracranial Vessels Diameters On CT Angiography In The Saudi Population.	Dr. Riyadh Alokaili	
Incidence and Radiological Predictors of Local Tumor Recurrence in Chondroblastoma.	Dr. Waleed Althobaity	
MRI Imaging Features of Angiomatoid Fibrous Histiocytoma.	Dr. Waleed Althobaity	6 months
BCGitis and BCGosis spectrum.	Dr. Ayman Khushaim	1 year
Renal Anomalies in Fanconi's Anemia Patients, Spectral of Findings.	Dr. Faisal bin Hussain	2 years
The Use of the Skeletal Burden Score (SBS) for Predicting Outcomes in Children and Adults with Fibrous Dysplasia.	Dr. Abdulaziz Alsugair	
Comparison Between Single Puncture with Loop Retained Gastrostomy with Multiple Punctures with Balloons Retained Gastrostomy Tube: A Retrospective Case Control Study.	Dr. Ahmed Alehaideb	12 months

Publications

- Alduraibi, A. and Fathala, A., (2021). Perfusion lungscan after pulmonary artery endarterectomy in patients with chronic thromboembolic pulmonary hypertension. *18(1)*, 1563-1569.
- Mohtasib, R. S., Alshamiri, K., Jobeir, A., Ambu-Saidi, F. M., Masawi, A., Alabdulaziz, L., & Hussain, F. B. (2021). Sonographic measurements for spleen size in healthy Saudi children and correlation with body parameters. *Annals of Saudi Medicine*, *41(1)*, 14-23.
- Fathala, A., Almehemeid, S., Alkharji, I., Alrwais, R., Benkuddah, R., & Aljahani, J. (2021). A conservative screening approach to kidney disease before contrast-enhanced computed tomography in outpatient population. *European Review for Medical and Pharmacological Sciences*, *25(6)*, 2503-2510.
- Fathala, A., Alsugair, A., Abouzied, M., & Almuhaideb, A. (2021). Patterns of [18F] FDG myocardial uptake in oncology patients as a predictor of myocardial ischaemia on stress myocardial perfusion imaging. *Nuclear Medicine Review*, *24(2)*, 51-57.
- Fathala, A. L., Alkulaybi, S., Khawaji, A., Alomari, A., & Almuhaideb, A. (2021). The association between low bone mineral density and coronary artery calcification in osteoporotic and non-osteoporotic patients in a tertiary center in Saudi Arabia. *Annals of Saudi Medicine*, *41(2)*, 101-108.
- Fathala, A., Alqattan, M., & Alsalloum, R. (2021). The diagnostic accuracy of stress myocardial perfusion scintigraphy in patients with end-stage renal disease. *American Journal of Cardiovascular Disease*, *11(2)*, 246.
- Abouzied, M. M., Alhinti, N., AlMuhaideb, A., Al Sugair, A.S., & AlQahtani, M. (2021). Extrahepatic metastases from hepatocellular carcinoma: multimodality image evaluation. *Nuclear Medicine Communications*, *42(6)*, 583-591.
- Alqahtani, M. & Alrowaily M. (2021). The significance of coordination chemistry in the development of anti-cancer peptide-based radiopharmaceuticals, *7(3)*. 38-46.
- Alqahtani, M. & Alrowaily M. (2021). PRRT a literature review *IOSR Journal of Biotechnology and Biochemistry*, *7(3)*. 03-12.
- Othman, M., Alshaalan, M., Khawaji, A., Benkuddah, R., Khalil, H., Alismail, K., . & Alreshoodi, S. (2021). Vertebroplasty Increases the Incidence Of New Vertebral Compression Fractures Compared To Conservative Management. *The Arab Journal of Interventional Radiology*, *5(01)*, 035-040.
- Fathala, A., & Aldurabi, A. (2021). Frequency of computed tomography abnormalities in patients with chronic thromboembolic pulmonary hypertension: a comparative study between lung perfusion scan and computed tomography pulmonary angiography. *Multidisciplinary Respiratory Medicine*, *16(1)*.
- Ghebeh, H., Al-Sayed, A., Eiada, R., Cabangon, L., Ajarim, D., Suleman, K., . & Al-Tweigeri, T. (2021). Weekly Paclitaxel given concurrently with Durvalumab has a favorable safety profile in triple-negative metastatic breast cancer. *Scientific reports*, *11(1)*, 1-9.

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Surgery Department

www.kfshrc.edu.sa

The Department of Surgery provides qualified research by members of the Department, in collaboration with other Hospital departments, other nationally, or international institutions.

The goal of the Department is to encourage research activities, and involve most of the junior staff and new generation of surgeons in research.

At the end of 2021, the Department of Surgery has 32 publications, with total impact factor of 250.2. We completed and closed 7 projects. Currently, there are 28 RAC-approved active projects, some of which 6 research projects were initiated in 2021. These projects included clinical, basic, evidence-based, prospective and retrospective studies.

A handwritten signature in blue ink that reads "Mohammed A." in a cursive style.

Mohammed Alomran, MD, FRCSC, MSc

Staff Names

Full Names	Title
Saif Al Sobhi	Consultant, Section Head
Osama Al malik	Consultant
Wafa A khayal	Consultant, Deputy Director, Perioperative Services
Amal Alhefdi	Consultant, Chairman, Surgery Departmental Research Committee, Chairman, Departmental M&M Committee, Director, B&E Fellowship Training Program
Samar Al Homoud	Consultant
Alaa Abdul jabbar	Consultant
Alaa Abdullah Alhazmi	Consultant, Deputy Chairman Surgery / Section Head
Ihssan Al Alem	Consultant
Saleh Al Nassar	Consultant, Director, PD Residency/Fellowship
Saud Al Shanafey	Training Program
Ali Alyahya	Consultant, Deputy Executive Director, ATA
Zakaria Habib	Consultant, Section Head
Ali Almalaq	Consultant
Abdulaziz Jarman	Consultant, Section Head
Mohammad Al Qattan	Consultant
Fuad Hashem	Consultant
Mohamed Mrad	Consultant
Moraya Alqahtani	Consultant, Plastic Surgery, Director, Plastic Residency Training Program
Samer, Koussayer	Consultant, Director, Vascular Fellowship Training Program
Faris Alomran	Consultant, Section Head

Ongoing Research Projects

Title of the Research	PI	Started From
Impact of diagnostic and treatment delays during the COVID-19 SARS-CoV-2 pandemic in the endocrine surgery population: A multi-institution study.	Amal Alhefdhi	2021 - Ongoing
Outcomes of Breast Cancer Patients with Isolated Liver Metastasis: Comparison of Surgical Resection Vs Other Local Modalities; an Experience of a Single Saudi Institution.	Amal Alhefdhi	2021 - Ongoing
Surgical Outcome of Parathyroidectomy for Tertiary Hyperparathyroidism Post Renal Transplantation in Saudi Arabia over the last 20 years, a single-center experience.	Amal Alhefdhi	2021 - Ongoing
Cytoreductive surgery (CRS) with hyperthermic intraperitoneal chemotherapy (HIPEC) +/- Intraoperative radiation therapy (IORT) A single tertiary care centre experience.	Samar Alhomoud	2021 - Ongoing
Indications & Outcomes of Re-Do Pancreatectomy for Infants with Congenital Hyperinsulinism after Near-total Resection: Tertiary Center Experience.	Zakaria Habib	2021 - Ongoing
Plastic surgeons in Saudi Arabia using Hirsch index. by MRAD, MOHAMED AMIR has been approved.	Amir Mrad	2021 - Ongoing
Outcomes of Emergency Surgery During the COVID-19 Crisis: A National, Multicentre, Observational Cohort Study	Alaa Alhazmi, Mohammed Bawazeer	2021 - Ongoing
Surgical management of Bilateral Wilms' Tumor:One center's experience	Saud Alshanafey	2020 - Ongoing

Ongoing Research Projects

Title of the Research	PI	Started From
Plastic surgery and COVID-19 in the gulf countries: fears, lessons learned and the plan for the future.	Amir Mrad	2020 – Ongoing
The impact of covid-19 pandemic on the provision, practice and outcomes of vascular surgery COVER.	Faris Alomran	2020 – Ongoing
Coagulopathy of COVID-19: A Pragmatic Randomized Controlled Trial of Therapeutic Anticoagulation versus Standard Care as a Rapid Response to the COVID-19 Pandemic (RAPID COVID COAG).	Faris Alomran	2020 – Ongoing
The Vascular Surgery COVID-19 Collaborative (VASCC) Principal International Investigator: Max Wohlaer.	Faris Alomran	2020 – Ongoing
Surgery of the axilla 10 years' Experience at KFSH –RC, Riyadh - KSA. 2019	Osama Almalik	2019 – Ongoing
Colorectal Cancer Screening Pilot Project in Saudi Arabia.	Samar Alhomoud	2019 – Ongoing
Efficacy of Cholecalciferol versus Calcitarol for the Prevention of Hypocalcemia Post-Thyroidectomy: A Randomized Controlled Study.	Saif Alsobhi.	2016 – Ongoing
Early Breast Cancer and Intra-Operative Radiotherapy (IORT).	Osama Almalik.	2016 – Ongoing

Research Collaboration

- Global Surgery collaborative.
- Global COVID SURG week
- COVID Cancer Surgery collaborative
- COVID Surgery collaborative
- Student Audit and Research in Surgery (STARSurg) collaborative
- Harvard Medical School
- The Vascular Surgery COVID-19 Collaborative (VASCC)
- (RAPID COVID COAG - RAPID Trial) Coagulopathy of COVID-19: A Pragmatic Randomized Controlled Trial of Therapeutic Anticoagulation Versus Standard
- The Vascular and Endovascular Research Network (VERN) COVID-19 Vascular Service (COVER)
- The Surgical Critical Care Chapter of the Saudi Critical Care Society
- The Saudi General Surgery Society

Other Achievements

- Saudi-International Colorectal Diseases Forum, 28-31 March 2021 (Virtual Conference)
- The Surgery Departmental Research Committee Initiated a performance Improvement Project titled "Standardize the Process of Reviewing Research Proposals in Surgery Department"
- In 2021, we maintained a high impact factor which was 250.2, and this was the highest impact factor the department of surgery reached over the years.

Publications

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Just-Do-It Form

Intervention Title: Standardize the process of reviewing research proposals in Surgery Department
Lead Name: Amal Alshabbi, MD **Date:** 04 April 2021

Current practice
No clear process for submitting and reviewing research proposals

➔

Targeted Practice
Standardize the submission and reviewing process to include clear steps for both parties

Step 3. Choose the solution to solve the most common reason/ cause:

Actions	Involved Person	Time Frame
• Develop a work process to review the process	• Quamr Alshabi	• 10/04/2021 to 17/04/2021
• Develop a work process for the submission and reviewing process	• Dr. Hani Alshabi • Dr. Amer Alshabi • Dr. Hisham Alshabi • Dr. Abdullah Alshabi	• 10/04/2021 to 17/04/2021
• Develop a checklist for the implementation	• Quamr Alshabi • Quamr Alshabi • Quamr Alshabi • Quamr Alshabi	• 10/04/2021 to 17/04/2021

Step 2. Clarify the root cause (reason) of the gap using 5 whys:

Present problem: No clear process for submitting and reviewing research proposals

- Why?** No Clear time frame for the process
- Why?** No clear roles and responsibilities for committee members

Root cause: No standardize process for reviewing research proposals

Step 4. List the lessons learned and the standard work to prevent recurrence:

Lessons Learned	Standard Work
• All department staff will understand the process of submitting and reviewing their research proposals	• Work process developed
• The project helped staff understand responsibilities and clear (time line) for the review, standardize (standardized staff)	• Standardized process for the submission and reviewing process
• Standardized	• Implementation checklist

Note: Please complete the form then e-mail it to: KQI@kfshrc.edu.sa Thank you.

DEP SURG Impact factor 2010 to 2021



ANNUAL REPORT 2021

Department of Physical Rehabilitation

www.kfshrc.edu.sa

Physical Rehabilitation Department: Provides physical therapy (PT), occupational therapy (OT), Orthotics and Prosthetics (O&P) services for the inpatient and outpatient settings. Which helps to rehabilitate a patient while recovering

from surgery, or a patient who has been injured or incapacitated in some way by an accident, illness, stroke or fit prosthetic device to amputees who have lost one or more limbs due to disease, trauma or a congenital anomaly.

A handwritten signature in blue ink that reads "Khaled A". The letters are fluid and connected, with a large, stylized 'A' at the end.

Khaled Alobthani

Staff Names

Full Names	Title
Khalid Al Obthani	Head,Physical Rehabilitation
Najwa Al Farra	Asst. Head Physical Rehabilitation
Tola Akomolafe	Education Coordinator
Collins Ogbeivor	Clinical Research Physical Therapist
Lorraine Paus	Hospital Assist. I
Romeo Asuncion	Hospital Assist. I
Nouf Aldhwayan	Supervisor, Outpatient
Ahmed Mahrous	Physical Therapist
Alanoud Alrasheed	Physical Therapist
Hala Aldosari	Physical Therapist
Hamad Alkahtani	Physical Therapist
Huda Al Mubarak	Physical Therapist
Hussain Al Mugizel	Physical Therapist
Inga Saara Marin	Physical Therapist
Jana Alzahrani	Physical Therapist
May Minkabou	Physical Therapist
Sultan Almiflih	Physical Therapist
Khulood Alrashid	Physical Therapist
Shahad Alshehri	Physical Therapist
Waad Alsaka	Physical Therapist
Deema Almadani	Physical Therapist
Israa Obaidallah	Physical Therapist
Abdulelah Alosaimi	Physical Therapist
Fatma Alkootame	Physical Therapist
Salih Alhomida	Physical Therapist
Sadoun Abu Ghazi	Clinic Assistant I

Staff Names

Full Names	Title
Faisal Altameemi	Pt. Assistant
Reem Assoud	Interpreter
Abdulaziz Almadhi	Interpreter
Ghadah Albunyan	Physical Therapist
Halah Abuaish	Physical Therapist
Samah Alharbi	Physical Therapist
Wea'am Alammar	Physical Therapist
Mai Alhenaki	Physical Therapist
Mohammed Jawkhab	Physical Therapist
Mohamed Takroni	Supervisor, Inpatient
Ahmad Alghamdi	Physical Therapist
Alimoddin Mohammed	Physical Therapist
Dalal Alghouth	Physical Therapist
Ibrahim Algarni	Physical Therapist
Mohammad Sheeha	Physical Therapist
Mohammed Bukhari	Physical Therapist
Muntaha Almansour	Physical Therapist
Nargis Mirza	Physical Therapist
Abdulaziz Althumayri	Physical Therapist
Feras Alfaifi	Physical Therapist
Malik Daghestani	Physical Therapist
Mohammad Basri	Physical Therapist
Fatimah Hosawi	Physical Therapist
Mohammed Alzahrani	Physical Therapist
Mohammed Alsubaie	Physical Therapist
Mohanad Omar Hossein	Supervisor Occupational Therapy

Staff Names

Full Names	Title
Basmah Alnuwaysir	Occupational Therapist
Reem Alkhudair	Occupational Therapist
Sarah Eissa	Occupational Therapist
Lama Yasin	Occupational Therapist
Reem Almutairi	Occupational Therapist
Abdulrahman Al-Anazi	Occupational Therapist
Abeer Alakeely	Occupational Therapist
Taghreed Alqubayshi	Occupational Therapist
Burhan Dhar	Supervisor, Orthotics & Prosthetics
Sajjad Hussain	Orthotist / Prosthetist
Mousa Almatrafi	Orthotist / Prosthetist
Maha Khedir	Orthotist Technician Assistant
Nawaf Alqarni	Orthotist Technician

Ongoing Research Projects

Title of the Research	PI
Physical therapy intervention to control Urinary Incontinence and quality of life in Multiple sclerosis patients	Hala Aldosari
The effectiveness of foot insoles on recovery of plantar fasciitis among health care providers.	Mohammed Takroni
The Influence of Early CR Intervention Program on ICU Length of Stay and Cost of Care in Post-CABG Surgery Patients: A retrospective Study.	Mohammed Takroni

Other Achievements

- Certificate of Appreciation for participating as a keynote speaker in “ The Cardiology Webinar 2021” April 14 – 15 2021
- Certificate of Recognition for a keynote presentation at “ The Global Virtual Conference on Cardiology” May 10 – 11, 2021.
- Certificate of appreciation for contributing as keynote speaker in (Health Career Pathway Conference” Sep 17 – 18 2021
- Outstanding Achievement Award Certificate in recognition for the support and dedication during the Pandemic Crisis. From Deputy Executive Director Nursing Affairs, 10 October 2021
- Appreciation Certificate for contributing as keynote speaker in “ The 3rd conference on Physiotherapy, Physical Rehabilitation & Sport Medicine” October 15 – 16 2021
- Certificate of Recognition for contributing as keynote speaker at “The 31 International Conference on Cardiology and Heart Failure. 5 November 2021.

Publications

- Ogbeivor, C. (2021). Lack of Motivation Among Healthcare Professionals in the National Health Service, 10(6), 45-54.
- Alotaibi, A. S., AlMarshad, F. A., Alzahrani, A. M., Hossein, M. O., Ijaz, A., Ifthikar, Z., & Jarman, A. T. (2021). Simultaneous Central Slip and Volar Plate Injuries at PIP Joint: A Novel Therapeutic Approach. Plastic and Reconstructive Surgery Global Open, 9(11).
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ANNUAL REPORT 2021

Department of Pediatrics

www.kfshrc.edu.sa

The Department of Pediatrics is one of the largest medical departments at KFSH&RC. It consists of ten subspecialty sections: Allergy/ Immunology, Endocrinology/ Diabetes, Gastroenterology, General Pediatrics, Infectious Diseases, Neonatology/ Perinatology, Nephrology, Pediatric Intensive Care, Pulmonology and Rheumatology. They provide medical treatment of a highly specialized nature, promoting medical research and education programs including post-graduate accredited fellowship training programs.

Residents and Fellows are heavily involved in conducting Research Projects with a high level of achievements in 2021. This report summarizes RAC-approved projects that were initiated, ongoing, and completed for 2021. During the year 2021, the Department of Pediatrics has continued to perform a variety of activities to promote Research through workshops, International forums, and Pediatric Training Sessions.

The Department of Pediatrics Mission is to continue in developing its strategic research plans which are designed to develop and sustain significant internationally acknowledged research in several thematic areas. We strive to educate and empower a diverse community of scholar-practitioners to achieve their educational goals and impact positive social change.

In order to promote research activities, the

department conducted Pediatric Research and Recognition Day on 6th October 2021 with 18 abstracts submitted. During this event, junior staff was exposed to the research environment from the beginning of their career in hopes that they will carry during their training, post-training period, and during their practice as senior staff. The current staff of the department is also encouraged to conduct clinical trials, studies, and research projects either individually or in collaboration with other departments. At the end of 2021, the Department of Pediatrics had a year of growth and development and there have been significant scientific achievements, including several publications, organization of seminars and workshops, active participation in various conferences and meetings, submission of grants, and training several students at different levels. We had 42 Publications, we have 52 RAC-approved ongoing projects including interventional, non-interventional studies, and clinical trials.

The Pediatrics Research Unit continues to develop its Strategic Research Plan which is designed to develop and sustain, internationally acknowledged research in several thematic areas relevant to our patient population in Saudi Arabia. The Pediatrics Research Unit plans to significantly increase its research capacity in each of these areas and to become recognized internationally for its high caliber research.



Esam AlBanyan, MD

Staff Names

Full Names	Title
Esam AlBanyan, MD	Chairman, Department of Pediatrics
Afaf Alsagheir, MD	Head of Committee Pediatric research
Manal AlShaikh, sCRC, MSc.RM	Senior Clinical Research
Prof. Hamoud AlMousa	Consultant, Allergy/Immunology
Bandar AlSaud, MD	Consultant, Allergy/Immunology
Prof. Bassam BinAbbas	Consultant, Endocrinology
Prof. Abdullah AlAshwal	Consultant, Endocrinology
Ohoud AlZahrani, MD	Consultant, Endocrinology
Mohammed Banemai, MD	Consultant, Gastroenterology
Ali AlMehaidib, MD	Consultant, Gastroenterology
Wajeeh AlDekhail, MD	Consultant, Gastroenterology
Fadiyah AlKhatabi, MD	Consultant, General pediatrics
Prof. Sami AlHajjar	Consultant, Infectious Diseases
Prof. Suliman AlJumaah	Consultant, Infectious Diseases
Salem AlGhamdi, MD	Consultant, Infectious Diseases
Saleh AlAlaiyan, MD	Consultant, Neonatology
Fahad AlHazzani, MD	Consultant, Neonatology
Eyad AlMidani, MD	Consultant, Neonatology
Mohammed BinJabr, MD	Consultant, Neonatology
Abdulaziz Binmanee, MD	Consultant, Neonatology
Weam Elsaidawi, MD	Consultant, Neonatology
Faisal Khan, MD	Consultant, Neonatology
Mahmoud Shaltot, MD	Consultant, Neonatology
Amal Hawari, MD	Consultant, Neonatology
Turki AlShareef, MD	Consultant, Nephrology
Prof. Essam AlSabban	Consultant, Nephrology

Staff Names

Full Names	Title
Sermin Saadeh, MD	Consultant, Nephrology
Weiam AlMaiman, MD	Consultant, Nephrology
Tareq Alayed, MD	Consultant, pediatric Intensive care
Fahad AlJofan, MD	Consultant, pediatric Intensive care
Tariq Alofisan, MD	Consultant, pediatric Intensive care
Fawaz Alenazi, MD	Consultant, pediatric Intensive care
Hanaa Banjar, MD	Consultant, Pulmonology
Ibrahim AlMogarri, MD	Consultant, Pulmonology
Prof. Suliman AlMayouf	Consultant, Rheumatology
Alhanouf AlSaleem, MD	Consultant, Rheumatology

Ongoing Research Projects

Title of the Research	PI	Status
The Safety & Efficacy of Cefepime Monotherapy for Peritoneal Dialysis-Associated Peritonitis in Pediatrics	Weiam AlMaiman	Ongoing
Glycemic Control and Evidence of Pancreatic Insufficiency in Children with Diffuse Hyperinsulinism who Underwent Near Total Pancreatectomy	Ohoud AlZahrani	Ongoing
Clinical, immunological characterization and outcome of stem cell transplantation for patients with Chediak-Hegashi Syndrome: a single centre experience	Hamoud Al-Mousa	Ongoing
The experience of diagnosing and managing laryngeal cleft in a tertiary center in Saudi Arabia.	Ibrahim AlMogarri	Ongoing

Ongoing Research Projects

Title of the Research	PI	Started From
Complications of Long lodged airway foreign bodies in tertiary care center	Ibrahim Almogarri	Ongoing
Conservative management of Congenital Lobar Over inflation: Evaluation and Long-Term Follow-Up	Ibrahim Almogarri	Ongoing
Minimally Invasive Surfactant Therapy in Preterm Infants with Respiratory Distress Syndrome on Continuous Positive Airway Pressure	Saleh AlAlaiyan	Ongoing
Duration of COVID-19 PCR positivity and frequency of seroconversion among immunocompromised patients at tertiary care center	Salem Alghamdi	Ongoing
The Impact of COVID-19 pandemic on Short-term Outcomes of Premature Infants: A local Experience	Saleh AlAlaiyan	Ongoing
Neonatal hypoglycemia after antenatal corticosteroids in Late Preterm Infants	Saleh AlAlaiyan	Ongoing
Monogenic Causes of Early-Onset Obesity in Saudi Pediatric Patients: Retrospective study	Afaf AlSagheir	Ongoing
Congenital Chloride Diarrhea Prognosis And Outcome	Ali AlMehaidib	Ongoing
Outcomes of Progressive Familial Intrahepatic Cholestasis	Wajeeh AlDekhail	Ongoing
Sclerosing cholangitis in children: Clinical, laboratory, and radiographic features, and outcomes	Khalid AlSaleem	Ongoing
Sanjad-Sakati-syndrome: gathering data about a serious life-limiting condition	Afaf AlSagheir	Ongoing
The Epidemiology and Outcome of Biliary Atresia in Saudi Arabia: A National Multicenter Study	Mohammed Banami	Ongoing

Ongoing Research Projects

Title of the Research	PI	Started From
Awareness, Care & Treatment in Obesity Management – An International Observation Among Teens (ACTION Teens)	Bassam Bin Abbas	Ongoing
Outcomes of Hematopoietic Stem Cell Transplantation for Chronic Granulomatous Disease patients: a single-centre experience	Reem Mohammed	Ongoing
Efficacy and safety of cinacalcet in children with secondary hyperparathyroidism due to Vitamin D resistant ricket , two arms , randomized clinical trial	Afaf ALSagheir	Ongoing
The Utility of serum galactomannan Test in the diagnosis of Invasive Aspergillus Infections in Patients with Chronic Granulomatous Disease: Retrospective Cohort and Literature Review	Reem Mohammed	Ongoing
Neonatal Acute Kidney Injury Retrospective Cohort Multicenter Study	Fahad N. Al- Hazzani	Ongoing
Tolerance, dependence and withdrawal from prolonged fentanyl use in critically ill infants: A local experience	Saleh AlAlaiyan	Ongoing
Development of a Multicentric Registry for the collection and statistical evaluation of clinical and therapeutic data of patients with monogenic and polygenic autoinflammatory diseases	Hanoof AlSaleem	Ongoing
A 2-Stage (Open-Label Run-in followed by Randomized Withdrawal), Double-Blind, Placebo-Controlled, Phase 2 Study of Setmelanotide in Patients with Specific Gene Defects in the Melanocortin-4 Receptor Pathway	Afaf ALSagheir	Ongoing
A Phase 3, Randomized, Double-Blind, Placebo-Controlled Study: 5 Independent Sub-studies of Setmelanotide in Patients with POMC, PCSK1, LEPR, SRC1, SH2B1, and PCSK1 N221D Gene Defects in the Melanocortin-4 Receptor Pathway	Afaf ALSagheir	Ongoing

Ongoing Research Projects

Title of the Research	PI	Started From
Potential effect of genetic variants in childhood large vessel vasculitis and vasculitis-like	Sulaiman M Al-Mayouf	Ongoing
Short Term Neonatal outcome after intrauterine transfusion	Abdulaziz Binmanee	Ongoing
The Outcome of PICU's Oncological Cases, That Diagnosed with or at High Risk of Tumor Lysis Syndrome (TLS) In Tertiary Care Hospital, Saudi Arabia	Tareq Al ayed	Ongoing
Adherence to Growth Hormone Therapy with Easypod™ in Pediatric Subjects at the Pediatric Endocrinology Clinics, King Faisal Specialist Hospital and Research Center	Bassam BinAbbas	Ongoing
Positive Distending Pressure Generated by Noninvasive High Frequency Oscillation Ventilation (NHFOV) as Compared to Continuous Positive Airway Pressure (CPAP) and Noninvasive Positive Pressure Ventilation (NIPPV)	Saleh Alaliyan	Ongoing
The Outcome of AKI (Acute Kidney Injury) in PICU (Pediatric Intensive Care Units), A retrospective Coherent Review Study in A Tertiary Care Center, Saudi Arabia	Tareq AlAyed	Ongoing
Pleuropulmonary Blastoma: Case Series in KFSHRC and Literature Review	Ibrahim AlMogarri	Ongoing
Exploring Our Experience of Pediatrics with (PH) Pulmonary Hemorrhage in the (ICU) Intensive Care Unit, A retrospective Coherent Review Study	Mouath Abdulsalam	Ongoing
An overview On Procedural Sedation Analgesia (PSA) Practiced By The Pediatric Critical Care Staff On Hematology Oncology Population	Mouath Abdulsalam	Ongoing

Ongoing Research Projects

Title of the Research	PI	Started From
Outcome for Pediatric Post Stem Cell Transplant (SCT) Admitted to Pediatric Intensive Care Unit	Fawaz Alanzi	Ongoing
Unnecessary Surgical exploration of neonates with Congenital Chloride Losing Diarrhea.	Ali AlMehaidib	Ongoing
Continuous Renal Replacement Therapy outcomes in infants & newborns	Weiam Almaiman	Ongoing
The Safety & Efficacy of Cefepime Monotherapy for Peritoneal Dialysis-Associated Peritonitis in Pediatrics.	Weiam Almaiman	Ongoing
Use of High-Flow Nasal Cannula Therapy in Pediatric Hematology/Oncology Patients Admitted to PICU with Acute Respiratory Failure – Review of data at King Fahad National Center for Children’s Cancer, King Faisal Specialist Hospital and Research Centre, Riyadh, Saudi Arabia	Tariq AlAyed	Ongoing
The Outcome of Pediatric Acute Respiratory Distress Syndrome (PARDS) Required High Frequency Oscillatory Ventilation (HFOV) In A Tertiary Care Center, Retrospective Review Study	Tariq AlAyed	Ongoing
Bile Acid Synthesis Disorders: A Case Series.	Wajeeh Al-Dekhail	Ongoing
Cystic Fibrosis (CF) Registry	Hanaa Banjar	Ongoing
Establishment of Primary Immunodeficiency Disease (PID) Registry at KFSHRC	Bander Al Saud	Ongoing
Efficacy of prophylactic glycerin suppositories for feeding intolerance in very low birth weight preterm infants; a randomized trial.	Emad Khadawardi	Ongoing
Underlying Molecular Genetic Defects of Primary Immunodeficiency Diseases in Saudi Arabia	Hamoud Al-Mousa	Ongoing

Ongoing Research Projects

Title of the Research	PI	Started From
Congenital Hepatic Fibrosis, A Single Centre Experience.	Wajeeh AlDeKhail	Ongoing
Quality of life evaluation in primary immunodeficiency patients receiving home-based subcutaneous immunoglobulin versus hospital-based intravenous immunoglobulin.	Bander AlSaud	Ongoing
Performance of the European League Against Rheumatism/American College of Rheumatology (EULAR/ACR) 2019 classification criteria for systemic lupus erythematosus in a monogenic lupus cohort	Sulaiman M Al-Mayouf	Ongoing

Research Collaboration

• International:

1. DUKE UNIVERSITY MEDICAL CENTER (DUMC).
2. Cincinnati Children Hospital Medical Center (CCHMC), Burnet Ave, USA
3. Inborn Errors working party (IEWP) / European Society for Blood and Marrow Transplantation (EBMT) /European Society for Immunodeficiency (ESID). Geneva, Switzerland.
4. Sultan Qaboos University Hospital (SQUH), the Royal Hospital (TRH).
5. Queen Rania Children Hospital, Amman, Jordan.
6. The University of Jordan, Amman, Jordan.
7. Royal hospital, Muscat, Oman.
8. Sabah Hospital, Kuwait.
9. Adan Hospital, Kuwait.
10. Tripoli Children Hospital, Libya
11. El Ayachi University Hospital of Rabat-Sale. Morocco.

• National:

1. King Saud University, Riyadh, KSA.
2. King Fahad Medical City, Riyadh, KSA.
3. King Abdullah Specialized children hospital, Jeddah, KSA.
4. King Abdullah Specialized children hospital, Riyadh, KSA.
5. AL Habib Hospital, Riyadh, KSA.
6. King Abdul-Aziz City for Science and Technology (KACST), KSA.
7. Department of Pathology & Laboratory Medicine, KFSH&RC, Riyadh, KSA.
8. Department of Medicine, KFSH&RC, Riyadh, KSA. Department of Medical Genetics, KFSH&RC, Riyadh, KSA.
9. Department of Oncology, KFSH&RC, Riyadh, KSA. Organ Transplant Center, KFSH&RC, Riyadh, KSA. Biostatistics, Epidemiology and Science Computer, KFSH&RC, Riyadh, KSA.
10. Quality Management, KFSH&RC, Riyadh, KSA.
11. Al FAISAL University, Riyadh, KSA.

External Grant Funding

Title of the Research	PI
Does CoVID-19 Have an Effect on the Prevalence and Number of Domestic Violence and Child Abuse Cases in the Kingdom of Saudi Arabia? And what are the Impacts on Children and their Families? (Study Number:2201172); ALKHATTABI, FADIAH, (Funding from KACST)	Fadiah Alkhattabi

Other Achievements

- Increased number of Approved New Research Proposal and Publications.
- Collaborative studies with National and International Institutions.
- Training Students / Employees in different aspects, methods, tasks, procedures of the registry.
- In order to promote research, the department conducted Pediatric Research Day on 6th October 2021 with 18 Abstract submitted.
- Bandar ALSaud,MD. 1st best oral presentation award in 10th Pediatrics Research Day 2021, held in Riyadh, KFSH&RC on 6th October 2021 for the research” Quality of Life Evaluation in Primary Immunodeficiency Patients Receiving Home-Based Subcutaneous - Immunoglobulin Versus Hospital-Based Intravenous Immunoglobulin”.

Publications

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ANNUAL REPORT 2021

Department of Pediatric Hematology / Oncology

www.kfshrc.edu.sa

Department of Pediatric Hematology / Oncology (PHO), is a world-class of institutions offering state-of-the-art treatment to the pediatric patients with cancer and hematological disorders in the Kingdom of Saudi Arabia. It is one of the largest centers worldwide in Hematopoietic Cell Transplantation (HCT) in the region since 1993. Being a champion of innovation, the Department also recognizes that clinical and translational research plays a starring role in its pursuit to deliver highest quality health care and to improve on

existing standards and disease-specific front-line protocols, critical for providing basis on delivering routine patient care in the paradigm of evidence-based practice, for our patient population. The department boasts a well-established, highest quality infrastructure for conducting clinical research, at par international standards graded by a number of evaluators from various well known medical institutions from North America, which is vital for this very special and unique medical practice.

A handwritten signature in blue ink that reads "Amani A". The signature is written in a cursive, flowing style.

Amani Al-Kofide, MD.

Staff Names

Full Names	Title
Hasan Shahin	Assistant Consultant
Ibrahim Ghemlas	Consultant
Muhammad Qasim	Assistant Consultant
Nicy Joseph	Assistant Consultant
Saadiya Javed Khan	Consultant
Sarah Ramiz	Consultant
Abdulaziz Elhussien	Assistant Consultant
Abdullah Aljefri	Consultant
Abdulrahman Almusa	Consultant
Ibrahim Alebaid	Assistant Consultant
Mahasen Saleh	Consultant
Saba Parween	Assistant Consultant
Amer Nadeem	Assistant Consultant
Ann Elabbadi	Assistant Consultant
Antonello Podda	Consultant
Awatif Alanazi	Consultant
Ibrahim Alfawaz	Senior Consultant
Mohammed Viqaruddin	Research Associate
Said Ahmed Ibrahim	Assistant Consultant
Ali Alahmari	Consultant
Hawazen Alsaedi	Consultant
Ibrahim Alqadiri	Assistant Consultant
Marwa Shams	Assistant Consultant
Mouhab Ayas	Consultant
Nada Elshaikh	Assistant Consultant
Osama Mohammed	Assistant Consultant

Staff Names

Full Names	Title
Samer Markiz	Assistant Consultant
Wejdan Alharbi	Specialist Physician
Abdulaziz Bin Mesained	Fellow
Ahmed Alsaeed	Fellow
Asmahan Assiri	Fellow
Batool Alghadeer	Fellow
Faleh Alqahtani	Fellow
Fatema Alhashem	Fellow
Fatima Alrojaye	Fellow
Hassan Madkhali	Fellow
Ibrahim Jaafari	Fellow
Maram Albashrawi	Fellow
Mohammed Suhaqi	Fellow
Mohammed Suhaqi	Fellow
Mujtaba Alyaseen	Fellow
Narjis Ghalab	Fellow
Njood Alwadei	Fellow
Rehab Alluqmani	Fellow
Zahra Albasarah	Fellow
Zainab Alnaser	Fellow
Zainab Alsaif	Fellow
Ahmed Alaseri	Assistant Clinical Research Coordinator
Antonette Geraldine Amao	Clinical Research Coordinator
Khawar Siddiqui	Senior Technical Specialist
Mohammed Sahabi	Research Technician
Muhammad Sohaib Zulfiqar	Clinical Research Coordinator

Staff Names

Full Names	Title
Seham Alqahtani	Research Technician
Syed Rafat Jafri	Clinical Research Coordinator
Abdulaziz Alobaidy	Administrative Coordinator I
Abdullah Alofayrayt	Hospital Assistant I
Epifania Butuhan Pastor	Senior Hospital Assistant
Jerome Racacho	Hospital Assistant I
Meznah Alotaibi	Administrative Coordinator Ii
Mohamed Aleid	Administrative Assistant Ii
Rose Lu	Senior Hospital Assistant

Ongoing Research Projects

Title of the Research	PI	Started From
Submission of data on pediatric patients undergoing stem cell transplantation at kfsh&rc, riyadh, sa, to the center of international blood & marrow transplant research (cibmtr) and the european society for blood and marrow transplantation (ebmt) databases	Mouhab Ayas	2014 - Ongoing
Registry for children and adolescents with cancer at kfsh&rc for the children's oncology group (cog) program	Afshan Ali	2014 - Ongoing
A phase iii randomized trial of adding vinc-topotecan-cyclo to standard chemotherapy in ini tx of non-met ewings sarcoma [aews1031]	Afshan Ali	2014 - Ongoing
Clinical characteristics and outcome of pediatric aml in saudi arabia: a multi-centre saphos leukemia group study	Ibrahim Ghemlas	2014 - Ongoing
Examining the Validity of a Non-Contact Infrared Detection Thermometer on the Hand Vs. the Forehead screening during the (COVID -19) Pandemic	Nahed Alsayed	2021 - Ongoing

Ongoing Research Projects

Title of the Research	PI	Started From
Pediatric non-malignant blood disorders registry at kfsh&rc	Mahasen Saleh	2015 – ongoing
[Cog] every child protocol: every child a registry, eligibility, screening biology and outcome study (apcc 14b1)	Afshan Ali	2016 – Ongoing
[Cog] anbl1232: utilizing response and biology based risk factors to guide therapy in patients with non-high-risk neuroblastoma (a group wide historically controlled phase iii study)	Afshan Ali	2017 – Ongoing
[Cog] risk stratified therapy for acute myeloid leukemia in down syndrome: a cog group wide phase iii study	Afshan Ali	2018 – Ongoing
Wapps-hemo (web accessible population pharmacokinetics service-hemophilia) protocol-phase 2: testing and validation	Mahasen Saleh	2018 – Ongoing
[Cog] anbl00b1: neuroblastoma biology studies	Afshan Ali	2018 – Ongoing
[Cog] aall1631: international phase 3 trial in philadelphia chromosome-positive acute lymphoblastic leukemia(ph+all) testing imatinib in combination with two different cytotoxic chemotherapy backbones	Afshan Ali	2018 – Ongoing
Real-world observational experience of recombinant factor viii fc fusion protein (eloctate) in hemophilia a patients from kfsh&rc	Mahasen Saleh	2018 – Ongoing
The level of fatigue and its impact on physical activity, cognitive impairment and quality of life among children with cancer	Amani Al-Kofide	2018 – Ongoing
Long-term treatment outcome in children with hemophilia: retrospective study from king faisal specialist hospital & research centre, riyadh, ksa	Mahasen Saleh	2018 – Ongoing

Ongoing Research Projects

Title of the Research	PI	Started From
A phase ii study of reduced therapy for newly diagnosed average risk wnt-driven medulloblastoma patients	Amani Al-Kofide	2019 – Ongoing
Childhood leukemia and lymphoma registry at kfsh & rc, riyadh, saudi arabia	Mahasen Saleh	2019 – Ongoing
Oral health survey in individuals with bleeding disorders.	Mahasen Saleh	2019 – Ongoing
A prospective non-randomized observational study of intra-arterial chemotherapy in children with retinoblastoma – a collaborative study from kingdom of saudi arabia	Amani Al-Kofide	2019 – Ongoing
Effectiveness of exergaming in reducing fatigue among children with cancer: a randomized controlled trial	Amani Al-Kofide	2019 – Ongoing
Haploidentical / mismatched hematopoietic cell transplantation in patients with immune deficiency disorders	Hawazen Al-Saedi	2019 – Ongoing
Venous thromboembolism (vte) registry for pediatric cancers at king faisal specialist hospital & research centre, riyadh	Mahasen Saleh	2019 – Ongoing
Related haploidentical bone marrow transplantation in children with symptomatic sickle cell disease	Awatif Alanazi	2019 – Ongoing
A 24-month prospective, noninterventional, international, multicenter study to describe the real-world effectiveness and usage of alprolix in patients with hemophilia b in elected european and middle eastern countries	Mahasen Saleh	2019 – Ongoing

Ongoing Research Projects

Title of the Research	PI	Started From
Outcome of haplo-identical stem cell transplant in pediatric leukemia/kfsh&rc experience	Amal Al-Seraihy	2020 – Ongoing
Covid-19 amongst children with cancer, non-malignant blood disorders and hematopoietic stem cell transplant recipients - reporting experience from a tertiary care center	Amani Al-Kofide	2020 – Ongoing
Phase ii study of a lentigen® cd19 chimeric antigen receptor (car) t cells in pediatric patients with relapsed/refractory cd19 positive acute lymphoblastic leukemia using a closed transduction system allacart19 study	Hawazen Al-Saedi	2020 – Ongoing
Early pulmonary complications in pediatric patients post hematopoietic cell transplant	Hawazen Al-Saedi	2020 – Ongoing
A 48-month, multi-centre, observational study to evaluate long-term effectiveness of elocta on joint health	Mahasen Saleh	2020 – Ongoing
Haploidentical stem cell transplantation with post-transplant cyclophosphamide (pt-cy) in children with familial hemophagocytic lymphohistiocytosis	Ali Al-Ahmari	2020 – Ongoing
Outcome of clofarabine based chemotherapy for treatment of relapse and /or refractory acute leukemia in children, a retrospective review at king faisal specialist hospital and research center, riyadh, saudi arabia	Ibrahim Ghemlas	2020 – Ongoing
A retrospective study of von willebrand disease molecular characterization among pediatric patients at king faisal specialist hospital and research centre in riyadh (2017-2019)	Abdulrehman Al-Musa	2020 – Ongoing

Ongoing Research Projects

Title of the Research	PI	Started From
Attributable cost and length of stay for central line associated bloodstream infections in pediatric hematology-oncology patients	Saadiya Khan	2020 – Ongoing
Haploidentical hematopoietic stem cell transplantation in pediatric severe aplastic anemia: a single center retrospective analysis	Ibrahim Ghemlas	2020 – Ongoing
25-hydroxyvitamin d status in children with leukemia and its association with outcome – a prospective investigation	Saadiya Khan	2021 – Ongoing
Genetic profiling using next generation sequencing to evaluate mutations, prevalence and prognostication, in children treated for acute leukemia in Saudi Arabia - a multicenter SAPHOS leukemia group study	Ibrahim Ghemlas	2020 – Ongoing
Pediatric and adolescent palliative care awareness survey	Saadiya Khan	2021 – Ongoing
In pediatric acute myeloid leukemia, is post-transplant recipient DNA in peripheral blood on serial chimerism analysis a predictor of relapse?	Saadiya Khan	2021 – Ongoing
Outcome of blood and marrow transplants in malignant infantile osteopetrosis: a retrospective review at King Faisal Specialist Hospital and Research Centre, Riyadh, Saudi Arabia (1995-2019)	Hawazen Al-Saedi	2021 – Ongoing
Characterization of biomarkers of medulloblastoma in the pediatric population at the King Faisal Specialist Hospital and Research Center, Riyadh, Saudi Arabia	Amani Al-Kofide	2021 – Ongoing
Second blood or marrow transplantation for patients with thalassemia: risks and benefits	Abdullah Al-Jefri	2021 – Ongoing
Attributable cost and tolerability of intravenous pentamidine in pediatric hematology-oncology patients	Saadiya Khan	2021 – Ongoing

Ongoing Research Projects

Title of the Research	PI	Started From
Outcome analysis of blood and marrow transplants in pediatric patients with severe congenital neutropenia at king faisal specialist hospital and research centre, riyadh, saudi arabia (1993-2018)	Ali Al-Ahmari	2021 – Ongoing
Short term outcome of patients undergoing stem cell transplantation after receiving the stem cell product over 2 days	Mouhab Ayas	2021 – Ongoing
Childhood soft tissue sarcomas at kfsh&rc 2013-2017	Antonello Podda	2021 – Ongoing
Incidence, risk factors, appropriate therapeutic strategies, and outcome of transplant associated thrombotic microangiopathic anemia	Hawazen Al-Saedi	2021 – Ongoing
[Cog] a phase 3 study of active surveillance for low risk and a randomized trial of carboplatin vs. Cisplatin for standard risk pediatric and adult patients with germ cell tumors protocol # agct1531	Afshan Ali	2018 – Ongoing
100-day infectious complications in post haploidentical hematopoietic stem cell transplants and associated morbidity and mortality in pediatric patients at king faisal specialist hospital and research center, riyadh, saudi arabia	Saadiya Khan	2021 – Ongoing
Significance of bone marrow biopsy for identification of marrow involvement in pediatric lymphoma patients getting baseline imaging with 18-fdg pet/ct	Saadiya Khan	2021 – Ongoing
[Cog] evaluation of ctdna as a prognostic biomarker for patients with newly diagnosed localized ewing sarcoma or osteosarcoma	Afshan Ali	2020 – Ongoing
Cog] international pleuropulmonary blastoma/ dicer1 registry (for ppb, dicer1 and associated conditions)	Afshan Ali	2019 – Ongoing

Ongoing Research Projects

Title of the Research	PI	Started From
[Cog]ahep1531: pediatric hepatic malignancy international therapeutic trial (phitt)	Afshan Ali	2020 – Ongoing
Mixed donor chimerism as a predictor of primary hemophagocytic lymphohistiocytosis reactivations in pediatric post hematopoietic stem cell transplantation	Ali Al-Ahmari	2021– Ongoing

Research Collaboration

- Children’s Oncology Group (USA).**
 A clinical trials group supported by the NCI, is the world’s largest organization devoted exclusively to pediatric cancer research. The COG conducts a spectrum of clinical research and translational research trials for infants, children, adolescents, and young adults with cancer. The group, with more than 7,500 experts worldwide, has nearly 100 active clinical-translational trials open at any given time, which include treatment for many types of childhood cancers, supportive care, and survivorship.
- Center for International Blood and Marrow Transplant Research**
 CIBMTR is collaboration between the National Marrow Donor Program and the Medical College of Wisconsin’s International BMT Registry and Autologous Blood and Marrow Transplant

Registry. The purpose of the partnership is to enhance large clinical studies across the United States. CIBMTR hopes improve treatment protocols and understanding of the biology behind transplants, with reducing morbidity and mortality from bone marrow transplants.

- The European Group for Blood & Marrow Transplantation**
 The EBMT has more than 5,000 members in over 60 countries. Members of the EBMT are centres and individuals active in the field of hematopoietic stem cell transplantation and cellular therapy research, or any other organisation involved in the care of donors and recipients of haematopoietic stem cells. This important forum ensures and encourages dialogues and information exchange, education and scientific productivity.

Other Achievements

- New Technology: Chimeric Antigen Receptor (CAR) T cells therapy for Leukemia Patients. These are T cells that have been genetically engineered to produce an artificial T cell receptor for use in immunotherapy. The premise of CAR T immunotherapy is to modify T cells to recognize cancer cells in order to more effectively target and destroy them.
- New Technology: Implementation of Machine Learning technology in statistical analysis of the data. This will enable us to find new vistas for looking at our data from multiple dimensions and analyze it for identification of risk factors using cutting edge technology.

Publications

- Owaidah, T., Al-Numair, N., Al-Suliman, A., Zolaly, M., Hasanato, R., Al Zahrani, F., . & Sajid, M. R. (2021). Iron deficiency and iron deficiency anemia are common epidemiological conditions in Saudi Arabia: report of the national epidemiological survey. *Anemia*, 2020.
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Nutrition Services Department

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Proper nutrition plays a key role in disease prevention and treatment. However, evidence in medical nutrition therapy is limited and available information is sometimes ambiguous. More research, especially randomized clinical trials is needed to provide updated evidence that can be translated into better clinical practice. Special areas of interest include: oncology, critical care, organ transplant, metabolic diseases and BMT.

Nutrition researchers have a key role in bridging the gap between disease prevention and disease treatment by fostering clinical research, providing innovative education for caregivers and patients, and delineating best practices for medical nutrition therapies in hospitals settings.

Department Objectives:

- Encourage our dietitians to lead or participate in Nutrition research, and collaborate with other interdisciplinary teams.
- Improve our dietitians' skills to make them more competent researchers.
- Conduct journal club within department, activities to discuss updated scientific articles, attend and present in scientific and medical conferences.

A handwritten signature in blue ink that reads "Sawsan A". The signature is fluid and cursive, with the first letter 'S' being particularly large and stylized.

Sawsan Albalawi

Staff Names

Full Names	Title
Alaa Alnafisah	Clinical dietitian I
Alanoud Alsalama	Clinical dietitian II
Bedour Handoom	Clinical dietitian I
Bushra Mazi	Clinical dietitian I
Dana Alqasabi	Clinical dietitian I
Ebtsam Albassam	Clinical dietitian I
Eman Aldajani	Clinical dietitian I
Eman Megdad	Clinical dietitian I
Faisal Alhamdan	Clinical dietitian I
Farah Alsugair	Clinical dietitian I
Ghaida Alharbi	Clinical dietitian II
Hanadi Alneghaimishi	Clinical dietitian I
Hanan Almutairi	Clinical dietitian I
Hanoof Alsobiyl	Clinical dietitian I
Lama Alessa	Clinical dietitian I
Lama Almarwani	Adult dietitians supervisor
Lamyaa Alghannam	Clinical dietitian I
Mai Ezzat	Clinical dietitian I
Manar Alahmadi	Clinical dietitian II
Maram Alawbathani	Clinical dietitian I
Maria Eulalia Aquino	Clinical dietitian I
Mariam Bakhsh	Clinical dietitian II
Meaad Alkhlaawi	Clinical dietitian II
Mona Alzamil	Clinical dietitian II
Munirah Almesned	Clinical dietitian I
Noura Alamri	Clinical dietitian I

Staff Names

Full Names	Title
Raneem Alaskar	Clinical dietitian I
Razan Dukmak	Clinical dietitian I
Sahar Madkhali	Clinical dietitian I
Saif Almutaeri	Clinical Nutrition Coordinator
Sara Aldakheel	Clinical dietitian II
Sarah AlShehri	Clinical dietitian II
Sawsan Albalawi	Head of clinical nutrition
Shatha Alshanwani	KACOLD dietitians supervisor
Turki Alziyadi	Clinical dietitian
Zainab Alghamdi	Pediatric dietitian supervisor

Ongoing Research Projects

Title of the Research	PI	Started from
Effect of Subcutaneous Semaglutide 2.4 mg Once Weekly Compared to Placebo in Subjects with Obesity and Knee Osteoarthritis; Interventional Studies	Razan Dukmak	2021
COVID-19 in patients with inherited metabolic disorders (IMD); by medical genetics department RAC# 2211190	Eman Megdad	2021
Assessing Impact of COVID-19 Pandemic on the Nutritional Status and Satisfaction amongst Children with Cancer: A Cross-Sectional Prospective Study RAC# 2211252	Hanan Almutairi	-
Replenish trial (Replacing Protein via Enteral Nutrition in a Stepwise Approach in Critically Ill Patients). An international multicenter randomized controlled trial. RAC# 2211078	Sawsan Albalawi Manar Alahmadi	2021

Ongoing Research Projects

Title of the Research	PI	Started From
COVID-19 vaccine side effects on patients affected with IMD by medical genetics department RAC# 2211212	Eman Megdad	2021
The Feasibility and Safety of the Ketogenic Diet in Treatment of Brain Cancer under palliative care in Paediatric Oncology	Hanan Almutairi	2021
“25-hydroxyvitamin D status in children with leukemia and its association with outcome – A Prospective Investigation” RAC# 2201284	Hanan Almutairi	-
The EFFORT Trial RAC# 2191155	Sawsan Albalawi, Shatha Alshanwani, Manar Alahmadi, Farah Alsugair	Enrollment completed – waiting for publication
Implementation of Pediatric Malnutrition New Indicators and comparison to previous practice. RAC# 2201195	Mai Ezzat	2020 – waiting for publication
The Effect of Ketogenic Diet in Reducing Brain Tumor Progression among children: Systematic-Review	Hanan Almutairi	-
Phase III, single-arm, open-label, international, multi-centre study to evaluate the efficacy and safety of lomitapide in paediatric patients with Homozygous Familial Hypercholesterolaemia (HoFH) on stable lipid-lowering therapy. (APH-19) RAC#2211032	Faisal AlHamdan	2022
The Impact of COVID-19 pandemic on Life Style among the Saudi Population The Journal of Public Health Research	Nora Alamri	-

Research Collaboration

- The EFFORT trial is a multicenter randomized clinical trial (RRCT) which studies 2 different protein doses on critically ill patients. The specific purpose of the study is to demonstrate

the value of extra protein supplementation in this nutritionally high-risk patient population.

Publications

- Almutairi, H. (2021). Side-effects of Enteral Nutrition in childhood cancer : Systematic Review and Meta-Analysis.the International Growth and Development Virtual Conference.
- Almutairi, H. (2021). The Safety and Feasibility of the Ketogenic Diet on Patients with Brain Cancers: Systematic-Review. the Excellence in Oncology Care Congress.

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Executive Health Medicine Department

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The Executive Health Medicine Department and its staff were able to published and currently in the

process of different researches/studies for year 2021/2022

A handwritten signature in blue ink that reads "Habib B". The letters are cursive and fluid.

Habib Bassil, MD

Staff Names

Full Names	Title
Dr. Mohammed Suliman	Research Committee Chairman & Consultant
Dr. Michael Foster	Research Committee Member & Consultant
Dr. Usamah ElAlem	Research Committee Member & Asst. Consultant
Dr. Muhammad Hanif	Research Committee Member & Asst. Consultant

Ongoing Research Projects

Title of the Research	PI	Started From
Patient Immune Response to COVID-19 Infection and Its Significance to Long Term Outcome		
Retrospective Analysis of Splenectomy Patients.		
Existing Subclinical or New COVID-19 Infection in Patient		
Lung Inflammation and Fibrosis Reversed by long-term azithromycin use		

Publications

- Conca, W., Alabdely, M., Albaiz, F., Foster, M. W., Alamri, M., Alkaff, M., Al-Mohanna, F., Nagelkerke, N., & Almaghrabi, R. S. (2021). Serum β 2-microglobulin levels in Coronavirus disease 2019 (Covid-19): Another prognosticator of disease severity?. *PLoS one*, 16(3), e0247758. <https://doi.org/10.1371/journal.pone.0247758>
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- Saleemi, S. A., Alothman, B., Alamer, M., Alsayari, S., Almogbel, A., & Mohammed, S. (2021). Tuberculosis presenting as metastatic lung cancer. *International Journal of Mycobacteriology*, 10(3), 327.
- Mohammad, K. (2021). Covid-19 vaccine: Concerns and comfort, who should take it? *Vaccine Research and Development*, 2(1).
- Mohammad, K. (2021). Low covid-19 associated mortality in developing countries, could it be the high flavonoid and antioxidant diet? *Archives of Community Medicine*, 3(1).
- Mobeireek, A., Conca, W., Mohammed, S., AlObaid, F., & AlHajji, M. (2021). Fatal rapidly progressive interstitial lung disease in a patient with amyopathic dermatomyositis. *Annals of Thoracic Medicine*, 16(3), 294.

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Critical Care Medicine

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Department of Critical Care Medicine is building an environment to help researchers and trainees achieve and gain the required knowledge and skills to conduct clinical research. Regular meetings activities to encourage staff involvement and guide the researchers through the steps of initiating and performing research projects.

The Department is looking at all possible factors that can ease the process and make research an essential part of the department's daily work.



Abdullah Alrbiaan, MD

Staff Names

Full Names	Title
Zainab Alduhailib, MD	Consultant Intensivist
Eiad Kseibi, MD	Consultant Intensivist
Mouhamad Jamil, MD	Consultant Intensivist
Abid Butt, MD	Consultant Intensivist
Talal Dahhan, MD	Consultant Intensivist
Hend Sallam, MD	Consultant Intensivist
Hakeam Hakeam	Clinical Pharmacy Specialist
Mohsen Khalil, MD	Consultant Intensivist
Eyad Althenayan, MD	Consultant Intensivist
Manal Alhazza, MD	Consultant Intensivist
Khalid Maghrabi, MD	Consultant Intensivist
Syed Khurshid Moazzum, MD	Consultant Intensivist
Muath Rabee, MD	Consultant Intensivist
Mohammed Ouda Abujazar, MD	Consultant Intensivist
Marwa Amer	Clinical Pharmacy Specialist
Mouhamad Jamil, MD	Consultant Intensivist

Ongoing Research Projects

Title of the Research	PI	Period
Replacing a protein via enteral nutrition in a stepwise approach in critical ill patients: an international multicenter randomized controlled trial (Replenish Trial)	Dr Khalid Maghrabi	19 April 2021 - 19 April 2022
Fluids in Sepsis and Septic Shock (FISSH)	Dr Zainab Alduhailib	26 May 2021 - 21 Mar 2023
Helmet Non-Invasive Ventilation for COVID-19 Patients	Dr Zainab Alduhailib	07 May 2021 - 19 April 2022
Blood Culture Utilization in Adult Intensive Care Units in King Faisal Specialist Hospital & Research Center (KFSH&RC)	Dr Eiad Kseibi	09 Sep 2021 - 31 Dec 2021
Feasibility of High Flow Nasal Oxygen for Management of Acute Type Two Respiratory Failure	Dr Mohsen Khalil	Dec 2021 - September 2022
Ceftazidime-Avibactam versus Colistin in Critically Ill Patients with Carbapenem-Resistant Enterobacteriaceae Infections (AVI-ICU): A Randomized Clinical Trial	Dr Zainab Alduhailib	13 Dec - 13 Dec 2022
Healthcare Worker's Perception on the Future Integration of Tele-ICU in Saudi Arabia	Dr Mouhamad Jamil	Dec 2021 - Feb 2022

Research Collaboration

- King Abdullah International Medical Research Centre
- Saudi Critical Care Society
- McMaster University

Publications

- Al Duhailib, Z., Farooqi, M., Pitcaru, J., Alhazzani, W., & Nair, P. (2021). The role of eosinophils in sepsis and acute respiratory distress syndrome: a scoping review. *Canadian Journal of Anesthesia/Journal canadien d'anesthésie*, 68(5), 715-726.
- Amer, M., Bawazeer, M., Butt, A. S., Dahhan, T. I., Kseibi, E., & Jamil, M. G. (2021). Modafinil for Wakefulness in the Critical Care Units: A Literature Review and Case Series including COVID-19 Patients at a Tertiary Care Saudi Hospital. medRxiv. medRxiv (preprinted).
- Alhazzani, W., Evans, L., Alshamsi, F., Møller, M. H., Ostermann, M., Prescott, H. C., . & Rhodes, A. (2021). Surviving sepsis campaign guidelines on the management of adults with coronavirus disease 2019 (COVID-19) in the ICU: first update. *Critical care medicine*, 49(3), e219-e234.
- Elhazmi, A., Al-Tawfiq, J. A., Sallam, H., Al-Omari, A., Alhumaid, S., Mady, A., & Al Mutair, A. (2021). Severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) and Middle East Respiratory Syndrome Coronavirus (MERS-CoV) coinfection: A unique case series. *Travel Medicine and Infectious Disease*, 41, 102026.
- Hakeam, H. A., Alsahli, H., Albabtain, L., Alassaf, S., Al Duhailib, Z., & Althawadi, S. (2021). Effectiveness of ceftazidime–avibactam versus colistin in treating carbapenem-resistant Enterobacteriaceae bacteremia. *International Journal of Infectious Diseases*, 109, 1-7.
- Khalil, M., Butt, A., Kseibi, E., Althenayan, E., Alhazza, M., & Sallam, H. (2021). COVID-19-related acute respiratory distress syndrome in a pregnant woman supported on ECMO: the juxtaposition of bleeding in a hypercoagulable state. *Membranes*, 11(7), 544.
- Arabi, Y. M., Tlayjeh, H., Aldekhyl, S., Al-Dorzi, H. M., Abdukahil, S. A., Al Harbi, M. K., . & Al-Fares, A. A. (2021). Helmet Non-Invasive Ventilation for COVID-19 Patients (Helmet-COVID): study protocol for a multicentre randomised controlled trial. *BMJ open*, 11(8), e052169.
- Amer, M., Kamel, A. M., Bawazeer, M., Maghrabi, K., Butt, A., Dahhan, T., . & Kashyap, R. (2021). Clinical characteristics and outcomes of critically ill mechanically ventilated COVID-19 patients receiving interleukin-6 receptor antagonists and corticosteroid therapy: A preliminary report from a multinational registry. *European journal of medical research*, 26(1), 1-12.

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Centre for Genomic Medicine

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TRANSLATIONAL GENOMICS DEPARTMENT

Precision Medicine (PM) is the future of healthcare. This revolution has been primarily driven by the rise of genomics. Just what part of the genome enables PM is at the heart of the Department of Translational Genomics. We see our activities, all translational in nature, as the link between basic discoveries in genomics and their clinical deployment in PM. Examples of such activities include our work to increase the sensitivity and specificity of the clinical genome both at the gene as well as the variant level. We are also committed to making genomics relevant not only to rare genetic diseases but to virtually all diseases a clinician expects to encounter through large initiatives to extract actionable information from genome sequencing for the masses.

CLINICAL GENOMICS DEPARTMENT

The Clinical Genomics Department (CGD) aims to integrate high throughput genomic, metabolomic and bioinformatic platforms to facilitate, prevention, diagnosis and treatment of disease. Clinical and research services provided by CGD encompass:

- Molecular Genetic Testing for inherited disorders
- Prenatal Testing
- Tumor Profiling
- Biochemical Genetic testing.
- Pharmacogenetics
- Genomics Core Services in sequencing and genotyping.

CGD now processes in excess of 20,000 clinical

samples per year and supports most medical departments and programs of KFSHRC. In addition to diagnostic testing CGD is geared to provide large volume screening tests to facilitate early detection and prevention of disease.

MEDICAL GENOMICS DEPARTMENT

The Department of Medical Genomics, the clinical arm of the Centre for Genomic Medicine, is the main tertiary referral center for genetic and metabolic diseases in the country, we provide diagnosis, treatment, and prevention for a wide range of genetic disorders. We are a major referral center in the region for liver transplantation for inherited metabolic diseases. specialize in treating lysosomal storage disorders with stem cell transplantation and enzyme replacement therapy. We have established the first independent genetic counseling service and prevention genetics program.

Our Fellowship Program offers strong clinical training to enable fellows to obtain an in-depth and focused experience in the major areas of medical genetics with trainees rotate in different specialized laboratories including the cytogenetic, biochemical, and molecular labs. These laboratories are directed by board-certified geneticists.

bioinformatics software development and engineering, digital phenotyping, as well as the use of artificial intelligence and machine learning in the field.

The departmental Research Activities had elicited great productivity and significant achievements during the year 2021, with highest standards of research and continuing education in support of providing safe and quality patient care. We have several ongoing research, development projects and participated in many different studies in genetics and metabolic diseases.

COMPUTATIONAL SCIENCES DEPARTMENT

The Department of Computational Sciences in CGM is a recently established department to serve the bioinformatics and informatics needs for both clinical and research activities of the center of

genomics medicine. For research, it works closely with the translational genomics department to address the modern research problems in genomics, genetics, inherited disorders, cancer and common diseases. Moreover, the department conducts computing oriented research in the areas of management and processing of big genomics data, bioinformatics computing infrastructure, bioinformatics algorithms and databases, bioinformatics software development and engineering, digital phenotyping, as well as the use of artificial intelligence and machine learning in the field.



Salah Baz, MD

Staff Names

Full Names	Title
Maarab Mohammed Mansour Alkorashy	Associate Scientist
Aisha Madi Mohammed Alqahtani	Genomics Laboratory Technologist I
Sahar Abdulaziz Mohmoud Tulbah	Genomics Laboratory Specialist Ii
Sara Sami Saeed Alabdulaziz	Genomics Laboratory Technologist Ii
Fadia Khodr Elbitar	Scientist
Maddirevula Sateesh	Associate Scientist
Ebtissal Mohammad Sultan Khouj	Associate Scientist
Tarfa Abdulaziz Alshidi	Genomics Laboratory Specialist Ii
Rana Tariq Saeed Bin Hallabi	Genomics Laboratory Technologist I
Amal Abdulaziz Omar Jaafar	Genomics Laboratory Technologist I
Fatma Majhood Alzahrani	Genomics Laboratory Specialist Ii
Mais Omar Hashem	Genomics Laboratory Specialist Ii
Mashael Dawoud Salman Alqahtani	Genomics Laboratory Technologist Ii
Hanan Shamseldin	Genomics Laboratory Specialist I
Hamsa Taher Mohammed Tayeb	Clinical Scientist
Amna Mohmmad Mohsen Magrashi	Genomics Laboratory Technologist Ii
Yufei Shi	Principal Scientist
Minjing Zou	Associate Scientist
Huda Abdullah Mohammed Diyaa Bin Essa	Genomics Laboratory Technologist I
Anas Mohammed Alazami	Senior Scientist
Hibah Jazzaa Tannaa Alruwaili	Genomics Laboratory Technologist I
Rana Abdullah Alamr	Genomics Laboratory Specialist I
Razan Hassan Bakheet	Genomics Laboratory Specialist I
Huda Fahad Abdullah Alajlan	Genomics Laboratory Specialist Ii
Shamsa Hilal Obaid Saleh	Genomics Laboratory Specialist Ii
Namik Kaya	Senior Scientist
Mazhor Salem Aldosary	Scientist

Staff Names

Full Names	Title
Albandary Abdulrahman Ibrahim Binbakheet	Genomics Laboratory Specialist Ii
Hanan Sulaiman Hamad Alqudairy	Genomics Laboratory Technologist I
Namik Kaya	Senior Scientist
Maritess Castro Santiago	Hospital Assistant I
Brian Meyer	Chairman Of Clinical Genomics
Rawan Abdullah Abdulrahman Al Humaidy	Genomics Laboratory Technologist I
Shaima Abdulmohsen Yakub Almohsen	Genomics Laboratory Technologist I
Mohammed Abdullah Aldahmesh	Clinical Scientist
Duaa Marwan Mousa Bin Khalaf	Genomics Laboratory Technologist I
Basma Saud Alrasheed	Genomics Laboratory Technologist I
Norah Abdullah Abdulrahman Alhaddab	Clinic Assistant I
Malak Hamad Saad Binflaih	Genomics Laboratory Technologist Ii
Saleh Mohammed Hadi Almansouri	Genomics Laboratory Technologist I
Ahmad Nasser Alodaib	Associate Clinical Scientist
Khawlah Sulaiman Saleh Aldhalaan	Genomics Laboratory Technologist I
Abdullah Mohammed Abdullah Alshehri	Genomics Laboratory Technologist Ii
Anas Mahmoud Abdel Rahman	Clinical Scientist
Manhal Abdulrahma Almokhadab	Genomics Laboratory Specialist Ii
Khalid Mohammed Alqahtani	Associate Clinical Scientist
Minnie Jacob	Technical Specialist
Mohamed Saleh Alamoodi	Senior Technical Specialist
Ebtesam Mahdi Ahmed Alhamaidi	Genomics Laboratory Technologist I
Ebtesam Abdulrahman Mohammed Jambi	Genomics Laboratory Technologist I
Samya Tahir Hagos	Genomics Laboratory Technologist I
Haya Mosalam Saad Aldusery	Genomics Laboratory Technologist I
Rola Ibrahim Ali Qarrash	Genomics Laboratory Specialist Ii

Staff Names

Full Names	Title
Khushnooda Ramzan	Clinical Scientist
Faiqa Imtiaz Ahmad	Senior Clinical Scientist
Mohamed Hashim Alhamed	Clinical Scientist
Afaf Hamdan Abdullah Alotaibi	Genomics Laboratory Technologist Ii
Amal Abdulaziz Mansour Alshammasi	Genomics Laboratory Technologist Ii
Dania Salem Hassan Khalil	Genomics Laboratory Technologist I
Laila Fawaz Ibrahim Alquayt	Genomics Laboratory Technologist I
Tayef Ibrahim Ali Alhefdhi	Medical Technologist
Midrar Attiah Idris Alhossiny	Senior Medical Technologist
Rana Fouad Ajmi Alardhy	Medical Technologist
Manal Abdullah Mohmmad Alhadyani	Senior Medical Technologist
Mai Abdulrahman Ibrahim Alfaris	Senior Medical Technologist
Nouf Suleman Rasheed Almohlesy	Medical Technologist
Douna Salem Hasan Khalil	Medical Technologist
Shahad Sharaf Khalaf Alzahrani	Medical Technologist
Aljawharah Abdullah Nasser Alsaigh	Genomics Laboratory Technologist I
Hadeel Mohammed Zaki Sandoqa	Senior Medical Technologist
Nada Abdullah Altassan	Senior Clinical Scientist
Ahmed Abdulaziz Mohammed Alfares	Senior Clinical Scientist / Consultant
Mohammad Ali Muttla Najai	Associate Clinical Scientist
Dana Mohammed Bakheet	Scientist
Paul Nzioka Muiya	Technical Specialist
Samar Radwan Elhawari	Genomics Laboratory Specialist Ii
Olayan Marzouq Albedairy	Genomics Laboratory Specialist Ii
Muna Monther Abdullah Albreacan	Genomics Laboratory Technologist I
Norah Khaled Ahmed Altuwaijri	Post-Doctoral Fellow

Staff Names

Full Names	Title
Dorota Monies	Clinical Scientist
Abdulmlik Ibrahim Ahmed Boureggah	Genomics Laboratory Technologist Ii
Saeed Mansour Saeed Surur	Genomics Laboratory Technologist Ii
Najlala Isaac Mohammed Filimban	Associate Clinical Scientist
Bashayer Rashed Mubarak	Scientist
Dr. Mohammed Alowain	Chairman
Dr. Hamad Alzaidan	Deputy Chairman
Dr. Zuhair Rahbeeni	Program Director
Dr. Moeenaldeen Dia ALSayed	Consultant
Dr. Zuhair Nasser Alhassnan	Consultant
Dr. Raashda A Sulaiman	Adult Consultant
Dr. Ruqaiyah Altassan	Consultant
Dr. Nada Derar	Adult Consultant
Dr. Saleh Alhajj	Assistant Consultant
Dr. Ayman Alsulaiman	Senior Genetic Counsellor
Alya Qari	Senior Genetic Counsellor
Ameera Balobaid	Senior Genetic Counsellor
Ahood Alsulaiman	Senior Genetic Counsellor
Saud Takroni	Senior Genetic Counsellor
Rawan Almas	Genetic Counsellor
Sana Alanazi	Clinical Coordinator
Hadeel Binomar	Genomics Laboratory Technologist
Abeer Almustafti	Genomics Laboratory Specialist
Hussain Maashi	Senior Hospital Assistant
Ohoud Alwheeby	Hospital Assistant

Staff Names

Full Names	Title
Dr. Mohamed Abouelhoda	Chairman
Meshari Alwazae	Bioinformatician
Shazia Subhani	Bioinformatician
Zeeshan Shah	Bioinformatician
Mohamed El-Kalioby	Senior Technical Specialist

Names of Joints

Full Names	Title
Lama Alabdi	Adjunct Scientist

Ongoing Research Projects

Translational Genomics Department

Title of the Research	PI	Started From
Genetics of Alzheimer's disease and its modeling in Saudi population		2014 - Ongoing
Potential Neuroprotective and Neurotrophic Candidates against the Toxicity of Beta-Amyloid Peptides Causing Alzheimer's Disease		2016 - Ongoing
Genetics of vision impairment in Saudi Arabia		2008 - 2022
Genetics of craniofacial birth defects		2008 - 2022
Characterization of Peroxisomal Biogenesis Disorders in Saudi Arabia		2010 - 2022
Positional Cloning of Developmentally Relevant Genes From Patients with Balanced Chromosomal Rearrangements		2009 - 2022
Genetics of Osteogenesis Imperfecta in Saudi Arabia		Under renewal

Ongoing Research Projects

Title of the Research	PI	Started From
Utilization of Discarded Foreskin as a Source of Control Fibroblasts		2018 – 2023
Study of Mendelian phenocopies of common diseases		2016 – Ongoing
Genetics of vision impairment in Saudi Arabia		2008 – 2022
Genetics of craniofacial birth defects		2008 – 2022
Characterization of Peroxisomal Biogenesis Disorders in Saudi Arabia		2010 – 2022
Positional Cloning of Developmentally Relevant Genes From Patients with Balanced Chromosomal Rearrangements		2009 – 2022
Genetics of Osteogenesis Imperfecta in Saudi Arabia		Under renewal
Utilization of Discarded Foreskin as a Source of Control Fibroblasts		2018 – 2023
Study of Mendelian phenocopies of common diseases		2012 - 2022
Autozygome Sequencing for High Throughput Identification of Genes with Biallelic Inactivation in Healthy Humans: Understanding Genetic Influence on Human Phenotypic Variation (The Human Knockout Project)		2014 – to 2022
Exploring The Polygenic Risk Score (Prs) For Common Multifactorial Disorders In Saudi Arabia		2019 – 2022 (under renewal with ORA)
Establishment and evaluation of a Flash Exome protocol for diagnosis of disease in critically ill neonates		2018 – 2022
The Study of Mosaic Disorders in Humans		2020 – 2023

Ongoing Research Projects

Title of the Research	PI	Started From
Next Generation Premarital Genetic Screening: A feasibility study		2017 - 2022
Solving the unsolved: Improving the diagnostic rate of clinical exome for patients with genetic disorders		2022 - 2022
Extraction of pharmacogenomic-relevant data from existing exomes		2021 - 2022
Quantifying The Economic Impact of Genetic Counselors		2021 - 2023
Underlying Molecular Genetic Defects Of Primary Immunodeficiency Diseases In Saudi Arabia	Anas Alazami, Hamoud Almousa	Ongoing
Metagenomics Approach to Riposte the SARS-CoV-2 Infection Ambiguity: Toward Identifying the Culprit, Fighting the Disease's Susceptibility and Improving the Outcome	Hamsa Tayeb	
Study Number:2190023 Metagenomics investigation among Saudi Population, Diabetic Foot Ulcer Microbiome.	Hamsa Tayeb	Under renewal
Hereditary Leukodystrophies in Saudi Arabia	Namik Kaya	
A Comprehensive Molecular Research Program for Hereditary Channelopathies in the Kingdom of Saudi Arabia	Namik Kaya	
Identification of Genes/Mutations Involving Neurologic Disorders	Namik Kaya	
Molecular Genetics Studies in Chromosome Disorders	Namik Kaya	
Positional Cloning of Genes Underlying Genetic Disorders with Prominent Neurodevelopmental Manifestations in Several Extended Families	Namik Kaya	

Ongoing Research Projects

Title of the Research	PI	Started From
Role of Wnt/ β -catenin signaling pathway in thyroid cancer development and progression	Yufei Shi	
Molecular Characterization of Underlying Genetic Defects of Congenital Hypothyroidism in Saudi Arabia	Yufei Shi	
Knockout of CYP24A1, the catabolizing enzyme of vitamin D, in thyroid tumor development and progression.	Yufei Shi	
Genetics of Mendelian Cardiovascular Disorders in Saudi Arabia	Zuhair Al-Hassnan	
Clinical & Molecular Characterization of Patients with Inherited Arrhythmogenic Disorders	Zuhair Al-Hassnan	
The clinical profiles and outcome of enzyme replacement therapy and immune tolerance induction in infants with Pompe disease	Zuhair Al-Hassnan	
Association Of Myocardial Muscle Non Compaction And Multiple Ventricular Septal Defects	Dr. Fadel Alfadley	

Ongoing Research Projects

Clinical Genomics Department

Title of the Research	PI	Started From
The Molecular Basis of Movement Disorders in Saudis	Bashayer Mubarak, Nada Altassan	
Characterizing Genetic Abnormalities in Autistic Spectrum Disorder (ASD) patients in Saudi Arabia	Nada Altassan	
Development of primary neuronal and glial cultures for in vitro genetic and pharmacological studies of neurological disorders	Bashayer Mubarak	
Clinical and molecular characterization of child psychiatric disorders in Saudi Arabia: a preliminary study	Bashayer Mubarak, Nada Altassan	
Molecular Profiling for Prostate Cancer	Bashayer Mubarak, Nada Altassan	
Mutational profiling of Myelodysplastic syndromes and Myelodysplastic syndrome/myeloproliferative neoplasm in Saudi patients by Next Generation Sequencing (NGS) approach	Bashayer Mubarak	
A genome wide association study to identify alleles that affect patient survival and response to treatment for advanced colorectal cancer	Nada Altassan	
Molecular Characterization of Hereditary Deafness in Saudi Population (King Salman Centre for Disability & Research).	Dr Faiqa Imtiaz, Dr Mohammad Al-Owain, Dr Khushnooda Ramzan	
Characterize the clinical and molecular basis of hereditary bleeding disorders. The Saudi Bleeding Disorder Database project (SBDD)	Dr. Nouf AL-Numair (PhD), Dr.Tarek Owaidah (MD), Dr. Faiqa Imtiaz (PhD), Dr. Hazzaa Al-Zahrani (MD), Dr. Mahasen Saleh (MD), Dr. Dorota Monies (PhD), Dr. Mohamed Abouelhoda (PhD)	

Ongoing Research Projects

Clinical Genomics Department

Title of the Research	PI	Started From
Genes Underlying Inherited Cystic Kidney Disorder in Saudi Arabia Families	Dr. Faiqa Imtiaz, Dr. Mohamed Al-Hamed	
Clinical, Biochemical and Molecular Characterization of Isovaleric Acidemia in Saudi Arabia	Dr. Moeenaldeen Al-Sayed (MD), Dr. Faiqa Imtiaz (PhD), Dr. Khushnooda Ramzan (PhD)	

Medical Genomics Department

Title of the Research	PI	Started From
A Prospective Clinical and Biochemical Assessment Study in Pediatric Patients with Methylmalonic Acidemia (MMA) Characterized by MMUT Mutations.	Moeenaldeen Alsayed	2021 - 2022
Microdeletion Syndromes, a retrospective study from a tertiary care center	Dr. Zuhai Rahbeeni	2021
Clinical and molecular characterization of vascular anomalies.	Dr. Nada Derar	2021 - 2022
Diagnostic AI tool for genetic disorders	Dr. Ruqaiyah Altassan	2021 - 2022

Computational Sciences Department

Title of the Research	PI	Started From
Use of Machine Learning Methods on Large-scale genomic data for improving diagnosis, studying disease prevalence and prediction of disease related variants		

External Grant Funding

Translational Genomics Department

Title of the Research	PI	Started From
4514.2 CPF2020 KAUST-KFSHRC Subaward, sub account 85739		
A Comprehensive Molecular Research Program for Hereditary Channelopathies in the Kingdom of Saudi Arabia (Recently Approved) (Funded by KSCDR)	Namik Kaya	
KACST#14-MED2007-20: Molecular Studies on Hereditary Ataxias in Saudi Arabia: A Multicenter Study Utilizing Exome Sequencing Coupled with Homozygosity Mapping for Clinical and Diagnostic Use (Funded by KACST, Under Review by RAC)		
We have been collaborating with Dr. Shioko Kimura, National Cancer Institute, NIH and Dr. Catrin Pritchard, Department of Biochemistry, University of Leicester, UK on thyroid cancer genetics, esp. in generating an in-vivo mouse model of BrafV600E-induced thyroid cancer to further our research in thyroid cancer therapeutics.		

Clinical Genomics Department

Title of the Research	PI	Started From
King AbdulAziz City for Science and Technology (KACST) (<i>summer researcher scheme</i>), Project Title "The role of Cav 2.1 and 2.2 type voltage gated calcium channels in mediating homeostatic synaptic plasticity".		Completed
KACST (11-BIO1440-20), Project Title "The Molecular Basis of Parkinson's Disease in Saudis"		Completed
Project Title "Development of primary neuronal and glial cultures for in vitro genetic and pharmacological studies of neurological disorders"		Completed

External Grant Funding

Clinical Genomics Department

Title of the Research	PI	Started From
Project Title" The Molecular Basis of ADHD in Saudis"		Completed
King Salman Center for Disability Research (RG-20190011), Project Title "Development of a national database for neurodevelopmental disorders like autism and attention deficit and hyper activity disorders"		Ongoing
Prevalence of genetic factors in Saudi patients with idiopathic pulmonary hypertension.	Dr. Abdullah Al-Dalaan Dr. Faiqa Imtiaz Dr. Khushnooda Ramzan	

Research Collaboration

Clinical Genomics Department

- National Collaboration with Al Habib Medical Center to recruit blood samples from Saudi Alzheimer's patients to study the genetic basis of Alzheimer's disease.
- KFSH-CHEORI (MTA)
- KFSH-UNC-Dr. Surgey (CRA)
- KFSH-Columbia (MTA)
- KFSH-Rochester (CRA)
- OTA838 KAUST-KFSHRC Material Transfer Agreement (MTA)
- KFSHRC-University of Geneva (Ramesh Pillai, PhD) (CRA)
- KFSHRC-University of Geneva (Ramesh Pillai, PhD) (MTA)
- KFSHRC-University of Texas (MTA)
- KFSHRC-UCLA- D. Julian Martinez (MTA)
- KFSHRC-University of Bergen (MTA)
- KFSHRC-University of Birmingham-Dr. Grant Stewart (MTA)
- KFSHRC-UNIVERSITY OF PITTSBURGH MEDICAL CENTER -Dr. Udai (MTA)
- King Saud University , Prospective Urban Rural Epidemiology study (PURE-Saudi)
- King Saud University, National Systemic Lupus Erythematosus Prospective Cohort, Saudi Arabia (NSPC-Saudi)"
- Collaboration with local physicians including allergy/immunology, rheumatology, both pediatrics and medicine.

Research Collaboration

Clinical Genomics Department

- Collaboration with scientist at King Saud University (as part of student's PhD project)
- Collaboration with Laboratory of Immunology & Human Diseases, Madrid, Spain
- Collaboration with Dr. Raif Geha, Boston Children's Hospital, USA
- King Saud University
- Princess Noura University
- King Abdullah University of Science and Technology
- New collaborations with Drs. Ali AlShehri, MUSAAD Abukhaled (KFSHRC, Neurosciences Center) Ruqaiyah AlTassan and Zuhair Rahbeeni (KFSHRC, CGM) at our hospital.
- New collaborations with Drs. Amal AlHashem, Brahim Tabarki (Riyadh Military Hospital)
- Eissa Faqeih (King Fahad Medical City), Majid AlFadhel, (National Guard Hospital), Mustafa Salih, Maha AlRasheed, Maha Daghestani (King Saud University), Naif Muntashiri Taibah University, Stefan Arold (KAUST) in The Kingdom.
- Prince Sultan Cardiac Center, Qassim

Clinical Genomics Department

- The Global Parkinson's Genetics Program consortium
- Dr. Sulaiman Al-Habib Medical Group and Research Center

Medical Genomics Department

- Research Collaboration with King Abdullah University of Science and Technology
- Research Collaboration with King Saud University
- Research Collaboration with Alfaisal University
- Research Collaboration with Ministry of Health

Computational Sciences Department

- Translational Genomics Department, Center for Genomic Medicine, KFSHRC
- Clinical Genomics Department, Center for Genomic Medicine, KFSHRC
- Medical Genomics Department, Center for Genomic Medicine, KFSHRC
- Artificial Intelligence, HITA, KFSHRC
- KAUST, KSA
- Broad Institute, Boston, USA
- Centre for Epidemic Response and Innovation (CERI), Stellenbosch University, South Africa

Other Achievements

Translational Genomics Department

- Scientific Committee for the Genomics of Rare Diseases Conference (Genomics of Rare Disease – 20220328 – Wellcome Connecting Science courses and conferences).
- Issued 68 research reports for 2021, including for novel genes and genes that were not adequately sequenced by NGS. These reports included 13 instances where direct medical care hinged on genetic analysis, or where misdiagnosis (based on unclear clinical phenotype) was prevented.
- Awarded to the third place @ the 6th international conference of Endocrinology and Diabetes conference in Riyadh (7-9, 2,19) for our Research work entitle “Diabetic foot ulcer microbiome investigation“
- In 28-11-2021 we at the Society of Social Responsibility, received the International Quality Award for Community Action in 2021 at the International Quality Conference in Dubai.
- My PharmD students, Nouf AlMutairi and Sarah AlRuways (who did their graduation research thesis and internship at NG, both are last year students at College of Pharmacy, KSU), won 1st place in Research Day competition at KSU (May 18, 2022)
- Selected to represent Translational Genomics Department at newly formed Training and Education Task Force for Center for Genomic Medicine (2022)
- PhD Student Albandary AlBakheet completed her studies in KSU and published a paper in Clinical Genetics (JIF. 4.438) (2022)
- PhD Student Ghada Aboheimed completed her studies in UCL and published a paper in Journal of Biological Chemistry (JIF. 5.157) PMID: 35526563 (2022)
- MSc Student Hanouf Aldeeb completed her studies in KSU and published a paper in Annals of Human Genetics (JIF. 1.670) (2021)
- Publication Award received from King Saud University by my MSc student for publishing her work in JCEM.

Other Achievements

Clinical Genomics Department

- Adriana Zardini Buzatto, Afshan Masood, Minnie Jacob, Mai Abdel Jabar, Imran Nizami, Hicham Benabdelkamel, Majed Dasouki, Liang Li, Anas Abdel Rahman*. Multiomics Approach to Reveal Cystic Fibrosis Efficient Biomarkers. 45th Canadian College for Medical Genetics Annual Scientific Meeting (virtual) 31 May 4 June 2021. (Poster Presentation)
- Anas M Abdel Rahman*, Xinyun Gu, Mohammed Al Dubayee, Awad Alshahrani, Afshan Masood, Hicham Benabdelkamel, Mahmoud Zahra, Liang Li, and Ahmad Aljada. Metabolomics profile associated with insulin resistance and type 2 diabetes mellitus. IUPAC CCCE 2021 - 48th World Chemistry Congress & 104th Canadian Chemistry Conference and Exhibition (Virtual) August 13-20, 2021. (Podium Presentation)
- Lina Dahabiyeh*, Muhammad Mujammami, Tawfiq Arafat, Hicham Benabdelkamel, Assim Alfadda, Anas Abdel Rahman*. A distinctive metabolic pattern of metformin in a cohort of healthy subjects. 3rd Metabolomics Association of North America (MANA) (virtual), October 18-21, 2021

Medical Genomics Department

- **Successful combination of heart transplantation and Galactose Therapy in PGM1-CDG infant.** This splendid achievement by a young Saudi female physician: Dr. Ruqaiyah Altassan. "Ghaim, the Saudi toddler, was the center of this accomplishment. She is affected with an extremely rare condition (CDG1T) that causes multi-organ involvement including severe cardiomyopathy. Despite the impediments related to the COVID pandemic, she was able to make the right diagnosis and promptly she institutes therapy with galactose, a rarely used supplement, from Europe".



- **The Spectrum of clinical and Molecular Findings in 212 Saudi Patients with 21-Hydroxylase Deficiency** Alya Qari: 2nd winner at the Pediatric Research Day – 06 Oct 2021

Other Achievements

Computational Sciences Department

- Setup of the clinical bioinformatics section to serve the clinical needs of KFSHRC.
- Development of clinical grade bioinformatics pipelines for 6 genomic based diagnostic tests currently running in KFSHRC.
- Engaging in the CAP accreditation process

Publications

Translational Genomics Department

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- Abou Tayoun, A. N., Fakhro, K. A., Alsheikh-Ali, A., & Alkuraya, F. S. (2021). Genomic medicine in the Middle East. *Genome Medicine*, 13(1), 1-3.
- Maddirevula, S., Alameer, S., Ewida, N., de Sousa, M. M. L., Bjørås, M., Vågbø, C. B., & Alkuraya, F. S. (2021). Insight into ALKBH8-related intellectual developmental disability based on the first pathogenic missense variant. *Human Genetics*, 141(2), 209-215.
- Shamseldin, H. E., Alhashem, A., Tabarki, B., Abdulwahab, F., Hashem, M., Sougrat, R., & Alkuraya, F. S. (2021). Mitochondrial “dysmorphology” in variant classification. *Human Genetics*, 141(1), 55-64.
- Maddirevula, S., Coskun, S., Al-Qahtani, M., Aboyousef, O., Alhassan, S., Aldeery, M., & Alkuraya, F. S. (2021). ASTL is mutated in female infertility. *Human Genetics*, 141(1), 49-54.
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- Kalantari, S., Carlston, C., Alsaleh, N., AbdelSalam, G. M., Alkuraya, F., Kato, M., . & Filges, I. (2021). Expanding the KIF4A-associated phenotype. *American Journal of Medical Genetics Part A*, 185(12), 3728-3739.
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Nursing Affairs

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Nursing affairs are committed to provide access and support for nursing to conduct research. Nursing research has a tremendous influence on current and future professional nursing practice, thus adaptation is an essential component of the educational process. Participation of all nurses in different research activities plays a vital role in generating a scientific knowledge basis in an evidence-based practice environment.

During the pandemic of COVID-19, there was changed in the practice and delivery of healthcare in fundamental ways, with a significant impact on the nursing profession and research. With the vision 2030, Research is one of the transformation project and KFSH&RC looking to be the world

leading in research, nursing affairs has invested in research that involve and support the strategic priorities of the hospital such as, patients' quality of life, satisfaction, pain management, end of life palliative care and quality indicators.

Nursing Affairs continued partnership with universities and external funding in research conducted by nurses at KFSH&RC.



Rosemarie Paradis

Staff Names

Full Names	Title
Kholoud Alshammari	Assistant Executive Director
Vanessa Lewis	Program Director
Samar Alrayyis	Program Director
Mary Verdaguer	Program Director
Luz Sadsad	Program Director
Nerissa Barcelon	Program Director
Glyn Lewis	Acting Program Director
Mary Healy	Acting Program Director

Ongoing Research Projects

Title of the Research	PI	Started From
Quality of Life Assessment and Supportive Management in an Oncology Outpatient Setting	Sadler K, Abudari G, Swelem AS, Aldhari M, AlShammari FM.,	2021 - Ongoing
FertilityRelated Psychological Distress of Cancer Patients After Receiving Chemotherapy	Amal Albishi	2021 - Ongoing
Quality of Life Among Parents of Children with Cancer. Prospective non-Interventional studies	Abeer Hussain	2021 - Ongoing
The Factors Contributing to Medication Administration Errors Among Nurses in a Tertiary Hospital Saudi Arabia. Prospective non-Interventional studies	Sho Meng Yong	2021 - Ongoing
COVID-19 patients' satisfaction levels with nursing care: A cross sectional study	Abdullah Alhowaymel	2021 - Ongoing
Examining the Validity of a Non-Contact Infrared Detection Thermometer on the Hand Vs. the Forehead screening during the (COVID -19) Pandemic	Nahed Alsayed	2021 - Ongoing

Ongoing Research Projects

Title of the Research	PI	Started From
Validation of a Questionnaire to Assess Healthcare Providers' Beliefs and Attitudes Toward Do-Not-Resuscitation (DNR) Orders	Kim Sadler	2021 - Ongoing
Knowledge, skills, and compliance of nurses on Central Line-Associated Bloodstream Infection in Cardiovascular Department King Faisal Hospital & Research Centre	Vanaja Perumal	2021 - Ongoing
Perception of Undergraduate Nurses on Clinical Placement in KFSH&RC	Ibrahim Alzamil	2021 - Ongoing

External Grant Funding

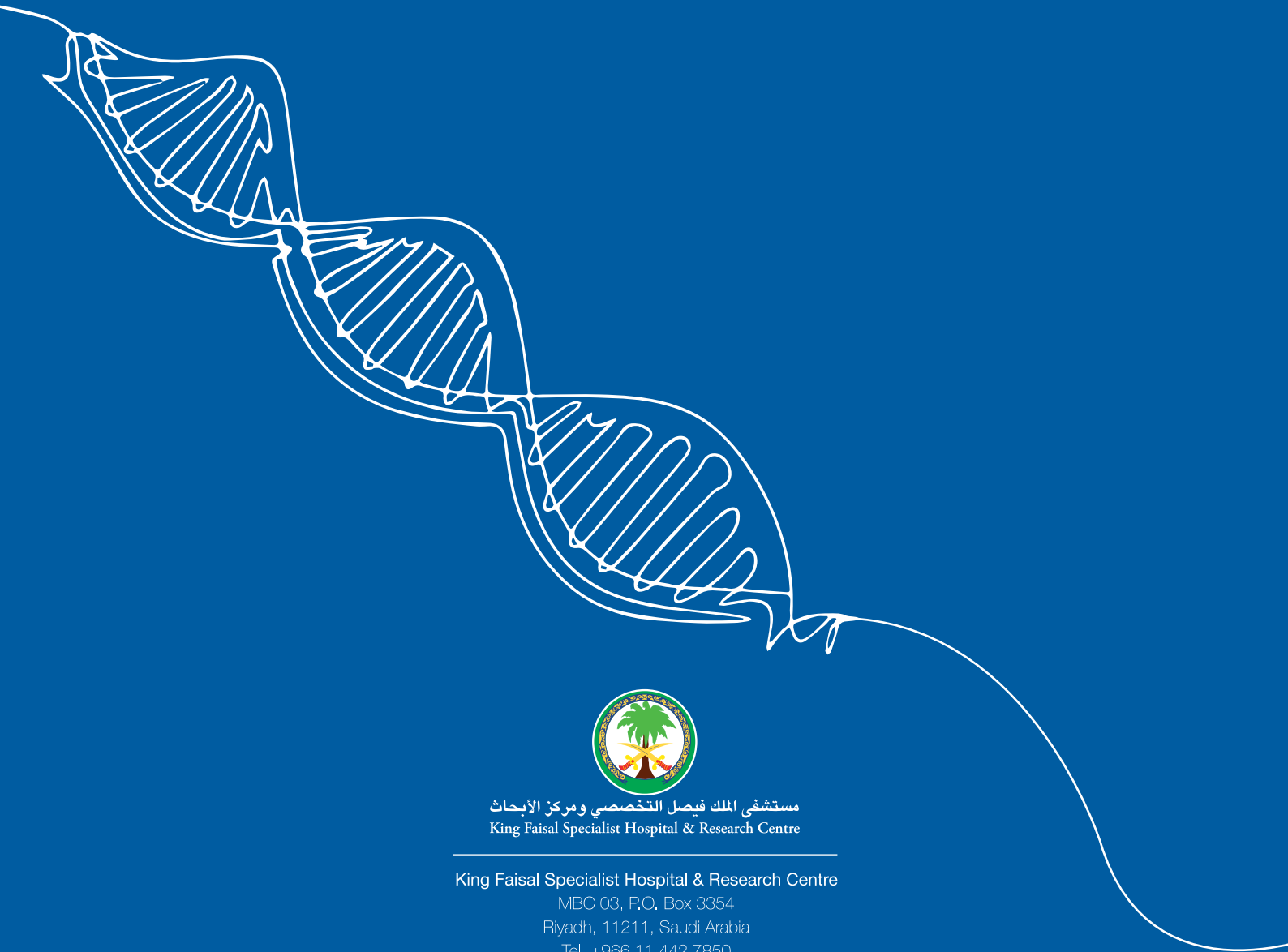
Title of the Research	PI	Started From
Quality of Life Among Parents of Children with Cancer. Prospective non-Interventional studies. Grant was offered by Sanad Society	Abeer Hussain	2021 - Ongoing

Other Achievements

- American Nurses Credentialing Center (ANCC), Magnet Recognition Accreditation, 2019-2023.
- American Nurses Credentialing Center (ANCC), Practice Transition Accreditation Program (PTAP), in process.

Publications

- Abudari, G., Aljawi, D., Almass, K., Botha, S., (2021). Quality of Pain Assessment for Emergency Department Nurses and Physicians at a Tertiary Hospital. *EC Nursing and Healthcare*, 3(2), p87-101.
- Hockenberry, M., Haugen, M., Amer, A., Slaven, A., Skeens, M., Montgomery, K., . & Arthur, M. (2021). Pediatric Education Discharge Support Strategies for Newly Diagnosed Children with Cancer. *Cancer Nursing*, 44(6), P520-53.



مستشفى الملك فيصل التخصصي ومركز الأبحاث
King Faisal Specialist Hospital & Research Centre

King Faisal Specialist Hospital & Research Centre
MBC 03, P.O. Box 3354
Riyadh, 11211, Saudi Arabia
Tel. +966 11 442 7850
Fax: +966 11 442 7854