جامعة الملك سعود
King Saud University
1957
كلية العلوم الطبية التطبيقية
قسم علوم المختبرات الإكلينيكية

Clinical Laboratory Sciences Research Booklet

2025

Presenting the Department's Research Infrastructure and Scholarly output

Prepared by CLS Research Committee - 2025

Message from the Head of the Department

The Department of Clinical Laboratory Sciences welcomes your interest and extends the welcome to its members and students. CLS reaffirms its commitment to maintaining the quality and excellence that started with in 1980, being the first academic medical laboratory department in the Kingdom to offer a bachelor's degree and the first master of Science degree in several sub-specialty tracks. Additionally, CLS launched the first Ph.D. program in Clinical Laboratory Sciences in the Kingdom, with five sub-speciality tracks, and is working on launching additional master's programs, joint programs, and training programs as part of our efforts to train and qualify practitioners with high scientific and professional efficiency.

The department offers unique specialties, including Hematology and Blood Transfusion, Clinical Microbiology, Clinical Biochemistry, Clinical Immunology, Medical and Molecular Genetics, Histology and Cytology, Health Informatics, and Quality Management/Diagnostic Laboratory Accreditation. These specialties reflect the importance of the profession in clinical diagnosis, as 80% of diagnoses rely on laboratory results. These specialties contribute to various fields, including academia, research, professional and administrative work, through basic science research, clinical, biotechnology, medical device applications, and medical innovations.

This areas is also closely aligned with the goals of Vision 2030, focusing on its core objectives of a vibrant society centered on integrated healthcare, extending healthy life expectancy, and ensuring the best medical care and can be achieved through comprehensive services, starting with decades of national investment in training and qualifying Saudi nationals, providing the infrastructure in universities, hospitals, and advanced research centers, plus unlimited support for this sector. It culminates in the

national biotechnology strategy launched by His Royal Highness the Crown Prince, which intersects scientifically and technically with CLS core business.

In addition to academia, postgraduate studies, and scientific research, the department focuses on academic accreditation for its programs, professional training courses for its members, and scientific and professional consultations. This is done directly through the department and through the Saudi Society for Clinical Laboratory Sciences, the CLS Students Club, and the Chair for Medical and Molecular Genetics Research, as well as our guest research center, Center of Excellence in Biotechnology Research, which serves the entire university. This collective effort unites the efforts and goals to achieve the highest standards of learning, education, research, and professional development.

Dr. Raed Ahmed Farzan

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About this Booklet

This booklet is a collective effort by the **Scientific Research Committee** of the Clinical Laboratory Sciences Department. It aims to showcase the department's research vision, **research infrastructure**, faculty contributions, and **scientific achievements** in a clearer and structured format.

It also serves as a reference for undergraduate and postgraduate students to explore **faculty research interests** and **ongoing projects**. Students are encouraged to reach out to faculty members to discuss research opportunities in a professional and informed manner.

This edition was conceptualized, formatted, and compiled under the supervision of **dr. Nahla Bakhamis**, **chair of CLS Research Committee.** Faculty profiles were prepared based on **survey responses** and **previous booklet entries**, with future plans to streamline updates through a dedicated system.

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Table of content

Program Vision and Mission

CLS Vision

Leadership and Innovation in Clinical Laboratory Sciences.

Program Mission

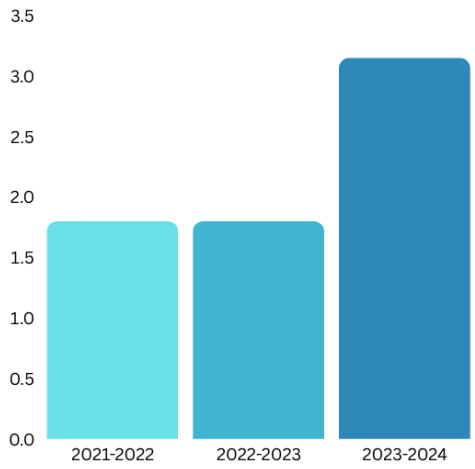
Preparing students with the highest level of biomedical knowledge, clinical training and professional ethics to become qualified specialists in the field of CLS to serve healthcare, scientific research, and community services.

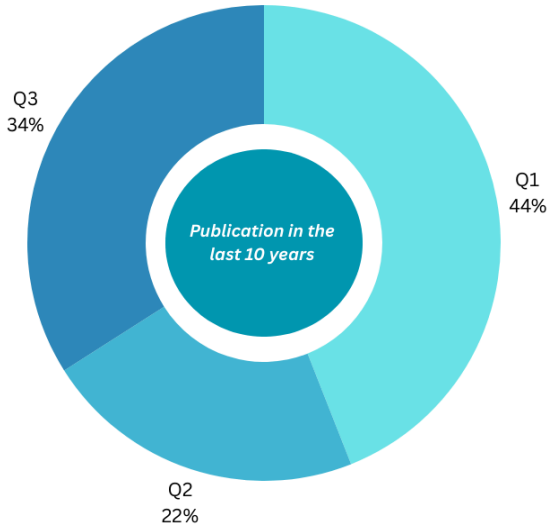
Program Goals

1. Prepare well-educated and highly competent clinical laboratory professionals to serve patients and the healthcare profession considering legal rules, and ethical standards related to health care services.
2. Encourage students to research and continuing education in Clinical Laboratory Science to address contemporary professional issues in a way that serves society and contributes to healthcare improvement.
3. Graduate professionals with the capacity to participate in leadership roles and effectively collaborate with the healthcare team to improve patient outcomes and health care services.

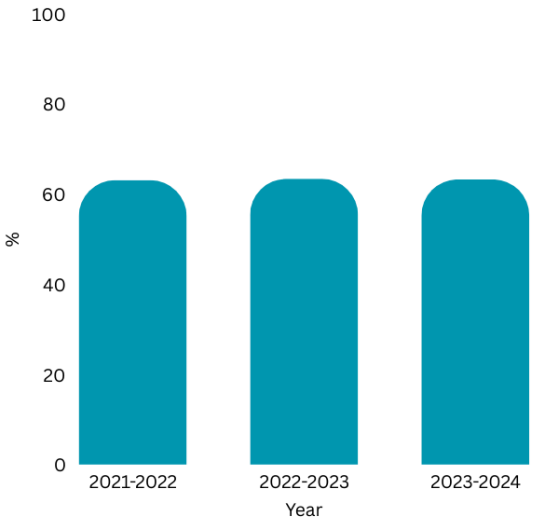
CLS Research Statistics (2024)

Rate of Publication per Faculty Member





Percantage of Publication of Faculty members



Highlights from Research day 2024

Overview

The 2024 CLS Research Day was held in March and organized by the CLS research Committee. The event included dynamic interactive sessions such as oral presentations, poster session, a three minutes thesis (3MT) competition, and a debate session.

It was held with the valued support of Dr. Mai Alrashed, Dean of the College of Applied Medical Sciences, and was attended by Dr. Ali Al-Sagr, Vice Dean for Graduate Studies and Research, faculty members, students, and honored guests.

With over 200 attendees, the Research Day highlighted student innovation, faculty engagement, and interdisciplinary collaboration, receiving highly positive feedback from both participants and college leadership.

Acknowledges Sponsors

Participated booths

Event Agenda

CLSRD 2024
Annual Scientific Research Day For Clinical Laboratory Sciences Department

جامعة الملك سعود
King Saud University
كلية العلوم الطبية التطبيقية
قسم علوم المختبرات الإكلينيكية

Annual Scientific Research Day for Clinical Laboratory Sciences (CLS) Department
21st of May 2024

TIME	Topic	Speaker	Location
08-00 - 08:05	**Welcoming Remarks**	**Dr. Raed Farzan** Head of CLS Department, KSU **Dr. Nahla Bakhamis** Chairperson of Research Committee, CLS, KSU	Auditorium 116
Scientific Forum			
08:05 - 08:30	**Innovative Biotechnology for Vaccine R&D Toward Combating Disease X**	**Dr. Mashal Alshazi, B, Pharm, PhD, PMP** Associate Professor of Pharmaceutical Biotechnology, College of Pharmacy, KSU	Auditorium 116
08:30 - 08:55	**X Pandemic Immunity: Approach of Different Ways to Fight**	**Dr. Abdulaziz Alamri, PhD** Assistant professor of Immunology, Department of Biochemistry, College of Science, KSU	
08:55 - 09:20	**Differentiation of Human Induced Pluripotent Stem Cells into Functional Lung Alveolar Epithelial Cells in 3D Dynamic Culture**	**Dr. Sarah Alsobaie, PhD** Associate professor, Department of Clinical Laboratory Sciences, College of Applied Medical Sciences, KSU	
09:20 – 09:45	**Clinical Utility of Polygenic Risk Scores in Saudi Population**	**Dr. Mohammed Alghamdi, MBiotech, MD** PhD candidate, Department of Clinical Laboratory Sciences, College of Applied Medical Sciences, KSU	
09:45 – 10:00	**Coffee Break & Networking**		CAMS Hall (ground floor)
10:00 – 10:30	**KSU-VP, CAMS Dean, CAMS Vice Deans Welcoming Session**		Auditorium 116
10:30 – 10:55	**Debate: Disposition Decision on the Frozen Embryos, do we have the right decision?**		Auditorium 116
10:55 – 12:00	**Exhibition Round & Poster Session**		CAMS Hall (ground floor)
12:00 – 12:30	**3- Minutes Thesis Competition**		Auditorium 116
12:30 – 13:00	**Prayer Break & Lunch**		CAMS Hall (ground floor)
13:00– 13:30	**Awards and Closing Remarks**		Auditorium 116
14:00 – 16:00	**Free Afternoon Networking**		CAMS Hall (ground floor)

الجمعية السعودية لعلوم المختبرات الإكلينيكية
Saudi Society for Clinical Laboratory Sciences

CEBR CENTER OF EXCELLENCE IN BIOTECHNOLOGY RESEARCH
مركز التميز البحثي في التقنية الحيوية

SAMA MASA

Snibe Diagnostic

Abstracts of Best Posters Awards - PhD

Winner of First Place – PhD Level

Title: Linolenic acid stimulates eryptosis and hemolysis in human erythrocytes through oxidative stress and activation of CK1α/MLKL pathway

Feryal Helal Alharthy

Supervised by: Dr. Hazim Gunim and Dr Mohammad Alfhili

Anticancer medications can cause anemia in patients through ill-defined mechanisms including hemolysis and eryptosis. α-linolenic acid (ALA), a dietary fatty acid, has been demonstrated to have anticancer characteristics against several cancer cells, although there is less information on its effects on red blood cell (RBC) physiology. Healthy donor RBCs were treated with anticancer concentrations of ALA at 37°C for 24 hours. Hemolysis and hemolytic marker were determined spectrophotometrically. Flow cytometry was employed to identify eryptotic cells using annexin-V-FITC and forward scatter (FSC), and Fluo4/AM to detect Ca2+. Additionally, the toxicity of ALA in the presence of specific signal transduction inhibitors were investigated. In a concentration-dependent manner, ALA significantly increased hemolysis and eryptosis, elevated Fluo4 and DCF fluorescence, and decreased FSC. Furthermore, the addition of D4476, necrosulfonamide, isosmotic urea, and polyethylene glycol 8,000 reduced the hemolytic activity of ALA. ALA stimulates hemolysis and eryptosis through Ca2+ buildup, anticholinesterase activity, casein kinase 1α (CK1α), and mixed lineage kinase domain-like protein (MLKL). The anticancer activity of ALA may be potentiated using Ca2+ channel blockers and chelators, and CK1α and MLKL inhibitors to ameliorate its toxicity to RBCs.

Winner of Second Place – PhD Level

Physiologic effects of anticancer drug pyrimidine analog on Pseudomonas aeruginosa virulence characteristic and DNA synthesis.

Amani Ahmed Niazy

Supervised by: Dr. May Al-Rashid, Co-supervisor. Dr. Abdulrhaman Adnan Niazy

The spread of resistant strains of Pseudomonas aeruginosa is a global public health risk, with carbapenem-resistant strains being of particular concern. While the discovery of new antibiotics is urgently needed, the production of new antibiotics is lagging. Therefore, there is growing interest in utilizing existing drugs, such as anticancer medications, in new ways to combat drug resistance. Studies have shown that the antineoplastic drug 5-Fluorouracil (5-FU) has antibiofilm activity and the ability to inhibit bacterial growth. This study aims to test and understand the physiological effect of 5-FU on Pseudomonas aeruginosa virulence and growth characteristics. The results of this study can increase the portfolio of potential therapeutic drugs used to treat multidrug-resistant organisms, which consequently improves the standard of medical care and quality of life in line with vision 2030.

Winner of Third Place – PhD Level

The Prognostic Value of Tumor Infiltrated Lymphocytes in Colorectal Cancer

Mohrah Alalshaishikh

Supervised by: Dr Jawaher Alsughayyir

The RhD antigen is considered as one of the most important immunogenic antigens in transfusion. Incompatibility between donor and alloimmunized recipients, for example, can cause sever hemolytic transfusion reaction. Serological tests are considered standard RhD detection tests with high accuracy. However, they are not effective under

certain conditions such as to determine the blood type in frequently transfused patients, or the RhD status for infants of RhD-negative sensitized pregnant women. In such conditions, genotyping by molecular techniques is required. The RHD gene is a very complex gene, with more than 800 known alleles and 28% of which are associated with the RhD-negative phenotype 1. The prevalence of blood group alleles differs significantly between different ethnic groups; therefore, knowing the frequency of alleles in a specific population is pivotal to establishing appropriate molecular typing methods. However, in the Saudi population, the molecular backgrounds of RhD-positive and negative phenotypes have not been elucidated. The aim of this study was to gain insights into the genetic background of the RhD-negative phenotype in the Saudi population and to determine the homozygosity of the RHD gene among RhD-positive Saudi individuals.

Abstracts of Best Posters Awards - MSc

Winner of First Place – MSc Level

Association of Iron Status and Endometriosis in Saudi Women: A Retrospective Study

Mohammed Algahtani

Supervised by: Dr. Abdulhadi Alabdulwahed, Dr. Fouad Alanzi

Endometriosis is a complex and debilitating gynecological condition that significantly affects health, fertility, and quality of life for many women in Saudi Arabia. Characterized by the growth of endometrial-like tissue outside the uterus, this disease often leads to severe pain and infertility. Despite its prevalence, the interactions between endometriosis and systemic metabolic processes, particularly iron metabolism, remain poorly understood among the Saudi population.

Despite the inherent challenges and potential biases typical of retrospective studies, new insights into the role of iron metabolism in the pathophysiology of endometriosis will be provided. These insights could significantly enhance the development of innovative therapeutic strategies that offer symptomatic relief and address the underlying metabolic imbalances associated with the disease. This study addresses a significant gap in existing research and covers the way for future investigations that could lead to more personalized and effective treatments for endometriosis.

Winner of Second Place – MSc Level

Candida auris candidemia: prevalence, antifungal susceptibility, and outcomes

Muosa Muqri

Supervised by: Dr. Hamood AlSudias

This study retrospectively assesses the prevalence, antifungal resistance, and clinical outcomes of Candida auris candidemia, a rising healthcare threat linked to high mortality. By analyzing treatment efficacy and patient data, it aims to guide improved antifungal strategies and infection control measures against this tenacious and virulent pathogen.

Winner of Third Place – MSc Level

The platinum coordination complex inhibits cell invasion migration and epithelial to mesenchymal transition by altering the TGF β SMAD pathway in colorectal cancer

Aminah Ahmad Alzailai
Supervised by: Dr. Sabiha Fatima

CRC is uncontrollable malignant growth arising from the wall of mucosa of the large bowel.

CRC is the third most diagnosed malignancy in men worldwide

CRC is the second most commonly diagnosed malignancy in women worldwide

CRC accounts for (9.2%) of cancer deaths globally with 20 % of CRC cases exhibiting metastases

Despite advancements in CRC chemotherapeutic agents improving CRC survival rates , their efficacy is often limited by adverse side effects.

For example: drug resistance, poorly targeted delivery,& damage to normal cells

Abstracts of Best Posters Awards - BSc

Winner of First Place – BSc Level

Klebsiella pneumoniae bacteraemia epidemiology: resistance profiles and clinical outcome of King Fahad Medical City isolates, Riyadh, Saudi Arabia

Sarah Alanazi

Supervised by: Dr. Taghreed Hafiz

Objective: This study assessed the epidemiology, microbial resistance, and clinical factors associated with *Klebsiella pneumoniae* bloodstream infections (BSI) in Saudi Arabia. Methods: Retrospective analysis of 152 *K. pneumoniae* isolates diagnosed between January 2019 and January 2020 at King Fahad Medical City was conducted. Clinical records were collected and analyzed.

Results: *Klebsiella pneumoniae* caused 152 cases of BSI, with higher risk in adults (66.4%) than pediatric patients (33.6%). Women had a slightly higher infection rate. Neurological disorders were the predominant underlying conditions. High resistance was observed to ampicillin (100%), amoxicillin-clavulanate (72.4%), and cephalosporins (76.3%). Deceased patients were mostly adults with multi-organ dysfunction.

Conclusions: *Klebsiella pneumoniae* BSI poses a significant threat, with alarming rates of multi-drug resistance. Understanding microbial resistance and its impact on clinical outcomes is crucial to combatting this infection.

Keywords: *Klebsiella pneumoniae*, bacteraemia, nosocomial infection, multi-drug resistant, pan-drug resistant

Sporadical development of chronic diarrhea among the 50-year adult women: undiagnosed and unidentified case for developing diarrhea

Sadeef AlSayari

Supervised by: Dr.Sara Alsobaie

Background:

Our study presents a case of undiagnosed systemic autoimmune enteropathy disorder that has been ongoing since 2011. The main symptom was chronic diarrhea, which resulted in imbalances in vital signs. Chronic diarrhea can occur due to several causes, for example, irritable bowel syndrome (IBS), irritable bowel disease (IBD), Sprue, Sjogren's syndrome, and infectious agents (such as Mycobacterium tuberculosis, Brucella species, and Cytomegalovirus (CMV).

Methodology and results: The patient suffered from severe hypokalemia resulting from chronic diarrhea. Unfortunately, a wide variety of investigations including did not aid in arriving at an obvious diagnosis.

Discussion:

Physicians concluded that the patient suffered from a systemic autoimmune enteropathy disease with poly inflammatory disorder. No obvious diagnosis could be made.

Conclusion:

No definitive treatment plan could be devised. The patient was prescribed prednisone for control of diarrhea. She is currently conditional and being administered oxygen for infinitive serous fluid. I recommend the use of other techniques and tools for sequencing in order to arrive at a diagnosis

Photo Gallery

Faculty Profiles

Prof. Khalid Alharbi

Professor of Molecular Genetics

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Web of Science ID- GYV-3906-2022
Scopus ID: 8635036500

Research Interest:

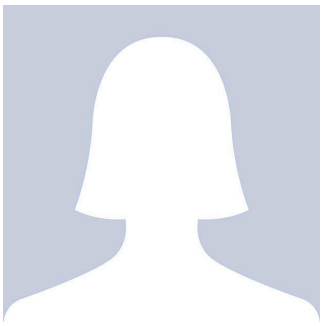
Clinical Genetics

Key publications:

93 Papers were published as full- length articles in international, peer- reviewed Journals. And 4 different chapter books were published Since 2004- 2025

https://pubmed.ncbi.nlm.nih.gov/?term=%22Alharbi+KK%22%5BAuthor%5D&size=50

- Almohlesy LS, Imtiaz F, Tulbah M, Alhashem A, Alhajooj M, Alhashem A, Mabillard H, Sayer JA, **Alharbi KK**, Al-Hamed MH. *ANKS6* Variants Underlie Polycystic Kidneys in Prenatal and Neonatal Cases. Genes (Basel). 2024 Oct 25;15(11):1374. doi: 10.3390/genes15111374. PMID: 39596574; PMCID: PMC11593910.
- Almohlesy LS, Imtiaz F, Tulbah M, Alhashem A, Alhajooj M, Alhashem A, Mabillard H, Sayer JA, **Alharbi KK**, Al-Hamed MH.Genes (Basel). 2024 Oct 25;15(11):1374. doi: 10.3390/genes15111374.PMID: 39596574



Prof. Sabah Ansar

Professor of Toxicology

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Research Interest:

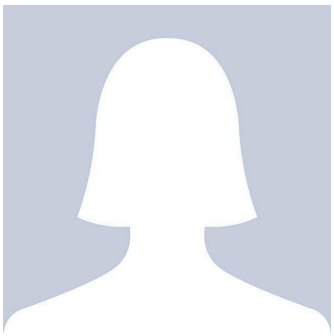
My research centers on cancer chemoprevention, with a particular focus on the role of oxidative stress in mediating toxicity. This work combines approaches from molecular biology, nanotechnology, and antioxidant-based strategies, conducted through both in vivo and in vitro models.

Ongoing Projects:

- Synthesis and characterization of nanomaterials/nanoparticles
- The Role of the Prefrontal Cortex in Moral Decision-Making
- Cancer modulation/therapy

Key publications:

- Investigating antioxidant effects of hamamelitannin-conjugated zinc oxide nanoparticles on oxidative stress-Induced neurotoxicity . https://doi.org/10.1007/s11033-024-09998-1
- Synthesis, characterization, in silico and in vitro assessment of 2-aminopyridine nicotinamide cocrystal as a new agent for breast cancer therapy. https://doi.org/10.1016/j.molstruc.2024.140315



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Professor of Molecular and Medical Microbiology

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Research Interest:

Professor Taghreed Hafiz specializes in the epidemiology of opportunistic nosocomial infections and their effect on public health. Her research focuses on the mechanisms of infection and antibiotic resistance in hospital-acquired pathogens. She also explores natural products as potential therapies to combat antimicrobial resistance, aiming to develop novel antibiotics that target resistant pathogens and address global health challenges.

Ongoing Projects:

The expression of efflux pumps in Gram-negative isolates from kidney transplant patients with urinary infections. This study aims to understand how these pumps contribute to antibiotic resistance, potentially leading to more effective treatment strategies.

Key publications:

- Taghreed A. Hafiz, Shahad S. Alghamdi, Murad A. Mubaraki, Shymaa S. M. Alghamdi, Abdulwahab Alothaybi, Esraa Aldawood, Fawziah Alotaibi. (2022) A Two-Year Retrospective Study of Multidrug-Resistant *Acinetobacter baumannii* Respiratory Infections in Critically Ill Patients: Clinical and Microbiological Findings. Journal of Infection and Public Health 16 (2023) 313–319

- Hafiz, T.A.; Aldawood, E.; Albloshi, A.; Alghamdi, S.S.; Mubaraki, M.A.; Alyami, A.S.; Aldriwesh, M.G. *Stenotrophomonas maltophilia* Epidemiology, Resistance Characteristics, and Clinical Outcomes: Understanding of the Recent Three Years' Trends. Microorganisms 2022, 10, 2506. https://doi.org/10.3390/microorganisms10122506

Dr. Ahmed Basudan

Associate Professor of Genetics

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Ongoing Projects:

Despite tremendous progress in the screening and treatment of early breast cancer, which have resulted in a ~30% reduction in annual mortality from breast cancer, metastatic breast cancer remains understudied and a major public health burden. In collaboration with multiple national and international investigators to perform comprehensive studies to identify mechanisms of metastases. In these studies, we are focusing on metastatic sites that are enriched in patients with invasive lobular breast cancer (ILC).

ILC is the second most common histological subtype, and accounts for approximately 10-15% of breast cancer cases, following the more common histological subtype, invasive ductal carcinoma (IDC). Both ILC and IDC can metastasize to common sites, such as bone, brain, liver, and lung. However, in patients with ILC, the tumours frequently metastasize to the gastrointestinal tract (e.g. colon and stomach), peritoneum, retroperitoneum, and uro-genital organs (mainly ovaries). It is currently unknown what causes the unique pattern of metastatic spread in ILC. We are developing models faithfully representing the disease, and we are collecting and characterizing metastatic tissue, in order to build a comprehensive genomic,

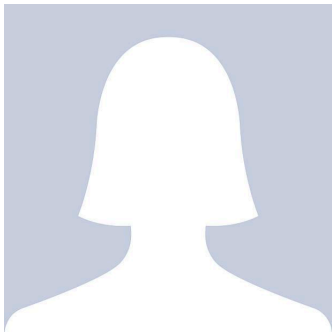
molecular,and clinicopathlogical landscape that will aid in understanding the unique ILC spread. Our goal is to identify targets for prevention and therapy of metastatic ILC.

Key publications:

- Differential Regulation and Targeting of Estrogen Receptor a Turnover in Invasive Lobular Breast Carcinoma. Sreekumar S, Levine KM, Sikora M], Chen J, Tasdemir N,Carter D, Dabbs DJ, Meier C, Basudan A, Boone D, McAuliffe PF, Jankowitz RC, Lee AV, Atkinson JM, Oesterreich S.Endocrinology. 2020 Sep 1;161(9):bqaa109. doi: 10.1210/endocr/bqaa109.

- FGFR4 overexpression and hotspot mutations in metastatic ER+ breast cancer are enriched in the lobular subtype. Levine KM, Priedigkeit N, Basudan A, Tasdemir N, Sikora M],Sokol ES, Hartmaier RJ, Ding K, Ahmad NZ, Watters RJ,

- Weiss KR, Blohmer JU, Denkert C, Machleidt A, Karsten MM, Boisen MM, Elishaev E, Lucas PC, Lee AV, Oesterreich S. NPJ Breast Cancer. 2019 Jun 27;5:19. doi: 10.1038/s41523-019-0114-x. eCollection 2019.



Dr. Esraa Aldawood

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Research Interest

Dr. Esraa is an Assistant Professor in Microbiology with extensive expertise in molecular bacteriology, infectious diseases, and antimicrobial resistance (AMR). Her research spans the development of natural and synthetic antimicrobial compounds, the optimization of bone tissue scaffolds for medical applications, and the molecular characterization of antimicrobial resistance. Dr. Esraa is passionate about integrating innovative technologies, including phage screening, to combat AMR in both healthcare and community settings. With a commitment to academic excellence, she is skilled in teaching and supervising graduate students, fostering their research development, and mentoring them through diverse microbiology projects. Dr. Esraa's collaborative nature is reflected in her ongoing partnerships, including those with the Industrial Engineering and Pharmacology Departments at King Saud University. Her aim is to provide research-driven solutions that advance microbiology and inspire future scholars in the field.

Ongoing Projects:

Antimicrobial Resistance (AMR) in Healthcare and Community Settings This research explores the prevalence and impact of antibiotic-resistant bacterial infections in both

healthcare and community.

Key publications:

- Aldawood, E., Dabbagh, D., Alharabi, S., Alzamil, L., Faqih, L., Alshurafa, H. H., & Dabbagh, R. HPV "Vaccine Knowledge and Hesitancy among Health College Students at a Saudi University." Journal of Multidisciplinary Healthcare (2023): 3465–3476.

- Faqih, L., Alzamil, L., Aldawood, E., Alharbi, S., Muzzaffar, M., Moqnas, A., ... & Alwelaie, Y. (2023). Prevalence of Human Papillomavirus Infection and Cervical Abnormalities among Women Attending a Tertiary Care Center in Saudi Arabia over 2 Years. Tropical Medicine and Infectious Disease, 8(12), 511.

- Aldawood, E., Aldawood, Z., & Alfhili, M. (2024). Awareness and knowledge of congenital cytomegalovirus (cCMV) among audiologists and speech-language pathologists in Saudi Arabia: A cross-sectional survey. Journal of Multidisciplinary Healthcare, 4155–4163.

- Aldawood, E., Alzamil, L., Dabbagh, D., Hafiz, T. A., Alharbi, S., & Alfhili, M. A. (2024). The Effect of Educational Intervention on Human Papillomavirus Knowledge among Male and Female College Students in Riyadh. Medicina, 60(8), 1276.

Dr. Fahad Aldakheel

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Research Interest:

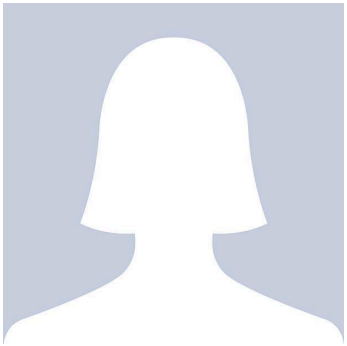
Clinical immunology, allergy, and cancer immunology

Ongoing Projects:

Integrating Machine Learning-Driven Virtual Screening and Molecular Dynamics Simulations to Identify Potential Inhibitors Targeting PARP-1 against prostate cancer. Decoding Prostate Cancer Recurrence Risk Through DNA Methylation and Gene Expression Analysis. Multi-Epitope Vaccine Design Against Human Respiratory Syncytial Virus Using Computational Means: A Study to Determine Immunogenicity, Antigenicity, Allergenicity, and Toxicity of Vaccine Construction.

Key publications:

- Aldakheel, F.M., 2024. Discovering potential asthma therapeutics targeting hematopoietic prostaglandin D2 synthase: An integrated computational approach. Archives of Biochemistry and Biophysics, 761, p.110157.
- Aldakheel, F.M., Alruwaili, Z.A., Alduraywish, S.A., Alshammary, A.F., Mateen, A., Syed, R. and John, J., 2023. Immune cell ratio and coagulation markers in assessing prognosis of asthma: a cross sectional study from Saudi Arabia. Frontiers in Immunology, 14, p.1206636.



Dr. Haifa Alnafea

Associate Professor of Heamatolgy and Blood transfusion

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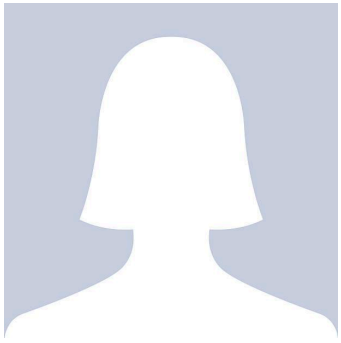
Research Interest:

Genetics in Hematology- Blood Bank and Infection-Immunology-Viral immunology

Key publications:

- Haifa M. AlNafea, H. M., & Korish, A. A. (2021). Activation of the Peroxisome Proliferator-Activated Receptors (PPAR-α/γ) and the Fatty Acid Metabolizing Enzyme Protein CPT1A by Camel Milk
- AlNafea, Haifa M.a,∗; Korish, Aida A.b,∗. The interplay between hypovitaminosis D and the immune dysfunction in the arteriovenous thrombotic complications of the sever coronavirus disease 2019 (COVID-19) infection. Blood Coagulation & Fibrinolysis 34(3):p 129-137, April 2023. | DOI: 10.1097/MBC.0000000000001212
- Albalawi R, Hanafy E, Alnafea H, et al. Novel Adenosine Deaminase 2 (ADA2) Mutations Associated With Hematological Manifestations. *Journal of Investigative Medicine High Impact Case Reports*. 2021;9. doi:10.1177/23247096211056770



Dr. Jawaher Alsughayyir

Associate Professor of Immunology

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Research Interest:

Clinical immunology and prospective therapies on the host immune response.

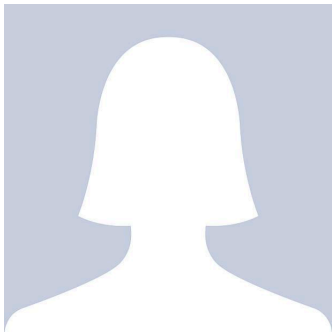
Ongoing Projects:

• Immunology in colorectal cancer

• Immune profile response against cancer therapy

Key publications:

- Alsughayyir, Jawaher; Almalki, Yasser; Alalshaik, Mohrah; et al (2022). Demography and blood donation trends in Saudi Arabia: A nationwide retrospective, cross-sectional study. Saudi Journal of Biological Sciences.
- Alsughayyir, J.; Alshaiddi, W.; Alsubki, R.; Alshammary, A.; Basudan, A.M.; Alfhili, M.A. Geraniin inhibits whole blood IFN-γ and IL-6 and promotes IL-1β and IL-8, and stimulates calcium-dependent and sucrose-sensitive erythrocyte death (2022). Toxicology and Applied Pharmacology.



Dr. Manal Abudawood

Associate Professor of Histopathology

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ORCID ID: https://orcid.org/0000-0003-3578-8988

Research Interest:

Cell and Molecular Biology, genetics, biomarkers.

Ongoing Projects:

Exploring genetic mutations to uncover molecular insights into glioma development and progression.Investigating the impact of oxidative stress markers and heavy metals on the progression and pathophysiology of cancer and endocrine disorders.

Key publications:

- Tabassum, H., Alrashoudi, R.H., Abudawood, M. et al. State-of-the-art Investigation on the Role of Indium, Terbium, Yttrium, and Lanthanum in Recurrent Pregnancy Loss. Biol Trace Elem Res (2024). https://doi.org/10.1007/s12011-024-04456-2 2.
- Reem Hamoud Alrashoudi, Hajera Tabassum, Sabiha Fatima, Manal Abudawood, May Alrashed, Nikkat J.Siddiqi, Sara Mohammed Alsaigh, Yazeed A. AlSheikh. Deciphering the link: A Cutting-Edge Exploration of the Intriguing Connection Between Recurrent Pregnancy Loss and Rare Earth Elements—Lutetium, Praseodymium, Samarium, Dysprosium, and Cerium. International Journal of Gynecolo

Dr. May Alrashed

CAMS Dean
Associate Professor of Molecular Genetics

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ORCID ID: https://orcid.org/0000-0002-3056-6393

Research Interest:

Molecular characterization of genetic disorders using next generation sequencing in addition to studying cancer genetics and genetic basis of antibiotic resistant bacteria.

Key publications:

- Rehman G, Khan J, Alrashed MM, et al. Development and characterization of dual drug loaded magnetic gold nanohybrid system for osteoarthritis. *Journal of Biomaterials Applications*. 2025;39(10):1222-1239.
- Jabeen, S., Khan, R., Alrashed, M.M. *et al.* Modulation of glucose metabolism and insulin resistance following hepatitis C virus clearance via direct-acting antivirals. *Sci Rep* 15, 14663 (2025). https://doi.org/10.1038/s41598-025-97827-1
- Tabassum, H., Alrashoudi, R.H., Abudawood, M. *et al.* State-of-the-art Investigation on the Role of Indium, Terbium, Yttrium, and Lanthanum in Recurrent Pregnancy Loss. *Biol Trace Elem Res* 203, 1444–1452 (2025). https://doi.org/10.1007/s12011-024-04456-2

Dr. Mohammad Alfuhaily

Associate Professor and Consultant of Clinical Chemistry

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Research Interest:

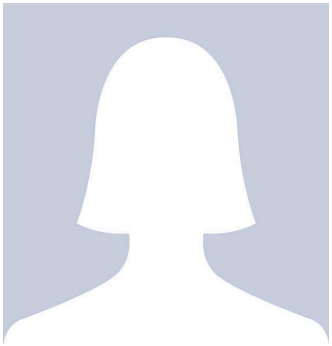
Eryptosis is a recently recognized form of cell death that specifically occurs in nucleated red blood cells (RBCs; erythrocytes). At the nexus of a wide array of life-threatening conditions, eryptosis plays a pivotal role in diabetes mellitus, renal failure, infections, and malignancy. Eryptotic cells display the characteristic “eat me” signal; phosphatidylserine externalization, that allows for recognition and engulfment by macrophages. Accelerated disposal of these cells from the circulation gives rise to anemia. Of particular interest to our studies is chemotherapy-induced anemia, which is prevalent in up to 90% of patients undergoing treatment. Nevertheless, whether or not current and prospective chemotherapeutic agents cause anemia through eryptosis remains unexplored.

Ongoing Projects:

- Anticancer Natural Products as Novel Modulators of Eryptosis.
- Molecular Profiling of the Host Immune Response in COVID-19 Active and Convalescent Saudi Patients.
- Resolving the Molecular Landscape of Microbial Sensing and Innate Cellular Immunity: Implications for the Inflammasome Response and Pyroptosis.

Key publications:

- Mohammad Alfhili, Ahmed Basudad et al. Bioymifi, a novel mimetic of TNF-related apoptosis-induced ligand (TRIAL), stimulates eryptosis (2021). Med Oncol. Oct 11;38(12):138. doi: 10.1007/s12032-021-01589-5.
- Mohammad A Alfhili, Jawaher Alsughayyir, Ahmed M Basudan, Hazem K Ghneim et al. Patterns of Dyslipidemia in the Anemic and Nonanemic Hypertensive Saudi Population: A Cross-Sectional Study (2022). Int J Gen Med. Oct 21:15:7895-7906. doi: 10.2147/IJGM.S379597. eCollection 2022.
- Mohammad A Alfhili 1, Sumiah A Alghareeb et al. Galangin Triggers Eryptosis and Hemolysis Through Ca2+ Nucleation and Metabolic Collapse Mediated by PKC/CK1α/COX/p38/Rac1 Signaling Axis (2024) Int J Mol Sci. Nov 15;25(22):12267. doi: 10.3390/ijms252212267.



Dr. Reem Alrashoudi

Associate Professor of Immunology

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Google Scholar: Dr. Reem Alrashoudi
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Research Interest:

Molecular Immunology, Immunotherapy, Nanoparticles anti-inflammatory

Ongoing Projects:

Anti-inflammatory, antioxidant, and immunomodulatory activities of green synthesized Magnesium oxide nanoparticles from shoot extracts of *Plicosepalus curviflorus* in Streptozotocin-Induced Diabetic Rats.

Key publications:

- Alrashoudi, R.H., Crane, I.J., Wilson, H.M., Al-Alwan, M. and Alajez, N.M., 2018. Gene expression data analysis identifies multiple deregulated pathways in patients with asthma. *Bioscience reports*, *38*(6).
- Alrashoudi, R.H., 2023. Unleashing the power of anti-CD20 immunotherapy: Mitigating multiple sclerosis risk in Epstein-Barr virus latent infections. *Advances in Clinical and Experimental Medicine: Official Organ Wroclaw Medical University*

Dr. Abdulhadi Alabdulwahed

Assistant Professor of Microbiology

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Google Scholar: Dr. Abdulhadi Alabdulwahed
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Research Interest:

Molecular and cellular mechanisms of cancer. DNA damage and genomic instability in response to chemotherapy. Gene positioning in chemosensitive and chemoresistant cancer cell lines. Oxidative stress and its role in cancer progression. Environmental toxicants and disease development. Cellular responses to environmental stressors and toxins. Computational approaches in cancer and toxicology research. Epigenetic and environmental determinants of obesity and metabolic disorders

Ongoing Projects:

(Cancer Biology & Chemotherapy Response) • DNA Damage and Genomic Instability in Response to Chemotherapy in Ovarian Cancer Cells • AI-Driven Precision Oncology: Predicting Chemotherapeutic Response in Ovarian Cancer Patients (Environmental Toxicology & Carcinogenesis) • Microplastic-Mediated Carcinogenesis: Novel Pathways in Environmental Cancer Development (Epigenetics, Obesity & Metabolic Disorders) • Epigenetic and Environmental Determinants of Obesity in the Saudi Population: AI-Driven Biomarker Discovery and Predictive Modeling (Endometriosis & Metabolic Dysregulation) • Association of Iron Status and Endometriosis in Saudi Women • Exploring the Role of Lipid Metabolism in Endometriosis Patients

(Molecular Epidemiology & Infectious Diseases) • Genetic Variation of HA and NA Genes of Influenza Viruses in Saudi Arabia (2015-2024): Molecular Epidemiology, Phylogenetic Analysis, and Vaccine Strain Match (Neuroscience & Oxidative Stress) • Synergistic Effects of Gotu Kola and Vitamin B6 on Depression: Interplay of Oxidative Stress and Neuroplasticity in a CUMS-Induced Rat Model

Key publications:

- Collins, A., Møller, P., Gajski, G., Vodenková, S., Abdulwahed, A., Anderson, D., ... (2023). Measuring DNA modifications with the comet assay: A compendium of protocols. Nature Protocols, 18(3), 929-989. https://doi.org/[DOI] Karbaschi, M., Ji, Y., Abdulwahed, A. M. S., Alohaly, A., Bedoya, J. F., Burke, S. L., ... (2019).
- Evaluation of the major steps in the conventional protocol for the alkaline comet assay. International Journal of Molecular Sciences, 20(23), 6072. https://doi.org/[DOI] Ji, Y., Karbaschi, M., Abdulwahed, A., Quinete, N. S., Evans, M. D., & Cooke, M. S. (2022).
- A high-throughput comet assay approach for assessing cellular DNA damage. Journal of Visualized Experiments (JoVE), (63559). https://doi.org/10.3791/63559 Alfahed, A., Ebili, H. O., Almoammar, N. E., Alasiri, G., AlKhamees, O. A., Aldali, J. A., ... (2023).

Dr. Abdullah Aljedai

Assistant Professor of Hematology

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Research Interest:

Signalling pathways in hematopoietic stem cell and cancer stem cells, molecular targeted therapy in leukemias and lymphoma, genetic alterations in plasma cell myeloma, genetic modifiers of sickle cell anaemia, haematological and metabolic assessment of frequent blood donations, haemostasis abnormalities in diabetes.

Ongoing Projects:

The Association between HBA1c Levels and Hemostasis Abnormalities in Type 2 Diabetic Saudi Patients.

Key publications:

- Aljedai A, Buckle A-M, Hiwarkar P, Syed F. Potential Role of Notch Signalling in CD34+ Chronic Myeloid Leukaemia Cells: Cross-Talk between Notch and BCR-ABL. PLoS ONE (2015) 10(4).
- Aljedai A, Saeed Aldosari, Mourad Aboul-Soud, Khalid Batarfi, Waleed Altamimi, Abdulrahman Al-shalani. Impact of Frequent Blood Donations on Red Blood Cell Indices, Reticulocyte Parameters, and Iron Metabolism in Saudi Donors. Submitted to: Journal of clinical medicine, 2025.

Dr. Abdulrahman Alrezaihi

Assistant Professor of Virology

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ORCID ID: https://orcid.org/0000-0002-7952-2738

Research Interest:

I specialise in medical virology, focusing on respiratory viruses such as SARS-CoV-2, MERS-CoV, and Influenza A. My research includes viral genomics, metagenomics, and molecular surveillance, using whole-genome sequencing and nanopore technology to study viral evolution and host-pathogen interactions.

Ongoing Projects:

Characterization of the upper respiratory microbiome and its relationship with disease severity in patients with COVID-19 or MERS , The impact of SARS-CoV-2 on the microbiome in the upper and lower respiratory tracts: clinical samples and animal model

Key publications:

- Dandachi, I., Alrezaihi, A., Amin, D., et al. (2024). Molecular surveillance of influenza A virus in Saudi Arabia: whole-genome sequencing and metagenomic approaches. Microbiology Spectrum, 12(8), e0066524. DOI:10.1128/spectrum.00665-24

- Alrezaihi, A., Penrice-Randal, R., Dong, X., et al. (2024). Enrichment of SARS-CoV-2 sequence from nasopharyngeal swabs whilst identifying the nasal microbiome. Journal of Clinical Virology, 105620. DOI:10.1016/j.jcv.2023.105620
- Aljabr, W., Alruwaili, M., Penrice-Randal, R., Alrezaihi, A., et al. (2021). Amplicon and Metagenomic Analysis of Middle East Respiratory Syndrome (MERS) Coronavirus and the Microbiome in Patients with Severe MERS. mSphere, e0021921. DOI:10.1128/msphere.00219-21
- Moore, S. C., Penrice-Randal, R., Alruwaili, M., et al. (2020). Amplicon-Based Detection and Sequencing of SARS-CoV-2 in Nasopharyngeal Swabs from Patients with COVID-19 and Identification of Deletions in the Viral Genome That Encode Proteins Involved in Interferon Antagonism. Viruses, 12(10). DOI:10.3390/v12101164

Dr. Abdulrahman Alshalani

Assistant Professor of Hematology and Blood Transfusion
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Research Interest:

As an Assistant Professor of Hematology and Blood Transfusion at CLS/CAMS/KSU, my research focuses on advancing knowledge and innovation in clinical laboratory sciences. My primary areas of interest include: 1. Red Blood Cell Physiology and Transfusion Outcomes I explore the factors influencing red blood cell functionality, storage quality, and transfusion compatibility. My research investigates how donor characteristics, such as biological sex, age, and storage duration, affect red blood cell integrity, organ entrapment, and clinical outcomes post-transfusion. This work seeks to optimize transfusion practices by improving donor-recipient matching protocols, minimizing adverse reactions, and ensuring the effective delivery of oxygen in critically ill patients. 2. Iron Metabolism and Related Disorders Iron is essential for many physiological processes, and its dysregulation can lead to serious health conditions. My research focuses on understanding the kinetics of iron metabolism, particularly how imbalances contribute to disorders such as anemia (iron deficiency or chronic disease) and iron overload (e.g., hemochromatosis). By studying iron storage, transport, and regulatory mechanisms, I aim to develop diagnostic tools and therapeutic strategies to better manage these conditions. 3. Hemolytic Anemia Hemolytic anemias, whether inherited or acquired, present complex diagnostic and management challenges. I focus

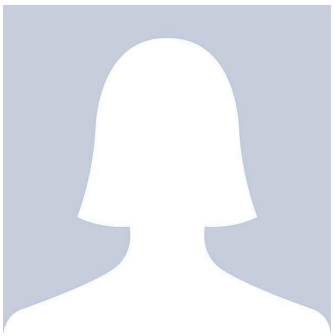
on both inherited disorders (such as Glucose-6-Phosphate Dehydrogenase (G6PD) and pyruvate kinase deficiencies) and acquired forms, including immune-mediated hemolysis. My research investigates the genetic, enzymatic, and immunological factors leading to red blood cell destruction and evaluates potential treatments and management protocols tailored to these patients' needs. 4. Blood Disorders in Infectious Diseases Infectious diseases can significantly alter hematological parameters, particularly in patients with pre-existing conditions. My recent work includes studies on the hematological impact of COVID-19, focusing on how the virus affects red blood cells, white blood cells, platelets, and coagulation profiles. I also explore the disease's implications for transfusion management, particularly for high-risk groups such as patients with leukemia, sickle cell anemia, and other hematological disorders. 5. Coagulation and Blood Disorders My research investigates coagulation disturbances, with a particular interest in Disseminated Intravascular Coagulation (DIC). DIC is a life-threatening condition marked by widespread clotting and bleeding, often secondary to severe infections, trauma, or cancer. I study how DIC affects red blood cell morphology, coagulation markers, and endothelial cell function. The goal is to correlate DIC severity with laboratory findings and provide evidence for improved diagnostic criteria and treatment protocols. 6. Peer Review, Research Quality, and Statistical Analyses I am dedicated to maintaining high standards in scientific research to support advancements in healthcare. I actively contribute to the peer review process for high-impact journals such as Scientific Reports, Epidemiologia, Transfusion Clinique et Biologique, and Cureus, ensuring the accuracy, relevance, and integrity of research publications. Additionally, I have extensive experience in statistical analyses and research design, including cross-sectional, retrospective, and experimental studies. I apply appropriate statistical methods to analyze clinical data, such as red blood cell indices and coagulation profiles, which helps generate reliable and meaningful conclusions that can inform both research and clinical practices.

Ongoing Projects:

Impact of DIC on Coagulation and RBC Parameters • Hematological and Biochemical Profiles in Diabetic Patients • Sex Discrepancies in Blood Donation and Transfusion Outcomes • Hematological Changes in COVID-19 Patients

Key publications:

- Aldali JA, Asseri MK, Almufarrij HA, Alromih AM, Alajlan AM, Alrashed KA, ALghadeer AI, Almutawa BI, Alshalani A. Prevalence of Gastroparesis and the Impact of Metformin in Diabetic Patients: A Cross-Sectional Study in Riyadh, Saudi Arabia. Gastroenterol Res Pract. 2024 Dec.
- AlSudais H, Alshalani A, Alajaji S, Alsaadoun S, Alsaiari L, Almuhanna Y, Asad M, Ghneim H. A decade later: Assessing pregnant women's perspectives on non-invasive prenatal testing (NIPT) in Saudi Arabia. Heliyon. 2024 Nov.
- Alshalani A, AlSudais H, Binhassan S, Juffermans NP. Sex Discrepancies in Blood Donation: Implications for Red Blood Cell Characteristics and Transfusion Efficacy. Transfusion and Apheresis Science. 2024 Oct.
- Almuhanna Y, Alshalani A, AlSudais H, Alanazi F, Alissa M, Asad M, Joseph B. Antibacterial, Antibiofilm, and Wound Healing Activities of Rutin and Quercetin and Their Interaction with Gentamicin on Excision Wounds in Diabetic Mice. Biology. 2024 Aug.



Dr. Alanoud Aljasham

Assistant Professor of Molecular Biology and Microbiology

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Research Interest:

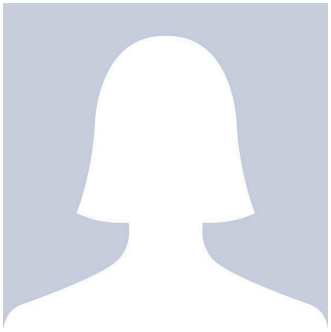
Biotechnology, Vaccine Development, Antimicrobial Resistance

Ongoing Projects:

Development of mRNA vaccine against different diseases, AMR surveillance across Saudi Arabia's regions

Key publications:

- AM Alotaibi, NB Alsaleh, AT Aljasham, EA Tawfik, MM Almutairi, MA Assiri. Silver nanoparticle-based combinations with antimicrobial agents against antimicrobial-resistant clinical isolates. Antibiotics 11 (9), 1219.
- AA Alkahtane, HA Alghamdi, AT Aljasham, S Alkahtani. A possible theranostic approach of chitosan-coated iron oxide nanoparticles against human colorectal carcinoma (HCT-116) cell line. Saudi journal of biological sciences 29 (1), 154-160
- AT Aljasham, EM Damra, NS Alkahtani, A Alouffi, WS Al Salem. Isolation, identification and antimicrobial susceptibility of the bacteria isolated from *Hyalomma dromedarii* infesting camels in Al-Jouf province, Saudi Arabia. Frontiers in Veterinary Science 10, 1227908



Dr. Arwa Almutlaq

Assistant Professor of Prenatal Genetics and Fetal Medicine

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Research Interest:

Gene expression analysis and biomarker discovery.

Human genome exploration and functional genomics.

Epigenetic markers and their role in development and disease.

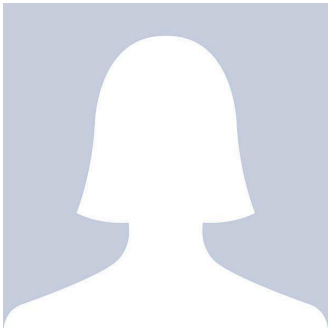
Integrating molecular and computational approaches for genetic research

Ongoing Projects:

miRNA in early embryo development: regulatory role and biomarker potential

Key publications:

Almutlaq A, Viñals Gonzalez X, SenGupta S. Differentially expressed microRNAs in aneuploid preimplantation blastocysts: a systematic review. Front Reprod Health. 2024 Mar 14;6:1370341. doi: 10.3389/frph.2024.1370341. PMID: 38550247; PMCID: PMC10973143.



Dr. Arwa Bagasi

Assistant Professor of Virology

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Research Interest:

Viral emergence and zoonosis. Specifically, viral factors contributing to these processes. The vast majority of viral epidemics/pandemics are of animal origin and usually involve viral genetic adaptations to the human host. Understanding viral behaviour upon cross-species transmissions improves the preparedness for the next pandemics. Screening human population at the animal-human interface is proven to be an efficient strategy both economically and logistically to tackle zoonosis at the early stages. Identification of therapeutics against emerging viral infections is considered a high priority by many health organizations and institutions. Thus, my interests also include B cell activation, antibodies production, and vaccinology. Additional interests include viral discovery and exploring respiratory virome. I have more than 6 years experience in various molecular and virological techniques including: protein expression and purification, pseudotyping (viral pseudoparticles), cell culture techniques, infection assays (reporter gene assays), neutralization assays, gene transduction, knock-out/knock-in assays, flow cytometry Bioinformatics tools and softwares including: plasmid designing and editing, primer designing, statistical analysis, flow cytometry data analysis, protein modeling tools and softwares, gene and protein expression tools.

Ongoing Projects:

I am currently collaborating with KFSH&RC in a project that involves genetic characterization of hepatitis B surface antigen isolated from different clinical groups including patients with hepatocellular carcinoma.

Key publications:

- Bagasi AA, Howson-Wells HC, Clark G, Tarr AW, Soo S, Irving WL, McClure CP. Human Bocavirus infection and respiratory tract disease identified in a UK patient cohort. J Clin Virol. 2020 Aug;129:104453. doi: 10.1016/j.jcv.2020.104453. Epub 2020 May 21. PMID: 32534437; PMCID: PMC7240277.
- Bagasi AA, Khandaker T, Clark G, Akagha T, Ball JK, Irving WL, McClure CP. Trichodysplasia Spinulosa Polyomavirus in Respiratory Tract of Immunocompromised Child. Emerg Infect Dis. 2018 Sep;24(9):1744-1746. doi: 10.3201/eid2409.180829. PMID: 30124403; PMCID: PMC6106430.

Dr. Aysha Mateen

Researcher

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Research Interest:

Nanotechnology, Gene Expression, Antimicrobial resistance ,Bacterial biofilms and Molecular docking.

Ongoing Projects:

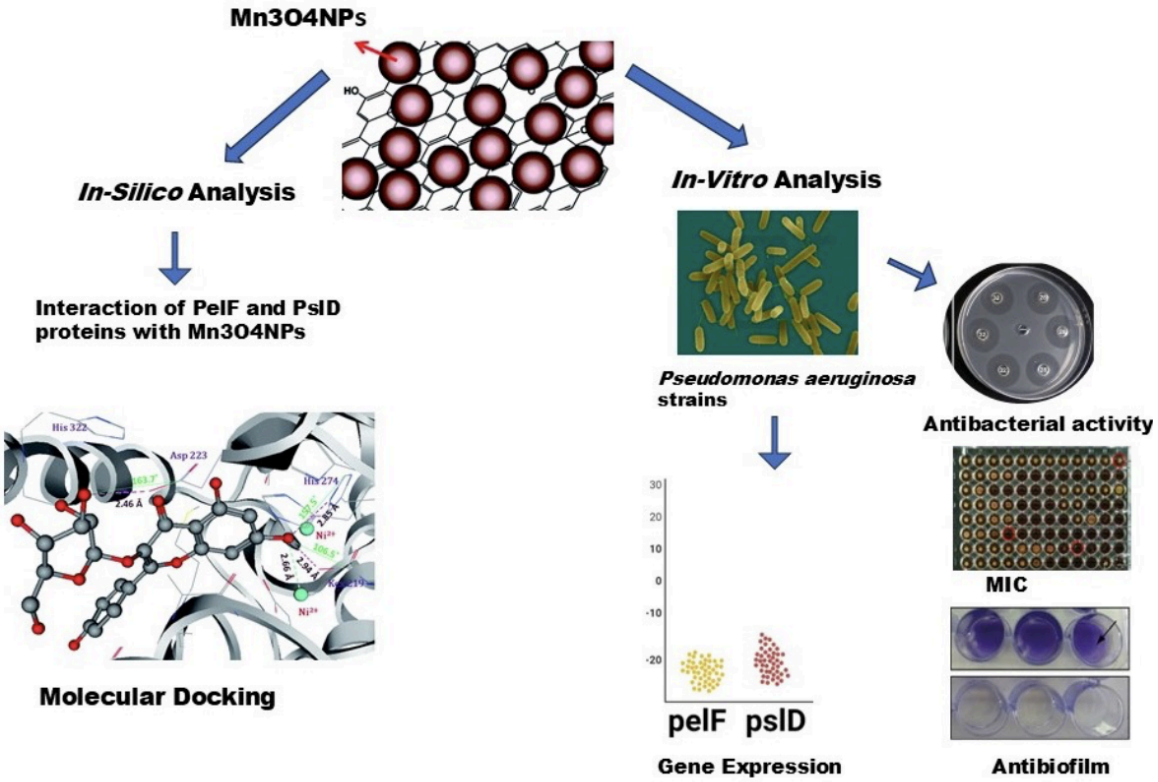
Antimicrobial and antibiofilm activity of green synthesised nanoparticles and organic compounds. Gene expression studies and molecular docking.

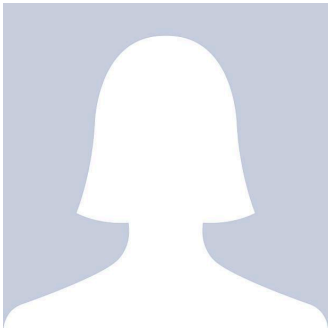
Key publications:

- Reem Hamoud AlrashoudiTaghreed A HafizAyesha MateenMohammed S. AldosaryAhmad S. AlYamiSabiha FatimaFahad AlwarradSultan Ali AlshahraniNorah Al Ragi Al RagiNasser AlshagadaliSara Mohammed AlsaighSultan Alhammadiet al.Prevalence of Biofilm Formation Genes in Association with Resistance Phenotypes Among Pseudomonas aeruginosa Clinical Isolates.Jundishapur J Microbiol.2025;18(4):e154378.https://doi.org/10.5812/jjm-154378.
- Aldakheel FM, Alnajran H, Mateen A, Alduraywish SA, Alqahtani MS, Syed R. Comprehensive computational analysis of differentially expressed miRNAs and

their influence on transcriptomic signatures in prostate cancer. Sci Rep. 2025 Jan 29;15(1):3646

- Aldakheel FM, Alnajran H, Alduraywish SA, Mateen A, Alqahtani MS, Syed R. Analysing DNA methylation and transcriptomic signatures to predict prostate cancer recurrence risk. Discov Oncol. 2025 Feb 1;16(1):110.





Dr. Basmah Almaarik

Assistant Professor of Microbiology

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Research Interest:

Micro-organisms and their activities are vitally important to virtually all processes on Earth. A better understanding of the physiology and ecology of pathogens to epidemiological typing of clinical isolates is a crucial feature in medical-microbiology. Although traditional microbiological techniques are considered old-fashioned in the context of new diagnostic and molecular approaches, they are still the reference practice in research aspects. My research interest focuses on oral and pathogenic bacteria and their interaction with the immune system in planktonic and biofilm forms. I have also investigated the effect of green synthesis nanoparticles on some medically important bacteria.

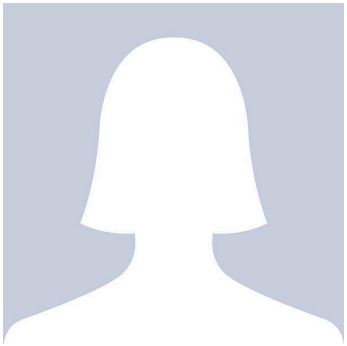
Ongoing Projects:

My PhD project assessed the role of neutrophil extracellular traps (NETs) in influencing the stability, mechanical resistance, and growth of both single-species and mixed-species oral biofilms in vitro. I am currently extending this research to explore interactions between neutrophils and various medically important biofilm-forming organisms, including Candida auris. Understanding how neutrophils contribute to biofilm

formation could pave the way for novel therapeutic strategies, such as the topical application of nucleases to target extracellular DNA. This approach aims to make biofilms more susceptible to mechanical forces and antimicrobial agents.

Key publications:

- F. A., ALMAARIK, B. & AL-ASKAR, M. 2022. Resolvin E1's antimicrobial potential against Aggregatibacter actinomycetemcomitans. Frontiers in Oral Health, 3, 875047.
- ABUDAWOOD, M., ALJASER, F., TABASSUM, H., ANSAR, S., ALSOBAIE, S., ALMAARIK, B., ALMOSA, K., SOBKI, S., ALI, M. N. & ALJOHI, A. 2018. Status of vitamin-D in relation to glycemic indices and lipid profile in postmenopausal women with type 2 diabetes mellitus: a case controlled study in Riyadh, KSA. Biomedical Research, 29, 3502-3507.
- ANSAR, S., TABASSUM, H., ALADWAN, N., ALI, M. N., ALMAARIK, B., ALMAHROUQI, S., ABUDAWOOD, M., BANU, N. & ALSUBKI, R. 2020a. Eco friendly silver nanoparticles synthesis by Brassica oleracea and its antibacterial, anticancer and antioxidant properties. Sci Rep 10: 18564. Proc Natl Acad Sci, 86, 3375-3378.
- ANSAR, S., TABASSUM, H., ALADWAN, N. S., NAIMAN ALI, M., ALMAARIK, B., ALMAHROUQI, S., ABUDAWOOD, M., BANU, N. & ALSUBKI, R. 2020b. Eco friendly silver nanoparticles synthesis by Brassica oleracea and its antibacterial, anticancer and antioxidant properties. Scientific Reports, 10, 18564.



Dr. Dalal Alsowaida

Assistant Professor of Genetics

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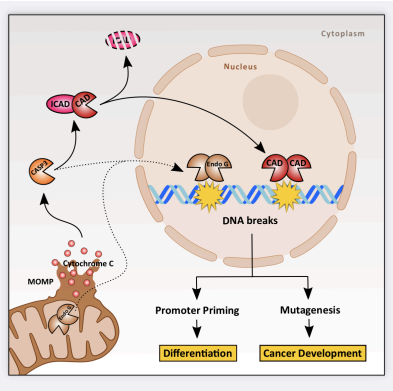
Research Interest:

DNA damage and repair, Genomics, Epigenetics, Non death role of Caspases.



Ongoing Projects:

Investigating the role of Caspase activated DNase (CAD) in cancer

Key publications:

- Self-inflicted DNA breaks in cell differentiation and cancer, Jan Benada, Dalal Alsowaida, Lynn A Megeney, Claus S Sørensen
- Chromatin Reorganization during Myoblast Differentiation Involves the Caspase-Dependent Removal of SATB2, Ryan A V Bell, Mohammad H Al-Khalaf , Steve Brunette, Dalal Alsowaida , Alphonse Chu, Hina Bandukwala, Georg Dechant, Galina Apostolova, F Jeffrey Dilworth, Lynn A Megeney
- Destruction as a creative process: CAD-induced DNA strand breaks promote macrophage differentiation, Dalal Alsowaida, Lynn A Megeney

Dr. Fuad Alanazi

Assistant Professor of Microbiology and Immunology

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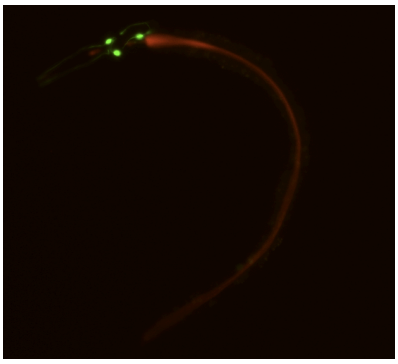
ORCID ID: https://orcid.org/0009-0001-5328-6239

Research Interest:

Characterization of Spirochete pathogens, C. elegans research on pathogen-host interactions , Multidrug Resistance (MDR) studies

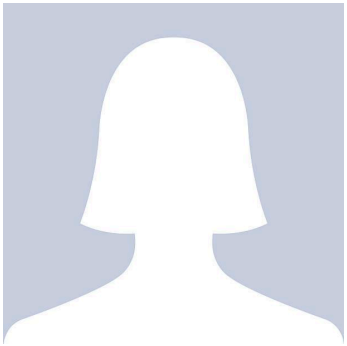


Ongoing Projects:

C. elegans research on pathogen-host interactions

Key publications:

- Alanazi F, Raghunandanan S, Priya R, Yang XF. The Rrp2-RpoN-RpoS pathway plays an important role in the blood-brain barrier transmigration of the Lyme disease pathogen. Infect Immun. 2023;91(11):e0022723.
- Raghunandanan S, Priya R, Alanazi F, Lybecker MC, Schlax PJ, Yang XF. A Fur family protein BosR is a novel RNA-binding protein that controls rpoS RNA stability in the Lyme disease pathogen. Nucleic Acids Res. 2024;52(9):5320-35.
- Zhang JJ, Raghunandanan S, Wang Q, Priya R, Alanazi F, Lou Y, et al. BadR directly represses the expression of the glycerol utilization operon in the Lyme disease pathogen. J Bacteriol. 2024;206(2):e0034023.



Dr. Hala Aldahshan

Assistant Professor of Immunogenetics and Genome Engineering

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Research Interest:

My research focuses on immunotherapy, molecular genetics, and genome editing, with particular emphasis on the genetic modification of primary cell lines. I have developed expertise in T-cell immunology and cell and gene therapy, applying advanced genome editing tools such as CRISPR/Cas9 and base editors to enhance therapeutic strategies. In addition, I am deeply interested in understanding the genomic and immunologic landscape of the Saudi population, aiming to contribute to the development of personalized and population-specific therapies.

Ongoing Projects:

- Precision Editing for CD20 CAR-T Cells: A Virus-Free Approach Using CRISPR-Cas9
- Immunological Barriers to AAV-Mediated Gene Therapy: A Study of Anti-AAV Seroprevalence in the Saudi Population
- Genomic Insights into Hematologic Malignancies and Clonal Blood Cell Disorders in the Saudi Population

- Investigating Gene Variations and Their Correlation with Diabetes Mellitus in Saudi Arabia
- Evaluation of Immune Background to Next-Generation Genetic Interventions in the Saudi Population

Key publications:

- Base-Edited CAR-T Cells for Relapsed T-Cell Acute Lymphoblastic Leukemia

R. Chiesa, C. Georgiadis, H. Zhan, A. Etuk, S. A. Gkazi, et al.

N Engl J Med. 2023; 389(10): 899-910

- Comparison of Cytidine Deaminase Base Editors for Multiplexed Editing of T Cells

H. Aldahshan, R. Preece, H. Brezovjakova, C. Georgiadis, W. Qasim

ESGCT 29th Annual Congress, UK, 2022.

- Virus-Free Production of CD20-Targeted CAR-T Cells via CRISPR-Cas9-Mediated Transgene Insertion O. Gough, R. Preece, H. Aldahshan, C. Georgiadis, W. Qasim

ESGCT 29th Annual Congress, UK, 2022.

Dr. Hamood Alsudais

Assistant Professor of Cellular and Molecular Medicine

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Research Interest:

Biomarker to improve diagnostics and improve diagnostics and Therapies for cancers and chronic diseases.

Ongoing Projects:

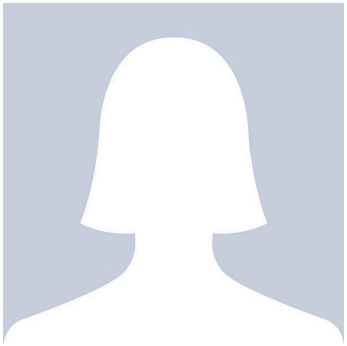
Identifying the transcription factor C/EBPb as a critical upstream regulator of inflammatory signaling pathways in both muscle and cancer cells. This discovery highlighted C/EBPb as a potential therapeutic target for combating muscle atrophy under various conditions, including cancer cachexia.

Key publications:

- AlSudais, H., Alshalani, A., Alajaji, S., Alsaadoun, S., Alsaiari, L., Almuhanna, Y., Asad, M., & Ghneim, H. K. (2024). A decade later: Assessing Pregnant Women's Perspectives on Non-Invasive Prenatal Testing (NIPT) in Saudi Arabia. Heliyon, https://doi.org/10.1016/j.heliyon.2024.e40379
- Alshalani, A., AlSudais H, Binhassan S., and Juffermans N.P. (2024) Sex discrepancies in blood donation: Implications for red blood cell characteristics

and transfusion efficacy. Transfusion and Apheresis Science,63(6), p. 104016. doi:10.1016/j.transci.2024.104016.

- Alshimemeri S, AlSudais H, Alamri NK, Alshoumar AM, Bin Dher SK, Maashi MH. Burden, Anxiety, and Depression Among Caregivers of Parkinson's Disease Patients. J Parkinsons Dis. 2024;14(7):1495-1505. doi: 10.3233/JPD-240014.
- Alshuweishi, Y.; Almufarrih, A.A.; Abudawood, A.; Alfayez, D.; Alkhowaiter, A.Y.; AlSudais, H.; Almuqrin, A.M. Patterns of Lipid Abnormalities in Obesity: A Comparative Analysis in Normoglycemic and Prediabetic Obese Individuals. J. Pers. Med. 2024, 14, 980. https://doi.org/10.3390/jpm14090980



Dr. Lama Alzamil

Assistant Professor of Virology

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Research Interests:

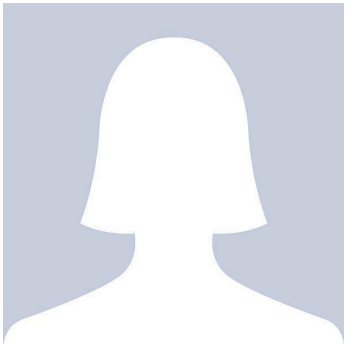
Cervical Biology & Oncogenesis, Infectious Disease & Public Health

Ongoing projects:

Profiling HPV among Saudi women

Key publications:

- E Aldawood, L Alzamil, L Faqih, D Dabbagh, S Alharbi, TA Hafiz. Awareness of human papillomavirus among male and female University students in Saudi Arabia. Healthcare 11 (2023), 649
- E Aldawood, L Alzamil, D Dabbagh, TA Hafiz, S Alharbi, MA Alfhili. The Effect of Educational Intervention on Human Papillomavirus Knowledge among Male and Female College Students in Riyadh. Medicina 60 (2024), 1276
- E Aldawood, D Dabbagh, S Alharbi, L Alzamil, L Faqih, HH Alshurafa. HPV vaccine knowledge and hesitancy among health colleges' students at a Saudi University
  Journal of Multidisciplinary Healthcare, (2023) 3465-3476



Dr. Nada Almebairik

Assistant Professor of clinical microbiology and bioinformatics

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Research Interest:

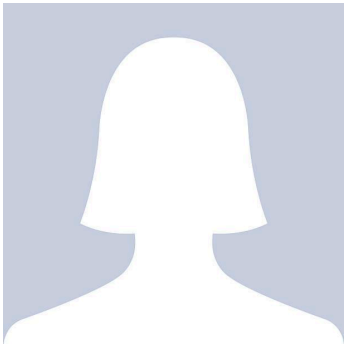
Microbial genomics

Ongoing Projects:

Genomic Characterization of Escherichia coli

Key publications:

- Almebairik, Nada, et al. "Genomic stability of composite SCC mec ACME and COMER-like genetic elements in Staphylococcus epidermidis correlates with rate of excision." Frontiers in Microbiology 11 (2020): 166.
- Wysocka, Magdalena, et al. "Whole-genome analysis uncovers loss of blaZ associated with carriage isolates belonging to methicillin-resistant Staphylococcus aureus (MRSA) clone ST5-VI in Cape Verde." Journal of Global Antimicrobial Resistance 26 (2021): 77-83.
- Al-Jabri, Zaaima, and Nada Al-Mebairik. "Genomic Islands in Staphylococcus." Microbial Genomic Islands in Adaptation and Pathogenicity. Singapore: Springer Nature Singapore, 2023. 207-231.



Dr. Nahla Bakhamis

Assistant Professor of Prenatal Genetics and Reproductive Health
Senior Embryologist

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Google Scholar: Nahla Bakhamis

Research Interest:

Women's Reproductive Health, with a focus on understanding maternal-fetal interactions and immune modulation during implantation and reproductive failure. My interest is also focused in the development of prenatal gene therapy approaches in the context of the Saudi population, aiming to enhance early intervention strategies for region-specific inherited disorders. In parallel, I bring expertise in the application of nanotechnology for targeted drug delivery, especially within the reproductive system, with the goal of developing novel, translational therapeutics for maternal and fetal health, as well as advancing innovative Assisted Reproductive Technologies (ART).

Ongoing Projects:

- Proteomic Profiling of Placental Responses to Melanin Nanoparticles During Pregnancy
- The Genome Editing Technology Acceptance & awareness in Saudi Arabia
- Conducting ongoing research in the field of women's reproductive health, with a regional focus on reproductive issues relevant to the Saudi population.

Key publications:

- Bakhamis, N., Awoyemi, T., Vatish, M., & Townley, H. (2025). Melanin Nanoparticles as a Safe and Effective Iron Chelation Therapy: An ex vivo Assessment of Placental Transfer in Pregnant Beta-Thalassemia. *International Journal of Nanomedicine*, *20*, 4983–4999. https://doi.org/10.2147/IJN.S494710
- Melanin nanoparticles for safe and effective iron chelation therapy for Beta-thalassemia during pregnancy. Bakhamis, Nahla et al. American Journal of Obstetrics & Gynecology, Volume 226, Issue 1, S54 - S55 (2022)
- Panicos Shangaris, Stavros P Loukogeorgakis, Sindhu Subramaniam, Christina Flouri, Laurence H Jackson, Wei Wang, Michael P Blundell, Shanrun Liu, Simon Eaton, Nahla Bakhamis, Durrgah Latchumi Ramachandra, Panayiotis Maghsoudlou, Luca Urbani, Simon N Waddington, Ayad Eddaoudi, Joy Archer, Michael N Antoniou, Daniel J Stuckey, Manfred Schmidt, Adrian J Thrasher, Thomas M Ryan, Paolo De Coppi, Anna L David. In Utero Gene Therapy (IUGT) Using GLOBE Lentiviral Vector Phenotypically Corrects the Heterozygous Humanised Mouse Model and Its Progress Can Be Monitored Using MRI Techniques. Sci Rep 9, 11592 (2019).

Dr. Raed Farzan

Associate Professor of Medical and Molecular Genetics

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Google Scholar Dr. Raed Farzan

Research Interest:

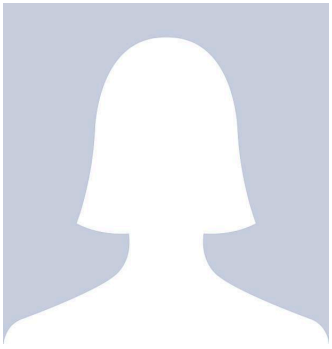
My research interest is about genes that are involved/ susceptible to have a role in cancer. Primarily in colon and breast cancer, as they are quite prominent is Saudi, and to find a clear linkage between certain set of genes and progression of cancers, i.e. if they are acting as a driver mutation or not. I am also using gene editing technology mainly CRISPR to study role of different genes in different cancer cell lines. I've successfully generated edited cell lines such as MCF-7, BT474, SKBR3, and HCT116 for the following set of genes (p53, APOBEC3B, APOBEC3C, APOBEC3H) and conducted sanger seq., RT-PCR, RNAseq and several other approach. I am also actively participated in COVID-19 validation tests for local research to establish alternative rapid test as a point of care testing. We do involve CRISPR in Varity of projects as a sophisticated technique with multiple applications.

Ongoing Projects:

COVID-19 validation tests for local research to establish alternative rapid test as a point of care testing. We do involve CRISPR in Varity of projects as a sophisticated technique with multiple applications

Key publications:

- Manikandan Periyasamy, Anup K. Singh, Carolina Gemma, Christian Kranjec, Raed Farzan, Damien A. Leach, Naveenan Navaratnam, Hajnalka L. Pálinkás, Beata G. Vértessy, Tim R. Fenton, John Doorbar, Frances Fuller-Pace, David W. Meek, R. Charles Coombes, Laki Buluwela, Simak Ali, “p53 controls expression of the DNA deaminase APOBEC3B to limit its potential mutagenic activity in cancer cells.” *Nucleic acids research* vol. 45,19 (2017): 11056-11069. doi:10.1093/nar/gkx721
- Linda Smith, Raed Farzan, Simak Ali, Laki Buluwela, Adrian T. Saurin & David W. Meek “Author Correction: The responses of cancer cells to PLK1 inhibitors reveal a novel protective role for p53 in maintaining centrosome separation.” *Scientific reports* vol. 8,1 5237. 22 Mar. 2018, doi:10.1038/s41598-018-23384-5



Dr. Sahar Alhogail

Assistant Professor of Microbiology

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Research Interest:

Biosensors For detection, microbial infection

Ongoing Projects:

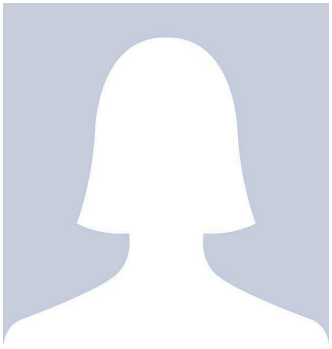
Isothermal Molecular identification

Key publications:

- Rapid and low-cost biosensor for the detection of Staphylococcus aureus

  GARY Suaifan, S Alhogail, M Zourob - Biosensors and Bioelectronics, 2017

- Rapid colorimetric sensing platform for the detection of Listeria monocytogenes foodborne pathogen S Alhogail, GARY Suaifan, M Zourob - Biosensors and Bioelectronics, 2016 – Elsevier
- based magnetic nanoparticle-peptide probe for rapid and quantitative colorimetric detection of Escherichia coli O157: H7 GARY Suaifan, S Alhogail, M Zourob - Biosensors and Bioelectronics, 2017 - Elsevier



Dr.Sana Alqarni

Assistant Professor of Cancer Genetics

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Google Scholar: Dr.Sana Alqarni

Research Interest:

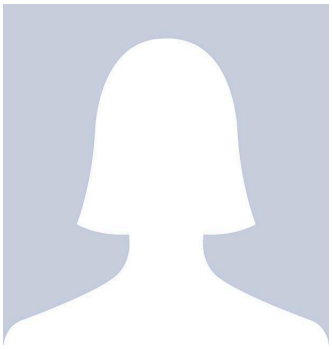
Cancer Molecular Genetics

Ongoing Projects:

Investigating the molecular mechanisms of B cell lymphoma in Saudi Arabia patients, which it contributes to its tumourigenesis. This investigation can help us with a view to new therapeutic approaches for this disease

Key publications:

- Alqarni, S., Al-Sheikh, Y., Campbell, D., Drotar, M., Hannigan, A., Boyle, S., Herzyk, P., Kossenkov, A., Armfield, K. & Jamieson, L. 2018, 'Lymphomas driven by Epstein-Barr virus nuclear antigen-1 (EBNA1) are dependant upon Mdm2', Oncogene, 37(29), pp. 3998- 4012



Dr. Sarah Alharbi

Assistant Professor of Microbiology

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Research Interest:

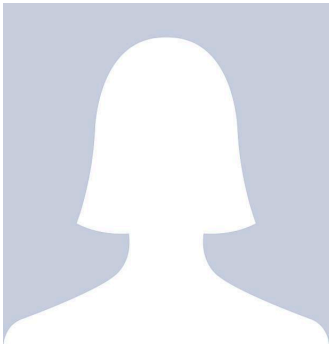
Antimicrobial resistance, Mobile genetic elements , bacterial genomics

Ongoing Projects:

Genomic characterization of carbapenem resistant bacteria, Molecular epidemiology of antibiotic resistant bacteria

Key publications:

- Alharbi, S., Aldawood E., Jamil, N., Alshehri, F., Ashour, M., Elfaky, M. (2024). Mobile Genetic Elements and the Evolution of Microbes. In Sylwia Okoń, Beata Zimowska, & Mahendra Rai (Eds.), Microbial Genetics. Chapter 7. Routledge Taylor & Francis Group.
- Balto, H., Barakat, R., Basudan, S., fakeeha, G., Alharbi, S. R. & Almohareb, R. 2024. Antibiofilm efficacy of a calcium silicate-based intracanal medicament against fusobacterium nucleatum strains. *Scientific reports,* 14**,** 26679.
- Fakeeha, G., Alharbi, S., Auda, S. & Balto, H. 2025. The impact of silver nanoparticles' size on biofilm eradication. *International dental journal,* 75**,** 1213-1222.



Dr. Sarah Almuhayya

Assistant Professor of Medical Microbiology

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Research Interest:

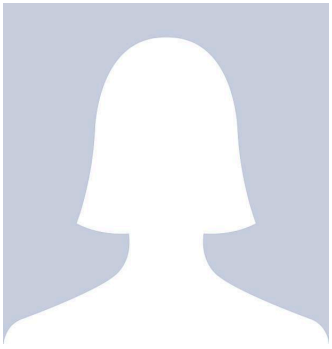
Clinical microbiology and biofilm research.

Ongoing Projects:

Systematic studies on acidic challenges and biofilm formation on CAD/CAM fibre-reinforced resin composites.

Key publications:

- Almuhayya, S., Alshahrani, R., Alsania, R., Albassam, A., Alnemari, H., & Babaier, R. (2025). Biofilm Formation on Three High-Performance Polymeric CAD/CAM Composites: An In Vitro Study. Polymers, 17(5), 676. https://doi.org/10.3390/polym17050676



Dr. Sarah AlOudah

Assistant Professor of Heamatology

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Research Interest:

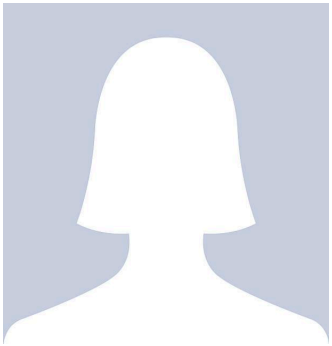
With all the development in the field of antiplatelet pharmaceuticals, limitations in the safety and efficacy of developed agents remain a challenging issue. Due to the working nature of such agents, the risk of developing bleeding ranging from mild to severe bleeds is unavoidable. Such side effects have encouraged continuous search for alternative measures to control platelets. My focus is to employ the basic and modern research technologies to better understand the biology of platelets, its role in haemostasis and thrombosis and lastly, unravel new targets in platelets with possible anti-thrombotic potentials. More importantly, through my passion for research I am hoping to contribute toward building focused academic research groups that invest in attracting undergraduate and postgraduate students in which students are provided with basic research skills and scientific writing to participate in present and future research projects.

Ongoing Projects:

Studying platelet signalling and coagulation in response to synthetic ligands

Key publications:

- Fahad S Alshehri , Abdullah A Bashmeil , Ibrahim A Alamar, Sarah K Alouda. The natural anticoagulant protein S; hemostatic functions and deficiency. Platelets (2024);35(1):2337907
- Abohassan M, Shahrani MMA, Alouda SK, Rajagopalan P. Dibenzo [a, c] phenazin-11-yl(phenyl) methanone (SBLJ23), a novel selective inhibitor targeting JAK2V617F mutation in myeloproliferative neoplasms.Oncol Res. 2025 Feb 28;33(3):675-685.
- AlOuda SK, Sasikumar P, AlThunayan T, Alaajam F, Khan S, Sahli KA, Abohassan MS, Pollitt A, Jung SM, Gibbins JM. Role of heat shock protein 47 in platelet glycoprotein VI dimerization and signaling. Res Pract Thromb Haemost. (2023) Aug 23;7(6):102177.



Dr. Sarah Binhassan

Assistant Professor of Cancer and Genomic Sciences

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Research Interest:

Cancer and Genomic Sciences

Ongoing Projects:

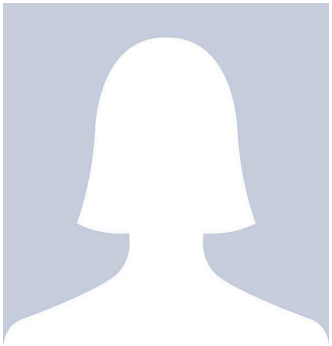
Revisiting the Molecular Landscape of Rosai-Dorfman Disease

High diagnostic yield of low allele burden JAK2V617F detection in myeloproliferative neoplasms

Key publications:

- Alshalani, A., AlSudais, H., Binhassan, S., & Juffermans, N. P. (2024). Sex discrepancies in blood donation: Implications for red blood cell characteristics and transfusion efficacy. Transfusion and apheresis science : official journal of the World Apheresis Association : official journal of the European Society for Haemapheresis, 63(6), 104016. https://doi.org/10.1016/j.transci.2024.104016
- Abudawood, M., Alorini, H., Samman, M. A., Bashir, S. M., AlSwayed, A., Binhassan, S., & Peer-Zada, A. A. (2023). Fatal intracranial haemorrhage in acute promyelocytic leukemia patients with short isoform of PML-RARα: Review of molecular and radiological data. Saudi journal of biological sciences, 30(7), 103710. https://doi.org/10.1016/j.sjbs.2023.103710

- Tabassum, H., Alrashoudi, R. H., Abudawood, M., Fatima, S., Alrashed, M., Ali, M. N., Binhassan, S., Fatima, Y., & AlSheikh, Y. A. (2024). State-of-the-art Investigation on the Role of Indium, Terbium, Yttrium, and Lanthanum in Recurrent Pregnancy Loss. Biological trace element research, 10.1007/s12011-024-04456-2. Advance online publication. https://doi.org/10.1007/s12011-024-04456-2



Dr. Zeina Alkudmani

Assistant Professor of Microbiology

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Research Interest:

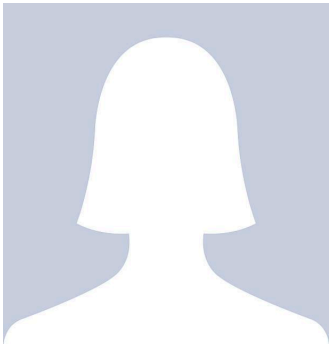
Microbiology and Molecular Genetics.

Ongoing Projects:

Antimicrobial resistance and molecular genetics.

Key publications:

- Molecular effect of variants in toll-like receptor 4 gene in Saudi patients with type 2 diabetes mellitus ZS Alkudmani, AF Alshammary, I Ali Khan - Cells, 2023
- Epidemiological, Microbiological, and Clinical Characteristics of Multi-Resistant Pseudomonas aeruginosa Isolates in King Fahad Medical City, Riyadh, Saudi Arabia SR Alharbi, AS Alyami, ZS Alkudmani… - Tropical Medicine 2023
- Toll-like Receptor 9 Gene in the Development of Type 2 Diabetes Mellitus in the Saudi Arabian Population ZS Alkudmani, AA Alzailai, KH Aburisheh… - Biology, 2023



Ms. Ameenah Alghamdi

Lecturer in Microbiology

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Research Interest:

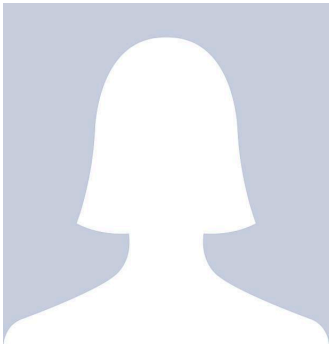
From the very beginning of my career, I loved medical microbiology, and I have taught many microbiology courses. I began my journey into the world of microbiology exploring microbes, infectious diseases, antimicrobials, and drug resistance. As known the abuse of antibiotics in agriculture and healthcare settings has led to a major rise in the incidence and prevalence of antibiotic-resistant microorganisms worldwide, which poses a significant problem for treating patients infected with these multidrug-resistant microbes. Moreover, antimicrobial resistance is a global healthcare issue, especially for vulnerable groups like young, old, and immunocompromised patients. The development of resistance can be broadly classified into three categories intrinsic, acquired, and adaptive resistance. Intrinsic resistance acts by lowering the concentration of the drug inside the cell by extrusion of the drug by efflux pumps. In my PhD project, I focused on bacterial Efflux pumps and their role in drug resistance among infected solid organ transplant recipients. Efflux pumps are proteinaceous transporters localized in the cytoplasmic membrane of all kinds of cells which mediate resistance to many antimicrobials. Efflux pump-mediated antimicrobial resistance in Saudi Arabia should be taken into consideration by the government's current healthcare system to characterize

the efflux pumps and study their role in multidrug resistance to deliver successful antimicrobial therapy in the future.

Ongoing Projects: 1- Aminah Alghamdi, Taghreed Hafiz, Reem Almaghrabi, Ahmed Al-Qahtani, Ehab Hammad, Dalia Obeid, Alwaleed Alaidan, and Fatimah Alhamlan. (2025). Multidrug resistance efflux pump expression in uropathogenic Gram-negative bacteria among organ transplant recipients: A review. JIDC. (accepted for publication but still in copy editing stage).

Key publications:

- Hafiz, T. A., Alghamdi, A. A., Aljameel, N. M., Alsaeed, E. F., & Hassan, A. A. (2018). Efficiency of granulocytes and monocytes in breast cancer patients following radiotherapy in KSA. Biomedical Research, 29(21). doi:10.4066/biomedicalresearch.29-18-1197.



Ms. Aminah Alzailai

Lecturer in Clinical Biochemistry

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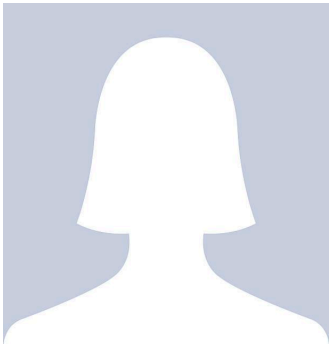
Research Interest:

Medical chemistry, molecular biology, and cancer research

Key publications:

- Abdulla, M. H., Alzailai, A. A., Vaali-Mohammed, M. A., Ahmad, R., Fatima, S., Zubaidi, A., ... & Khan, Z. (2023). The platinum coordination complex inhibits cell invasion-migration and epithelial-to-mesenchymal transition by altering the TGF-β-SMAD pathway in colorectal cancer. Frontiers in Pharmacology, 14, 1178190.2 - Alkudmani, Z. S., Alzailai, A. A., Aburisheh, K. H., Alshammary, A. F., & Ali Khan, I. (2023). Toll-like receptor 9 gene in the development of type 2 diabetes mellitus in the saudi arabian population. Biology, 12(11), 1439.3 - Alenazi, D., Arjumand, S., Alqarni, S., Aljohi, A., Abudawood, M., Alanazi, M., Alzailai, A., & Alkarni, M. (2023). Presence of circulatory autoantibodies against glycated histones in diabetic patient in Saudi Arabia. International Journal Of Community Medicine And Public Health, 10(12), 4527-4534



Ms. Daheeya Alenazi

Lecturer in Clinical Biochemistry

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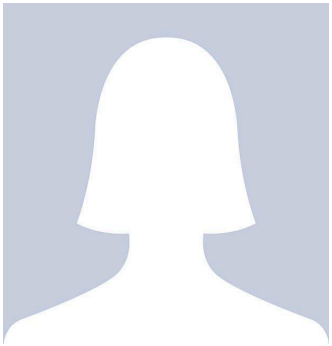
Research Interest:

Clinical Science

Key publications:

- Alenazi, D., Arjumand, S., Alqarni, S., Aljohi, A., Abudawood, M., Alanazi, M., Alanazi, K., Sayeed, S., Alzailai, A., & Alkarni, M. (2023). Presence of circulatory autoantibodies against glycated histones in diabetic patient in Saudi Arabia. International Journal of Community Medicine and Public Health, 10(12), 4527–4534. https://doi.org/10.18203/2394-6040.ijcmph20233548



Ms. Iman Alajeyan

Lecturer in Clinical Biochemistry

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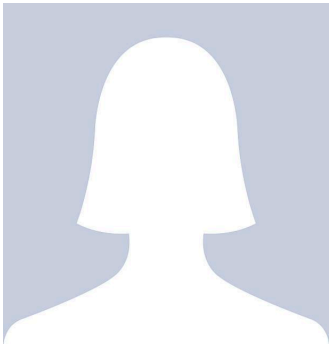
Research Interest:

Ferroptosis is an iron-dependent type of programmed cell death characterized by an excessive build-up of iron-dependent lipid peroxide and reactive oxygen species (ROS). Ferroptosis has become an important field of research as it may be utilized for developing therapies for various diseases by controlling the death process by either inhibiting or activating it.

Key publications:

- IA Alajeyan, J Alsughayyir, MA Alfhili. (2024) Stimulation of Calcium/NOS/CK1α Signaling by Cedrol Triggers Eryptosis and Hemolysis. Yonago Acta Medica
- IA Alajeyan, J Alsughayyir, MA Alfhili. (2025) Zeatin Elicits Premature Erythrocyte Senescence Through Calcium and Oxidative Stress Mediated by the NOS/PKC/CK1α Signaling Axis. Dose Response
- Noura Al- Jameel, Amina Hassan, Rana Hassanato, Seree R. Isac, Maram Alotaibi, Fadwa alshareef, Basma Al-Mareek, Iman Al-Ajeyan, kholoud AlBahloul, Samina Ghani, Dana AlTorbak. (2017) The prevalence of PI*S and PI*Z SERPINA1 alleles in healthy individuals and COPD patients in Saudi Arabia. Medicine



Ms. Mohrah Alalshikh

Lecturer in Immunology

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Research Interest:

My research interests focus on various aspects of transfusion sciences, including transfusion safety and advanced techniques for phenotyping and genotyping red blood cell and platelet antigens. Additionally, I am deeply interested in transplantation science, particularly in areas such as immune responses to allografts, human leukocyte antigen typing methodologies, and hematopoietic stem cell manipulation techniques.

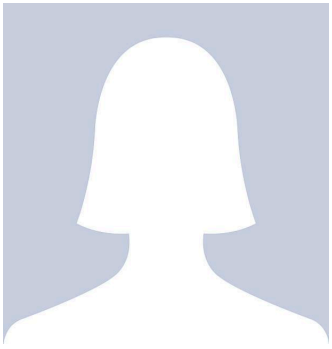
Ongoing Projects:

Transfusion transmitted infections in frequently transfused patients.

Key publications:

- Alalshaikh, M. A., Alsughayir, A. H., Alsaif, A. S., Ababtain, S. A., Aloyouni, S. Y., Aldilaijan, K. E., & Alsubaie, S. F. (2024). Molecular Background of RhD-positive and RhD-negative Phenotypes in a Saudi Population. *Saudi Journal of Medicine & Medical Sciences*, *12*(3), 210-215.
- Alalshaikh, M., Almalki, Y., Hasanato, R., Almomen, A., Alsughayir, A., Alabdullateef, A., ... & Alsuhaibani, O. (2022). Frequency of Rh and K antigens in blood donors in Riyadh. *Hematology, Transfusion and Cell Therapy*, *44*, 555-559.

- Alsughayir, A., Alalshaikh, M., Almaki, Y., Almass, L., Alnamnakani, M., Pukhta, I. A., ... & Albarghash, A. (2022). Acute Transfusion Reactions in a Tertiary Care Hospital: The Saudi Context. *Basic and Applied Sciences*.
- Alsughayyir, J., Almalki, Y., Alalshaik, M., Aljoni, I., Kandel, M., Alfhili, M. A., & Alabdullateef, A. (2022). Demography and blood donation trends in Saudi Arabia: A nationwide retrospective, cross-sectional study. *Saudi Journal of Biological Sciences*, *29*(12), 103450.



Ms. Rawan Alfrayh

Lecturer in Stem cell and blood cancer

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ORCID ID: https://orcid.org/0000-0002-9226-8332

Research Interest:

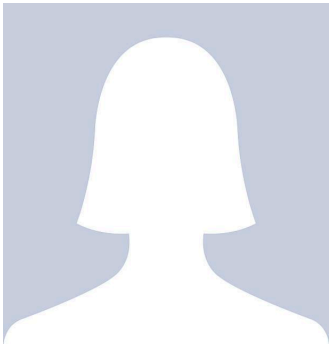
Stem cell and blood cancer

Ongoing Projects:

Targeting serine threonine phosphatase in hematological malignancies

Key publications:

- atima, S., Alfrayh, R., Alrashed, M., Alsobaie, S., Ahmad, R., & Mahmood, A. (2021). Selenium Nanoparticles by Moderating Oxidative Stress Promote Differentiation of Mesenchymal Stem Cells to Osteoblasts. International journal of nanomedicine, 16, 331–343. https://doi.org/10.2147/IJN.S285233



Ms. Sahar Alsubaie

Lecturer in Biochemistry and Molecular Genetics

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Research Interest:

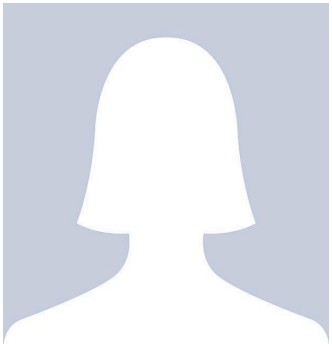
Biochemistry and Molecular Genetics

Ongoing Projects:

Quercetin nanoparticle and its biological efficacy

Key publications:

- El Bitar, F., Al Sudairy, N., Qadi, N., Al Rajeh, S., Alghamdi, F., Al Amari, H., Al Dawsari, G., Alsubaie, S., Al Sudairi, M., Abdulaziz, S. and Al Tassan, N., 2021. A Comprehensive Analysis of Unique and Recurrent Copy Number Variations in Alzheimer's Disease and its Related Disorders. Current Alzheimer Research, 17(10), pp.926- 938. https://pubmed.ncbi.nlm.nih.gov/33256577/
- Alalshaikh, M.A. et al. (2024) 'Molecular background of RHD-positive and RHD-negative phenotypes in a Saudi population', Saudi Journal of Medicine & Medical Sciences, 12(3), pp. 210–215. doi:10.4103/sjmms.sjmms_664_23.



Ms. Ghada Alotaibi

Teaching Assistant

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Research Interest:

My research interest focuses on the intersection between immune disorders and cytokine dysregulation, with an emphasis on the underlying molecular pathways associated with such conditions. Particularly, Heat Shock Protein 70 (HSP70) is known to have a potent immunomodulatory role as it is upregulated in cancer cells, contributing to chemoresistance and maintaining plasma cytokine levels. Modulating HSP70 activity offers a promising avenue for therapeutic intervention in both cytokine-based therapies and anticancer treatments.

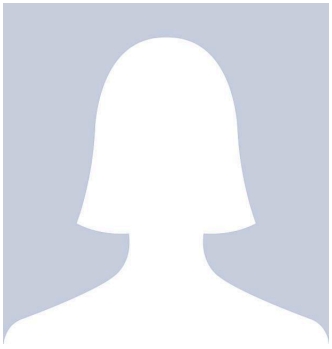
Ongoing Projects:

Elucidating the effect of Heat Shock Protein 70 (HSP70) inhibition on innate immune activation

Key publications:

- Alfhili MA, Alotaibi GA, Alfaifi M, Almoghrabi Y, Alsughayyir J. Association of Platelet-Monocyte Ratio with Dyslipidemia in Saudi Arabia: A Large, Population-Based Study. Life (Basel). 2023 Aug 4;13(8):1685. doi: 10.3390/life13081685.

- Alfhili MA, Alghareeb SA, Alotaibi GA, Alsughayyir J. Galangin Triggers Eryptosis and Hemolysis Through Ca2+ Nucleation and Metabolic Collapse Mediated by PKC/CK1α/COX/p38/Rac1 Signaling Axis. IJMS (Basel). 2024 Nov 15;25(22):12267. doi: 10.3390/ijms252212267.



Ms. Nouf Mutrib

Teaching Assistant

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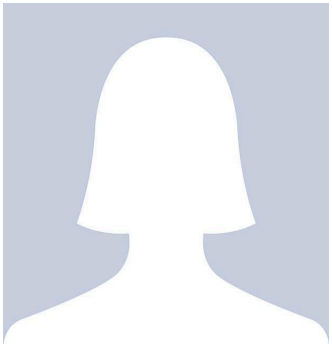
Research Interest:

Germline JAK2 46/1 haplotype has been reported as a predisposition factor to JAK2V617F positive or negative myeloproliferative neoplasms, and also to acute myeloid leukemia with normal karyotype. The C or T allele identified by a single-nucleotide polymorphisms JAK2 rs10974900 and rs12343867, is part of the JAK2 46/1 and have been associated with disease susceptibility and poor survival regardless of JAK2V617F status



Ms. Hajera Shareef

Researcher

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Research Interest:

Exploring Clinical Biomarkers, heavy metal toxicity and nanotechnology with special interest in women's reproductive health and other chronic diseases. Has published around 50 research articles in International journals indexed in Web of Science (Science Citation Index Expanded).

Ongoing Projects:

- Rare earth elements and oxidative stress induced metal intoxication in females with PCOS and Recurrent miscarriage.
- Vitamin D as a neuroprotective modulator in the CUMS rat model.
- Salivary E -Cadherin as non-invasive biomarker in diagnosis of Diabetes.
- Biological activity of green synthesized nanoparticles.

Key Publications

- Tabassum, H., Alrashoudi, R.H., Abudawood, M. et al. State-of-the-art Investigation on the Role of Indium, Terbium, Yttrium, and Lanthanum in Recurrent Pregnancy Loss. Biol Trace Elem Res (2024).

- Abudawood, M.; Alnuaim,L.; Tabassum, H.; Ghneim, H.K.;Alfhili, M.A.; Alanazi, S.T.; Alenzi,N.D.; Alsobaie, S. An Insight into the Impact of Serum Tellurium, Thallium, Osmium and Antimony on the Antioxidant/Redox Status of PCOS Patients: A Comprehensive Study. Int. J. Mol. Sci. 2023, 24, 2596. https://doi.org/10.3390/ijms24032596.
  https://doi.org/10.1007/s12011-024-04456-2 2.
- Reem Hamoud Alrashoudi, Hajera Tabassum, Sabiha Fatima, Manal Abudawood, May Alrashed, Nikkat J.Siddiqi, Sara Mohammed Alsaigh, Yazeed A. AlSheikh.
- Deciphering the link: A Cutting-Edge Exploration of the Intriguing Connection Between Recurrent Pregnancy Loss and Rare Earth Elements—Lutetium, Praseodymium, Samarium, Dysprosium, and Cerium. International Journal of Gynecology and Obstetrics; Published online Oct 29;2024 doi: 10.1002/ijgo.15995 3.

Research Facilities

1. **Molecular Research**

   Microbiology Research Lab.pdf

2. **Microbiology Research**

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3. **Electron Microscopy**

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4. **Biochemistry**

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5. **Pathology**

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6. **Hematology**

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7. **Microbiology**

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8. **Cytogenetics and IVF**

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Research Committee members 2025

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Dr. Aysha Mateen

Dr. Hala Aldahshan

Dr. Jawaher Alsughayyir

Dr. Sabah Ansar

Dr. Sarah AlHarbi

Dr. Sarah almuhayya

Dr. Sarah bin Hassan

Ms. Iman Alajeyan

Ms. Hajera Shareef

Acknowledgment

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Our sincere thanks go to the **Research Committee members** for their diligent efforts in compiling and organizing this publication, and to the **Laboratory & Safety Committee** and **Ms. Samah Alamri** for their continued support in upholding research integrity and safety standards.

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