سدرة للطب
Sidra Medicine

2024 ANNUAL REPORT

SIDRA MEDICINE RESEARCH

SIDRA MEDICINE RESEARCH ANNUAL REPORT 2024

TABLE OF CONTENTS

WELCOME NOTE BY CRO

Prof. Khalid A. Fakhro
Chief Research Officer

As we reflect on the past year, we take immense pride in the transformative strides made in research and innovation at Sidra Medicine. Our commitment to advancing translational research promises to position Qatar as a global leader in research-guided care for women and children. In fact, precision medicine can only reach its true potential when patients become the center of everything we do — whether it's using WGS to end a diagnostic odyssey, or a novel gene therapy to cure someone — and every patient's journey is enriched through research.

Amongst all achievements you will find in the 2024 Annual Report, several stand out. First, the Research Branch underwent a thorough strategy refresh, paving the way for a new Research Strategic Plan for 2025-30. This process not only helped us map current areas of strength, but also identify key priorities for the future. These include doubling down on our investment in genomics as a key diagnostic and preventative screening technology, commiting to building clinical research and trials capacity for rare and orphan diseases, and expanding our scope to embark on implementation and health services research – the latter promising to transform Sidra Medicine into the region's leading academic learning health system.

An important aspect to executing on the new strategy is developing an ecosystem that supports innovation and encourages capacity building. In terms of scientific productivity, our commitment to rigorous, high-qualithy discovery remains as high as ever. In 2024, our scientists published 97 papers (mean IF – 8.7), were awarded 6.7 M QAR of grants, mentored 69 Masters and PhD students, and hosted 12 visiting scientists and externs across their labs. In terms of support for clinical activities, our core facilities have been intimately involved in launching clinical grade sequencing, long-read sequencing, cord blood banking and, most recently, supporting a pioneering BMT program at Sidra. These efforts not only demonstrate our world-class capabilities, but for the first time provide local options for services which used to require families travel thousands of miles for treatment.

Finally, we are very proud of our efforts in thought leadership, as our faculty are internationally recognized in their fields, and our exceptional conferences and workshops, and training programs are very well-attended. In 2024, we successfully launched Sidra's Science Café, which promises to improve public engagement and undersanding of science, and has the power to inspire the next generation of scientists.

In conclusion, as we embark on the next phase of our journey, we remain committed to excellence, collaboration, and impact-driven science. We extend our heartfelt gratitude to our trainees, researchers, clinicians, and partners who have played a vital role in driving our vision forward, and to hospital leadership for their exceptional support of Sidra's academic mission to improve patient lives. Together, we will continue to push the boundaries of science and medicine, and bring the cutting-edge of research-driven healthcare to our patients and their families.

LEADERSHIP STRUCTURE

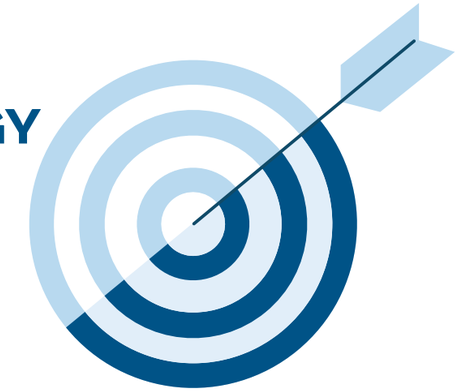
Prof. Khalid Fakhro
Chief Research Officer

Dr. Sonia Davila
Executive Director - Translational Medicine

Muhammad Hameed
Executive Director - Research Core Facilities

Dr. Marla Beerens
Executive Director - Research Operations

OUR MISSION AND STRATEGY



Operating Model

To achieve its potential, Research at Sidra Medicine encompasses four complementary streams – diagnostic, therapeutic, and implementation – which together combine to achieve an operating model in line with leading ALHS worldwide, as follows:

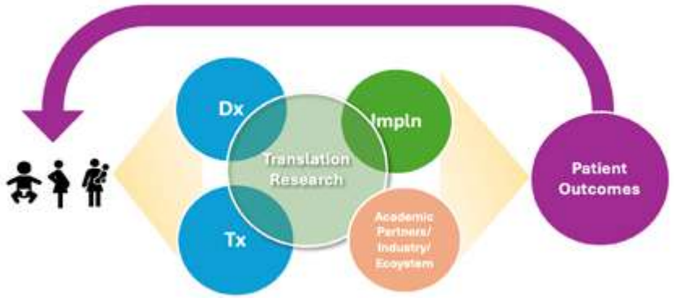
Precision Diagnostics (Dx) – Discovering why patients get sick through advanced diagnostics & screening.

Personalized Therapies (Tx) – Improving patient outcomes through bedside research and clinicial trials.

Implementation Research (Ix) – Measuring impact on health services and quality improvement of Dx and Tx above.

World-class Ecosystem (Ex) – Positioning SM as regional leader for alliances/partnerships and biomedical talent.

Virtuous Cycle of Precision Medicine



These priorities and implementation are underpinned by a strong culture of innovation, and recognition of our intellectual property and technical know - how.

Our Strategic Priorities for 2024-2029

- Understand the mechanistic basis of rare and complex diseases and develop preventive screening.
- Improve patient outcomes through clinical research and advanced therapies.
- Enhance the effectiveness and experience of patient care.
- Create a world-class translational research environment attracting global talent and industry and academic partnerships.

Our Mission

We deliver leading clinical and translational research of value to our patients, the State of Qatar and the world.

Our Goal

Women and children living with rare and complex diseases in Qatar and travelling to Qatar achieve improved health outcomes aided by cutting-edge translational research and genome-informed patient care.

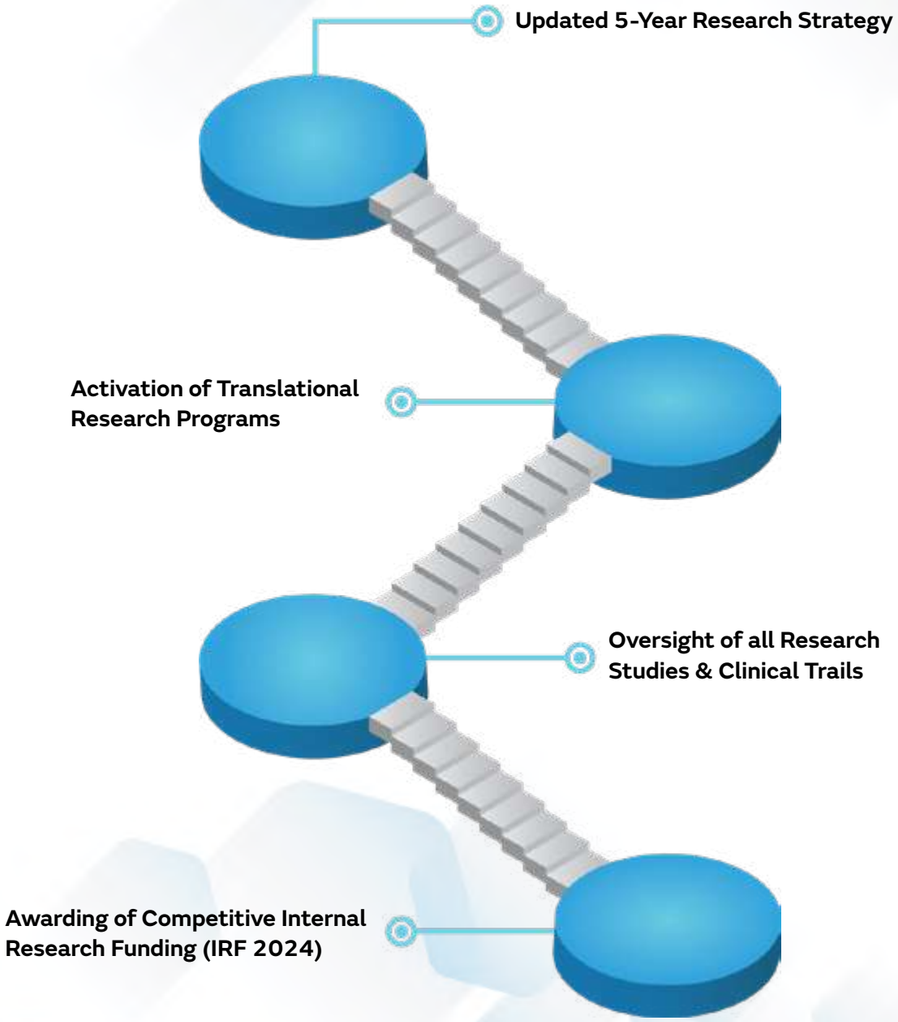
Our Values

Trust, Transparency, Teamwork, Care, Innovation and Efficiency.

INTERNAL RESEARCH COUNCIL

The Internal Research Council (IRC) at Sidra Medicine serves as the key governance body responsible for overseeing the institution's research roadmap. Its primary objective is to ensure that our research remains internationally competitive while adhering to necessary governance and assurance frameworks that support effective functioning and delivery of the roadmap. Through strategic planning, rigorous oversight, and fostering collaborative efforts, the IRC has worked to align research initiatives with organizational priorities.

Achievements and Activities



Impact and Contributions The IRC's efforts have laid a robust foundation for advancing clinical research at Sidra Medicine. By establishing clear guidelines, activating key programs, and fostering collaboration across disciplines, the Council has enhanced the alignment of research initiatives with our strategic goals, improved the clarity and focus of clinical research programs through the adoption of SMART Goals, and ensured that research efforts remain competitive on an international scale while adhering to governance frameworks. The IRC has made substantial strides in advancing Sidra Medicine's research mission through meticulous planning, collaboration, and oversight. The initiatives undertaken this year position Sidra Medicine to achieve transformative breakthroughs in healthcare and reinforce its reputation as a leader in clinical research. The Council remains dedicated to fostering innovation and excellence in research in the coming years.

Internal Research Council Membership List

Prof. Khalid Fakhro
Chief Research Officer
Chairperson

Dr. Ibrahim Janahi
Division Chief, Pulmonology
Senior Clinician Scientist
Vice Chairperson

Muhammad Ali Hameed
Executive Director, Research Core Facilities
Senior Research Scientist
Member

Dr. Sonia Davila
Executive Director, Translational Medicine
Senior Research Scientist
Member

Dr. Mamoun Elawad
Division Chief, Gastroenterology
Senior Clinician Scientist
Member

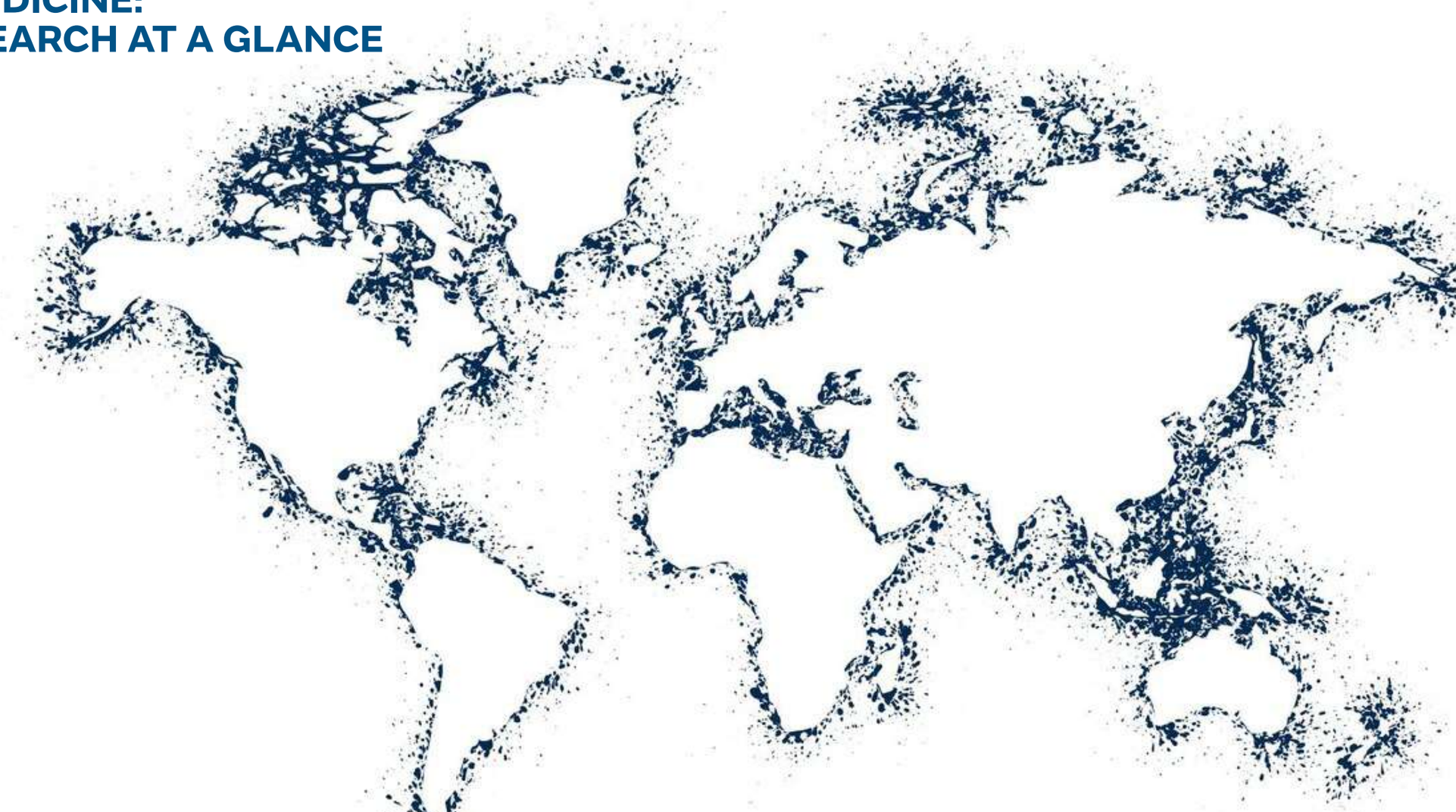
Dr. Chiara Cugno
Director, Advance Cell Therapy Core
Senior Research Scientist
Member

Dr. Sandra Holmes
Director, Nursing Education
Prof Practice & Standards, Nursing
Member

Dr. Johnny Awwad
Division Chief, Reproductive Medicine
Senior Clinician Scientist
Member

Dr. Tariq Abbas
Senior Attending Physician, Urology
Senior Clinician Scientist
Member

SIDRA MEDICINE:
OUR RESEARCH AT A GLANCE



37 Nationalities at Sidra Medicine Research

- Algeria
- Australia
- Azerbaijan
- Bahrain
- Bangladesh
- Belgium
- Canada
- China
- Egypt
- France
- Germany
- India
- Indonesia
- Iran
- Iraq
- Italy
- Jordan
- Lebanon
- Netherlands
- New Zealand
- Oman
- Pakistan
- Palestine
- Philippines
- Portugal
- Qatar
- Saudi Arabia
- Somalia
- Spain
- Sudan
- Syria
- Tunisia
- Turkey
- UK
- Ukraine
- USA
- Yemen

206 Total Staff

17% Qatarization

143 Female

63 Male

18	5	47	106	30

- Research Operations Team
- Office Management Team
- Researchers in Core Facilities
- Researchers in Translational Medicine
- Grant Funded

COLLABORATIONS

74 Total collaborations
36 International collaborations
38 Local collaborations

International Collaborations

Belgium
Jordan
South Korea
China
Netherlands
Sweden
France
New Zealand
Turkey
Germany
Pakistan
United Kingdom
Italy
Saudi Arabia
United States

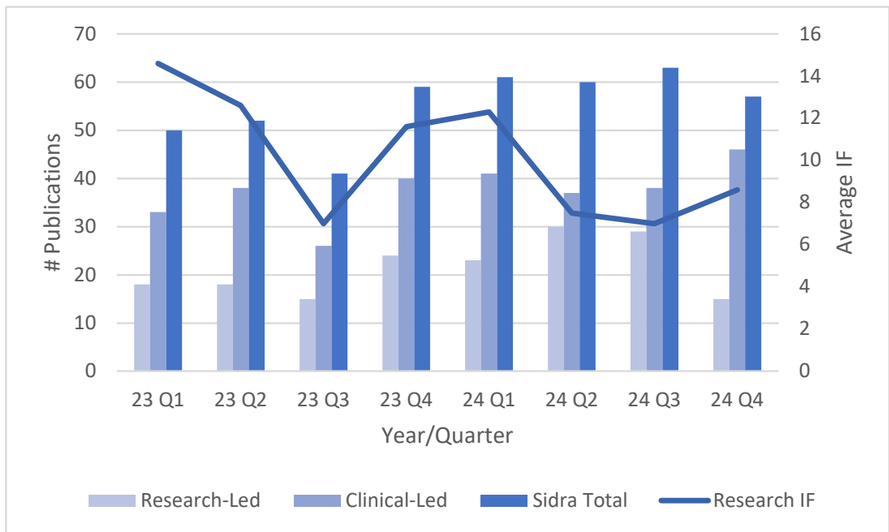
Local Collaborations

Hamad Medical Corporation (HMC)
Texas A&M University - Qatar
Qatar Research Development and Innovation Council (QRDI)
Qatar University (QU)
Hamad Bin Khalifa University (HBKU)
Qatar Museums (IN-Q)
Weill Cornell Medicine -Qatar (WCM-Q)
Qatar Bio Bank (QBB)
The Cultural Village Foundation -Katara
University of Doha and Science and Technology (UDST)
Qatar Cancer Society (QCS)

PUBLICATIONS

58% — Research papers in top 15% of journals worldwide (IF>4.5)
12% — Research papers in the top 2% of journals worldwide (IF>12.8)
8.7 — Mean impact factor for Research Branch publications
26.4 — Research Branch Investigator average H-Index
57% — Research studies have a clinical lead/coinvestigator
97 — Research Branch papers published
259 — Affiliated peer-reviewed scientific papers published

Sidra Medicine Publications 2023-2024



RESEARCH DIVISIONS










SCIENTIFIC DIVISIONS

Dr. Sonia Davila joined Sidra Medicine in December 2023 as Executive Director - Translational Medicine. She completed her undergraduate and graduate studies in Spain. Upon graduation she moved to Yale University and in 2004 Sonia joined the Genome Institute of Singapore as a postdoctoral fellow on nephrogenomics. She was rapidly promoted to Research Scientist and to Principal Investigator. Her work focused on human genetic susceptibility to infectious diseases. In 2016 she started working at SingHealth-Duke NUS AMC and was Deputy Director of Precision Medicine (PRISM) and Director of Research at their Genomic Medicine Centre.

Dr. Sonia Davila
Executive Director - Translational Medicine

TRANSLATIONAL MEDICINE

The Translational Medicine department plays a vital role in advancing Sidra Medicine Research's vision, paving the way for Sidra Medicine to become a premier academic medical center and a leading destination for patients seeking cutting-edge medical care in the region. The translational medicine department is dedicated to the development and implementation of precision medicine approaches aiming to deliver accurate molecular diagnosis that guide effective therapeutic decisions for our patients.

Sidra Medicine's commitment to innovation in precision medicine is reflected in the work of its research groups, which leverage high-throughput profiling technologies. The Translational Medicine department at Sidra Medicine is a cornerstone of the institution's research strategy. Through its focus on precision medicine, innovative research, and global collaboration, it is poised to make significant contributions to the field of medicine and improve patient outcomes.

Ammira Al-Shabeeb Akil, PhD

Laboratory of Precision OMICs Research and Translational Medicine (PORT Lab)

Bio:

Dr. Akil holds a leadership role at Sidra Medicine's Metabolic and Mendelian Clinical Genomic Research Program and serves as Lead Principal Investigator for the Precision OMICs Research & Translational Science initiative in Doha, Qatar. She partakes in extensive contributions to clinical genomic research, particularly in rare and complex metabolic diseases. Dr. Akil secured over $7M in research funding from prestigious national and international organizations, strengthened Sidra Medicine's partnerships with the biotechnology and pharmaceutical industries, and made significant contributions to capacity building by training and mentoring hundreds of externs, equipping the next generation of researchers and clinicians with cutting-edge expertise in genomic medicine. She is an active member of several prestigious organizations, including the American Diabetes Association, ISPAD, IDS, EASD, and INNODIA.

Lab Interest:

Dr. Akil's research focuses on advancing the integration of genomic technologies into precision medicine, particularly in newborn screening, metabolic, and Mendelian disorders. A key element of her work involves discovering innovative research ideas and transforming them into successful funding applications and translational research. Dr. Akil's lab collaborates actively with leading scientists and global partners to explore novel genomic and multi-omics solutions to ensure that our research remains at the forefront of scientific discovery while also addressing critical health challenges. The Akil lab interests extend to population-based multi-omics research, integrating genomic, transcriptomic, proteomic, and metabolomic data to unravel complex biological mechanisms underlying human diseases. Additionally, they focus on leveraging genetic and polygenic risk scores for predictive diagnostics, particularly in type 1 and type 2 diabetes.

Ajaz Ahmad Bhat, Reem Al-Karbi, Ammira Akil, Sura Ahmed Hussein, Ikhlak Ahmed.

Annalisa Terranegra, PhD

Laboratory of Precision Nutrition

Bio:

Dr. Terranegra is the Principal Investigator of the Laboratory of Precision Nutrition. She currently covers the position of adjunct Assistant Professor, since 2015, in the college of Health and Life Sciences at Hamad bin Khalifa University, Qatar and adjunct Assistant Professor, since 2018, in the College of Health Sciences at Qatar University, Qatar. Annalisa achieved strong experience in molecular biology and genetics during her career at the University of Milan, Italy. Before joining Sidra Medicine in 2014, Dr. Terranegra covered a consultant position in genetics at San Raffaele Hospital, Milan, Italy and a research fellow position in nutrition at San Paolo Hospital. Dr. Terranegra also has extensive teaching experience as an Assistant Professor and Lecturer at University of Milan, Italy.

Lab Interest:

The Laboratory of Precision Nutrition (PreNutri Lab) at Sidra Medicine focuses on characterizing the mechanisms underlying the role of food and nutrients in the development and the management of pregnancy complications, infertility, and pediatric non-communicable diseases. The PreNutri lab research projects focus on understanding the effect of diet on gut microbiota and epigenetic mechanisms, as well as diet interaction with the genomic background, using the most advanced technologies, such as bacterial 16S rRNA-sequencing, DNA-methylation arrays, DNA genotyping and nutritional assessment. Thanks to local and international collaborations, the PreNutri lab is currently running many studies on female reproductive health, perturbation of the mother-baby axis during the pregnancy and early baby life, pediatric type 1 diabetes, adult and pediatric obesity, cardiovascular diseases, inflammatory bowel diseases, and nephrotic syndrome.

Salma Hayder, Shalima Lathief, Arun Lakshmanan, Annalisa Terranegra, Ayaaz Ahmed, Fatima Mohamad, Dena Al Dasooqi, Surya Devarajan.

Bernice Lo, PhD

Laboratory of Immunoregulation

Bio:

Dr. Bernice Lo is the Principal Investigator of the Laboratory of Immunoregulation. She is also a Joint Assistant Professor at HBKU. Bernice has contributed to the discovery, diagnosis, and molecular understanding of inherited autoimmune disorders. Bernice performed her post-doctoral training under the leadership of Dr. Michael Lenardo in the Laboratory of Immunology at the National Institutes of Health in the US. She is trained in cell and molecular biology and genomic approaches for genetic diagnosis. During her fellowship, she helped discover and understand the etiology of two new diseases of immune dysregulation. She received her Ph.D. in Cell Biology at Duke University under the mentorship of Dr. Jo Rae Wright, where she began her appreciation for the immune system and the critical role of immune tolerance and regulation.

Lab Interest:

The research focus of Dr. Lo's laboratory is on understanding the molecular mechanisms of immune regulation and tolerance. Her approach includes identifying the genetic basis of disease in patients with immune dysregulation and autoimmunity with the ultimate goal of elucidating the molecular pathways involved and, therefore, revealing new therapeutic targets for disease treatment or novel drugs for immunomodulation. Dr. Lo's lab specializes in using cellular and biochemical techniques to uncover the role of newly discovered gene mutations in causing disease and in understanding the function of these genes in immune regulation. Her research interests also include identifying modifier genes and elucidating their functional role in immunologic disorders with incomplete penetrance. She is also interested in developing methods for disease diagnosis or evaluating treatment efficacy by assessing immune biomarkers.

Katherine Whitmore, Yasmin El Bsat, Bernice Lo, Jonamae Dioso, Rafah Mackeh, Ameera Sadoun, Abdulrahman Ahmed Al Subaiey, Asha Elmi, Satanay Zuhair, Maryiam Osman.

Essam M. Abdelalim, PhD

Laboratory of Pluripotent Stem Cell Disease Modeling

Bio:

Dr. Abdelalim is a Principal Investigator at Sidra Medicine, leading the Laboratory of Pluripotent Stem Cell Disease Modeling. He earned his PhD in Medical Science from Shiga University of Medical Science in Japan then became Assistant Professor there. Before joining Sidra Medicine, he held the position of Senior Scientist at QBRI until February 2024. Notably, he established Qatar's first pluripotent stem cell program focused to diabetes research. Dr. Abdelalim also serves on the editorial boards and has authored over 75 peer-reviewed articles, received numerous research grants and honors for his contributions to the field. Dr. Abdelalim also holds a joint appointment as Associate Professor at HBKU, where he teaches Stem Cell Biology and mentors graduate students.

Lab Interest:

Our laboratory is dedicated to unraveling the intricate disease mechanisms underlying diabetes and rare genetic disorders using human pluripotent stem cells (hPSCs). Leveraging iPSC technology alongside state-of-the-art gene editing and omics approaches, we strive to dissect the molecular intricacies of these diseases. By collaborating closely with clinicians at Sidra Medicine, we have unique access to patients presenting specific mutations or variants implicated in these conditions. Our multidisciplinary approach enables a deeper understanding of the molecular drivers behind these conditions. Ultimately, our research endeavors focus on identifying novel therapeutic targets, facilitating the development of precision treatments tailored to meet individual patient needs and making significant contributions to the field of personalized healthcare and regenerative medicine.

AlDana Alnesf, Essam Mohamed, Yusra Manzoor, Noura Aldous, Ahmed Kamel, Karim Esmat, Idil Ibrahim, Nafisa Fadulelmula, Simona Semaan, Tara Fathi, Hafsa Madni.

Khalid A. Fakhro PhD

Laboratory of Human Genetics and Genomics

Bio:

Prof. Khalid Fakhro is the Chief of Research and Chair of the Precision Medicine Program at Sidra Medicine, the largest tertiary care women and children hospital in Qatar. In addition to research and hospital duties, Prof. Fakhro serves multiple leadership roles in Qatar's growing biomedical ecosystem, including as a Board Member of the Qatar Precision Medicine Institute and Adjunct Professor at both Weill-Cornell Medical College and Hamad Bin Khalifa University, where he teaches and supervises Master's and Ph.D. students in genomics and precision medicine.

Lab Interest:

Prof. Fakhro leads the Laboratory of Human Genetics and Genomics, which focuses on bringing emerging genomic technologies from the lab close to the patient's bedside. Over the past decade, his group has sequenced thousands of genomes from patients and volunteers across the Middle East, leading gene discovery efforts for a wide range of rare disorders, as well as publishing landmark studies on population structure, genome structural variation, and the role of Islamic ethics in genome research. To date, his lab has been awarded competitive grants exceeding $8m to study genome structure and the genetic etiology of rare diseases and Autism, and their discoveries have featured in high-impact journals worldwide. Our laboratory is interested in interpreting the human genome (the instruction book of life).

Shima Salim, Amal Ibrahim, Khalid Fakhro, Rulan Shaath, Alya Al Kurbi, Geethanjali, Najeeb Syed, Waleed Aamer, Aljazi Al-Maraghi, Elbay Aliyev.

Luis R. Saraiva, PhD

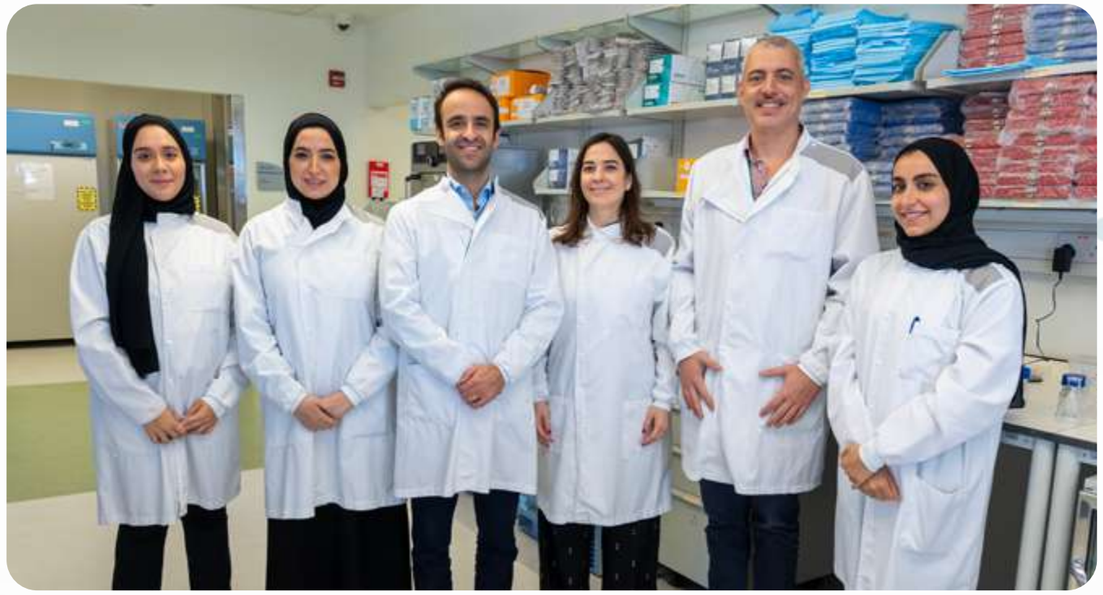
Laboratory of Disease Modeling and Therapeutics

Bio:

Dr. Luis join Sidra Medicine in 2015 and currently is the Principal Investigator leading the Human Disease Modeling and Therapeutics Laboratory and the Congenital Malformations Clinical Research Program. Luis' academic journey took him to Harvard Medical School as a visiting scientist, funded by the Boehringer Ingelheim Fonds, followed by his first postdoctoral appointment at the Fred Hutchinson Cancer Research Center (USA). He served as Adjunct Faculty at the Monell Chemical Senses Center (USA) from 2016-2023, has been a Joint Professor at Hamad bin Khalifa University (Qatar) since 2018, and an Associate Professor Adjunct at Yale University (USA) since 2024.

Lab Interest:

Our laboratory develops and deploys biological assays to understand how specific genetic variants can cause the dysregulation of specific molecular mechanisms leading to disease. We collaborate with clinicians and leverage cell and animal models to apply an integrative strategy combining molecular biology, genetics, behavior, and omics techniques. Ultimately, we aim to advance fundamental science and translate our findings into new diagnostic and treatment options for patients suffering from rare genetic diseases. We also play a pivotal role in the implementation and advancement of the Congenital Malformations in Clinical Research Program at Sidra Medicine. Our efforts support clinical colleagues in gathering and analyzing patient cohorts with a diverse range of congenital malformations, with a particular focus on hypospadias, spina bifida, orofacial clefts, and congenital heart disease.



Reem Hasnah, Kholoud Al Shafai, Luis Saraiva, Melanie Makhlouf, Diogo Manoel, Asma Al Naama.

Matteo A Avella, Ph.D

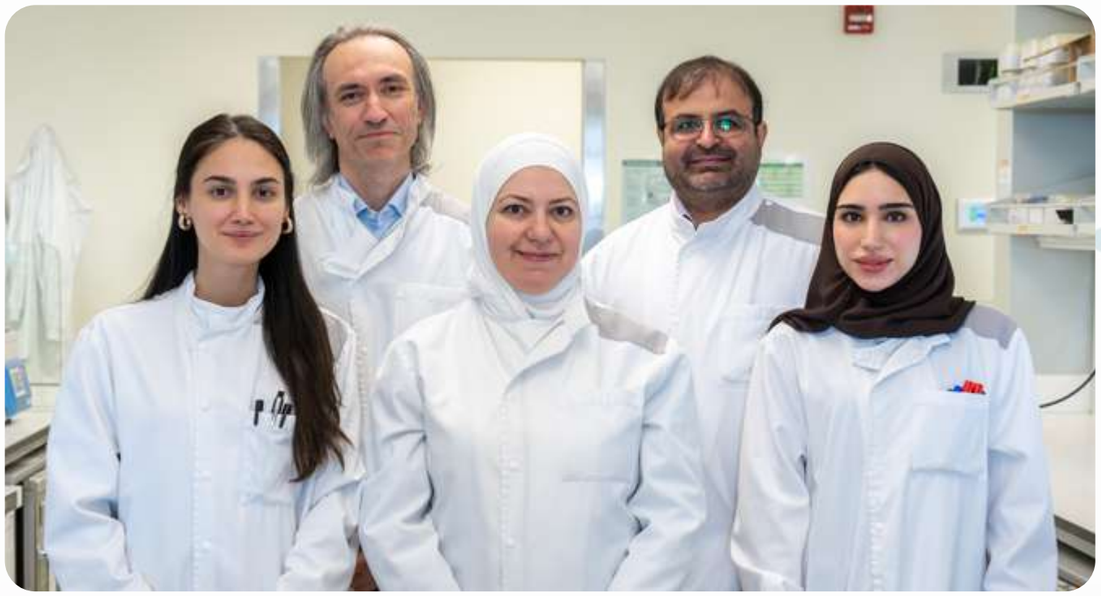
Laboratory of Reproductive Biology

Bio:

Dr. Matteo Avella is a Principal Investigator in the Division of Maternal and Child Health at Sidra Medicine and is head of the Lab of Reproductive Biology. Prior to joining Sidra Medicine, Dr. Avella was an Assistant Professor in the Department of Biological Science at the University of Tulsa, USA and the School of Health Professions at Eastern Virginia Medical School (Norfolk, VA, USA). Dr. Avella completed his Ph.D. at the Polytechnic University of Marche (Ancona, Italy), studying the intestinal microbiota's effects on fish's early development and reproduction. Before his first academic appointment at the University of Tulsa, Dr. Avella received training as a human embryologist at Shady Grove Fertility (Chesterbrook, PA, USA).

Lab Interest:

Dr. Avella's lab investigates the mechanisms regulating gamete interactions, fertilization, and early embryonic development. A series of carefully orchestrated molecular events ensures monospermic fertilization, essential for successful embryonic development and a healthy pregnancy outcome. In collaboration with the Division of Genetics and the IVF program, we use next-generation sequencing to identify novel genes or variants in infertile patients from the Qatari population. In our lab, we use different model systems (e.g., zebrafish, mouse, and cell lines) to functionally characterize such variants or genes. In addition, we translate our discoveries to establish novel assays for assisted reproductive technologies. A precise characterization of the mechanisms regulating reproduction is instrumental in providing targeted fertility treatments to people requiring assisted reproductive technologies in Qatar.



Suma Garibova, Manar Mahmoud, Maha Abdulla, Matteo Alessandro Avella, Shoaib Nawaz.

Souhaila Al Khodor, PhD

Laboratory of Microbiome and Biomarkers Discovery

Bio:

Dr. Al Khodor is Principal Investigator of the Laboratory of Microbiome and Biomarkers Discovery. She is an adjunct Faculty at the College of Health & Life Sciences in Hamad Bin Khalifa University. Souhaila has over 77 peer-reviewed publications. She currently serves as the Section Editor for Metagenomics in the Journal of Translational Medicine and a speciality chief editor at Frontiers journal. Souhaila received her second master's degree and PhD in Microbiology and Immunology from the University of Louisville, Louisville, KY, USA. Before joining Sidra Medicine, Dr. Al Khodor worked as a postdoctoral fellow in the Signaling systems Unit, laboratory of Systems Biology, at the National Institute of Allergy and infectious Diseases (NIAID), National Institutes of Health (NIH) in Maryland, USA.

Lab Interest:

Dr. Al Khodor's laboratory at Sidra Medicine focuses on using multi-omics (metagenomics, transcriptomics, proteomics) and computational biology aiming to understand the molecular mechanisms underlying various diseases. Her primary goal is to identify early biomarkers for disease prediction. With a special focus on pregnancy complications (mainly preterm birth and Gestational Diabetes Mellitus) and complex pediatric disorders such as Inflammatory Bowel Disease, her research at Sidra Medicine has attracted around 17 million QAR in external funds. Al Khodor's lab uses omics and computational biology aiming to understand the role of the microbiome and the complex microbial-immune cross-talks in pregnancy and chronic diseases.

Parul Singh, Samar Yahiya, Souhaila Al Khodor, Daliya Abubakar, Marwa Saadaoui, Duaa Ahmed, Ghada Yousif, Mohamed Nadhir, Manoj Kumar, Selvasankar Murugesan.

Wouter R.L. Hendrickx, PhD

Laboratory of Tumor Biology
and Immunology

Bio:

Dr. Wouter Hendrickx is an investigator in Population Genomic Medicine Division of the Research Branch and member of the Cancer Program at Sidra Medicine. He Leads the Tumor Biology and Immunology Laboratory and has experience in stem cell and cancer research at the universities of Brussels (VUB), Leuven (KUL) and Norwich (UEA) where he gained a PhD in Medical Science. He has experience with classic molecular biology techniques as well as advanced 3D cell culture and proteomics technology. At Sidra Medicine he has focused since 2014 on the tumor immune micro environment deploying bio-informatic tools to analyze tumors for immune related signatures and other determinants of the immune phenotype and translating the findings to the wet lab environment.

Lab Interest:

We investigate the immunogenetic profile of colon cancer patients as Part of a JSREP funded grant. This is the first study of its kind in Qatar that enabled us to establish a Next Generation Sequencing (NGS) cancer cohort locally. In addition, we are involved in several international collaborations focusing on the therapeutic manipulation of the tumor immune microenvironment and the genomic determinations of these interventions. Following up on the genetic profiling of cancer samples, our wet lab research extends to functional omics to unravel the mechanistic basis of the NGS findings. For this purpose, we employ various methodologies, including 3D in vitro modeling and single cell analyses.

Rania Alanany, Shimaa Mohammed, Ayesha Jabeen, Wouter Hendrickx, Apryl Sanchez, Eiman Ahmed, Yara Elzeini, Christophe Raynaud.

Younes Mokrab, PhD

Laboratory of Medical
and Population Genomics

Bio:

Dr. Younes Mokrab is principal investigator and head of Medical and Population Genomics Lab, Sidra Medicine. He joined in 2015 from Eli Lilly, where he led computational genomics research at the Neurogenetics Discovery Unit. Dr Mokrab obtained a PhD in Bioinformatics from Prof. Tom Blundell lab, University of Cambridge, UK (2007). Upon joining Sidra Medicine, Dr Mokrab helped establish research programs in population and medical genetics and is a co-founding member of the Qatar Genome Program Research Consortium. Also, he co-chaired conferences including Sidra Medicine Functional Genomics and CUDOS and holds academic appointments at WCM-Q and HBKU. Dr Mokrab is a co-author of > 45 publications in top tier including Nature and Cell journals and is the recipient of multiple awards and external grants (> 9.1 m QAR).

Lab Interest:

Dr. Mokrab's lab uses advanced wet and dry lab methods to study large-scale genomic and health records including EHR and Imaging to explore fine-scale population structure, its impact on disease risk, and the genetic architecture of both rare and complex diseases. His lab has a particular interest in Middle Eastern populations where high level of parental relatedness (consanguinity) is common, notably from Qatar and Arabia. In this regard, he has been working closely with the Qatar Genome Program, Genomics England, TCGA and other international consortia. Furthermore, he is leading a national effort to unravel the genetic architecture of rare neurodevelopmental disorders including epilepsy and the establishment of a national registry and disease cohort.

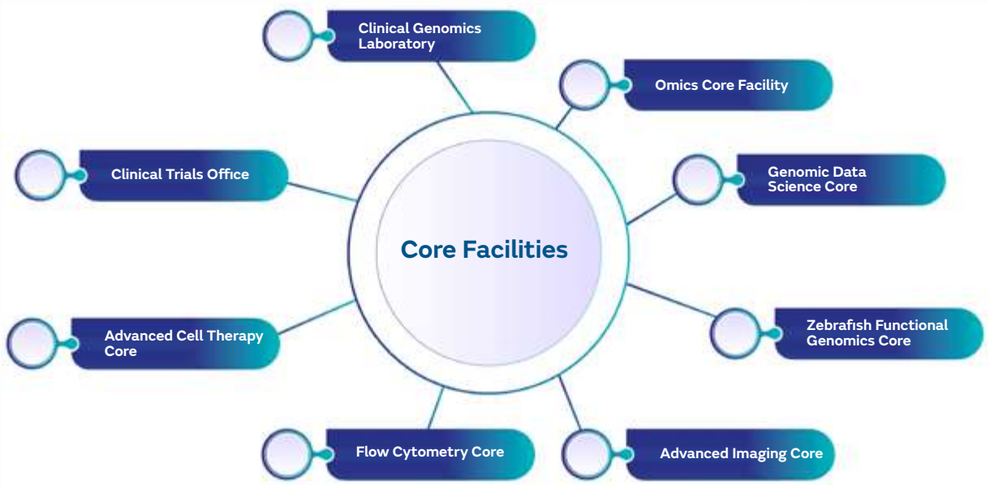
Radi Farhad, Melissa Tauro, Shabir Moosa, Zenab Siddig, Mohammadmersad, Younes Mokrab, Rawan Abouelhassan, Ilhame Diboun, Haroon Naeem, Sondoss Hassan.

CORE FACILITIES

Muhammad Hameed is the Executive Director of Sidra Medicine's Research Core Facilities. He has over 15 years of experience in finance and business management across healthcare, energy, manufacturing, and education. His leadership experience has encompassed large-scale operations in clinical research as well as core lab and biobank management, while successfully commercializing clinical services and spearheading initiatives to advance research and biotech innovation. He holds a Master of Business Administration from York University and a Bachelor of Engineering from the University of Windsor and is a Chartered Professional Accountant, Professional Engineer, Project Management Professional, and Certified Lean Six Sigma Black Belt.

Muhammad Ali Hameed
Executive Director - Research Core Facilities

The Advanced Research Core Facilities at Sidra Medicine's Research Department aim to promote a synergy between research and clinical care. Each of our core facilities houses cutting-edge equipment and technology and is staffed by top researchers. The multidisciplinary core facilities at Sidra Medicine promote collaboration between researchers and clinicians, fostering a holistic approach to patient care. Research Investigators and healthcare providers can work closely with experts at the core facilities to deliver the best patient care possible and lead to a better understanding of diseases affecting Qatar's women and children. This synergy leads to advanced diagnostics, improved treatments, access to experimental therapies, and a culture of continuous improvement in medical practice. These benefits result in better patient outcomes and higher healthcare quality.



Omics Core Facility

The Omics Core Facility at Sidra Medicine serves as a hub to support research projects as well as international collaborations for translational and precision medicine. The Omics Core promotes world-class biomedical research by ensuring availability of the highest quality biospecimens and by offering a variety of services that complement the off¬ering of CGL Core, playing a critical role in accelerating discoveries in medicine.

Services include and are not limited to sample storage and tracking, DNA and RNA isolation from different sample types, long-read sequencing (PacBio and ONT), optical genome mapping (Bionano Genomics), Illumina arrays (genotyping and methylation), Sanger sequencing, and High-throughput qPCR-based gene expression and genotyping profiling.

Alia Al Massih, Rebecca Mathew, Sara Tomei, Iman Al Azwani, Muna Al-Hashmi, Santhi Raveendran.

Clinical Genomics Laboratory

Sidra Medicine Clinical Genomics Laboratory (CGL) o¬ffers access to a medium-to high throughput library preparation and sequencing methods. CGL employs the widely used and industry-leading Illumina Novaseq X Plus, Novaseq 6000, Nextseq sequencers complemented with Hamilton Robotics automation platforms and cutting-edge analytical instruments for sample quality control. CGL employs the widely used and industry-leading Illumina Novaseq X Plus, CAP accredited clinical grade whole-genome sequencing with 50-fold coverage of the human genome on Illumina Novaseq 6000, Nextseq sequencers, complemented by Hamilton Robotics automation platforms and innovative analytical instruments for sample quality control. We also offer cost-efficient 3' differential gene expression pro¬filing and small RNA sequencing using Nextseq 500, and ultra-low input RNAseq for enriched cells and rare samples.

Guishuang Wang, Kun Wang, Oleksandr Soloviov, Li Liu, Lisa Sara Mathew, Jodelyn Asinas, Li Wang.

Zebrafish Functional Genomics Core

The facility employs the zebrafish as a valuable experimental model, offering a path toward advancing precision medicine. Our platform has achieved remarkable success in generating patient-specifi¬c genotype models. Our platform provides access to state-of-the-art technologies and equipment to study the genetic variation impact on cell, tissue, organ, and whole organism levels. Working with researchers and clinicians, the functional validation in the zebrafish model sheds light on gene discoveries, clinical presentations, disease prognosis, and treatment strategies. We contribute to interpreting the Qatar Genome Project's unique findings and offer pediatric disease models for neurological disorders, cardiovascular diseases, congenital anomalies, and other diseases. Our support services encompass animal husbandry, training programs, and consultation for tailored research needs.

Waseem Hasan, Sahar Da'as, Doua Abdelrahman, Tala Abu Arja.

Advanced Cell Therapy Core

The Advanced Cell Therapy Core (ACTC) plays an important bridging function between the Research and Clinical Departments allowing the delivery of personalized, advanced and/or experimental therapies, including cell and gene therapy, to patient cohorts. Sidra Medicine has the first Good Manufacturing Practice Facility for cell and gene therapy in Qatar and is set up to provide advanced and experimental treatments. R&D activities go hand in hand with commercial manufacturing, enabling revenue generation in a virtuous circle.

All ACTC personnel providing clinical services are QCHP licensed. Key activities are represented by private stem cell banking for innovative use of cord blood stem cells, manufacturing of experimental (i.e., gene-edited hypo-immune pancreatic islets for type 1 diabetes, CAR-T cells, etc.), and possibly marketed gene therapy products, manufacturing and biobanking of mesenchymal stromal cells for multiple clinical applications, and regenerative medicine.

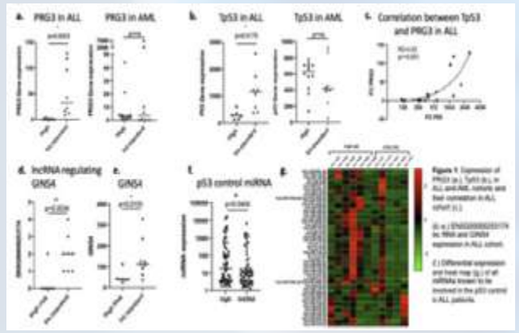
Zainab Awada, Watfa Ahmed, Anjud Al-Mohannadi, Zayana Ali, Mariam Lotfy, Reem Mohammad, Massimino Miele, Sara Deola, Chiara Cugno, Aylene Marquez, Che-Ann Lachica, Dhanya Kizhakayil, Michelle Esblaca, Sheanna Marie, Juvilyn Gusi.

Advanced and Novel Therapies and Treatments

Advanced Cell Therapy Core offers translational research from "bench to bed" to the form "bed to bench."

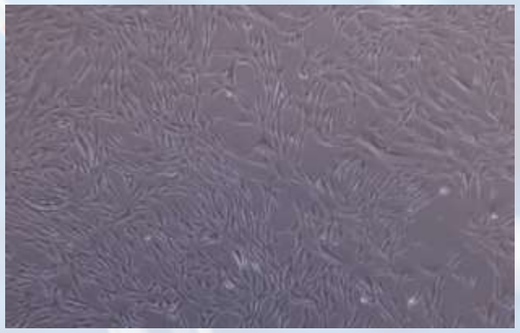
- World-class translational research facility
- Highly trained and skilled, clinically licensed experts
- ISO 9001:2015 Quality Management System certified

Bridge between DISCOVERY and development of therapies



Hematology and Oncology

Achieve a better understanding of the cellular and molecular bases of blood cells and cancer.



Stem Cells

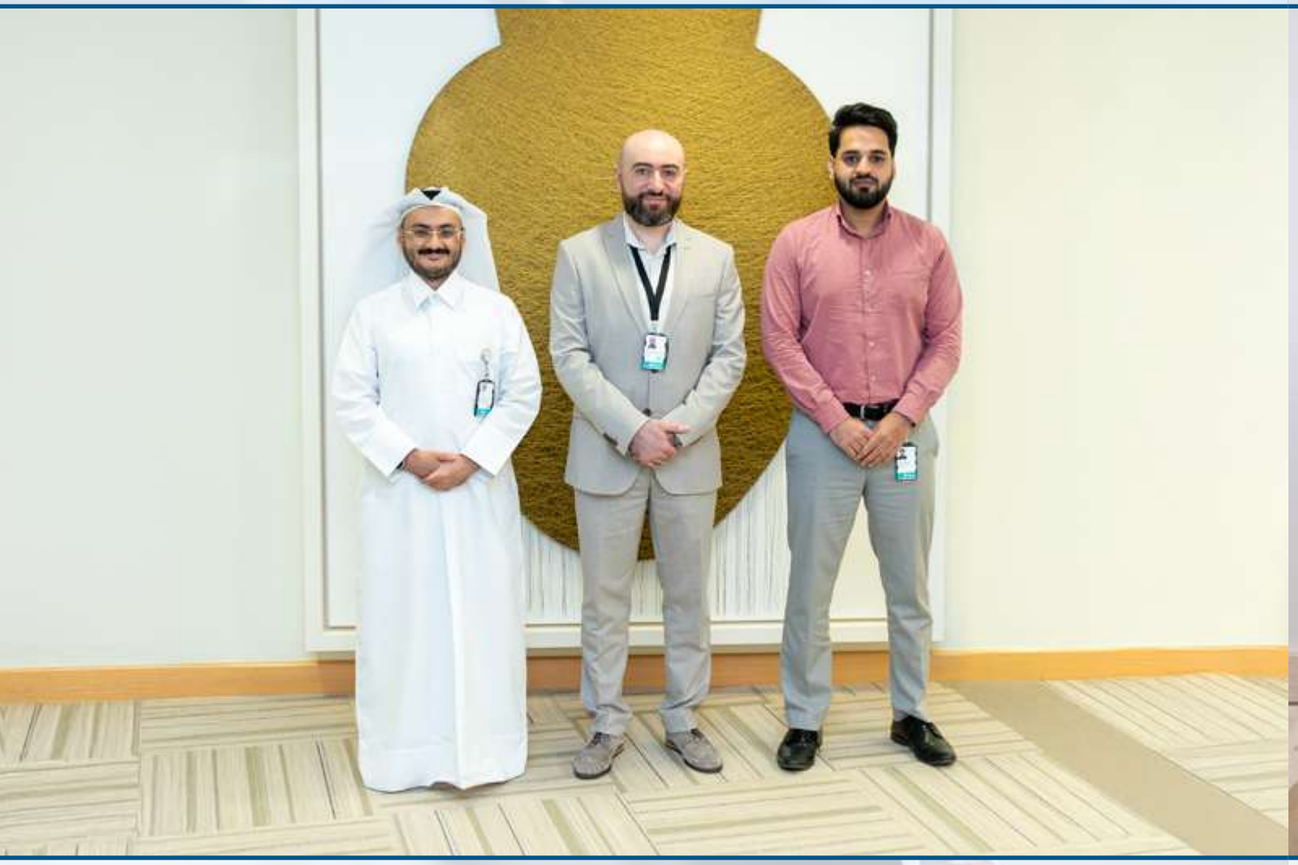
Move innovative stem cell methodologies into accelerated clinical applications.

UNVEIL and DEVELOP new clinical therapies & treatments.
Reach our experts through actc@sidra.org

Genomic Data Science Core

Genomic Data Science Core (GDSC) enables researchers and clinicians at Sidra Medicine and external collaborators to efficiently manage, analyze and interpret their data. GDSC developed a clinical-grade WGS bioinformatics pipeline for pathology department at Sidra Medicine. Moreover, GDSC co-developed, with QPHI's bioinformaticians, a pipeline to process the QPHI over 30 thousand samples from QPHI.

GDSC develops analysis pipelines to QC, process and analyze a wide range of datasets like WGS, WES, and (sc)RNA-seq, and deliver the results to the end users in a short turnaround time. GDSC works closely with the HPC team at Sidra to provide the necessary infrastructure to allow for rapid processing of datasets as well as storing and archiving the results securely and safely for internal and external collaborators.



Mohammed Abuhaliqa, Abdul Rahman Salhab, Ashraf Saifullah.

Flow Cytometry Core

The Flow Cytometry Core provides a multifaceted phenomics platform dedicated to establishing cellular, molecular, and functional phenotypes that complement genomics, transcriptomics, and clinical phenotypic analyses of patients. The core aims to complement in depth and breadth the panels of diagnostic and investigational assays proposed in Sidra Medicine and in Qatar as well as establishing international collaborations. The core mission is to provide the technical and intellectual frameworks for the realization of the second pillar of Sidra Research Personalized Medicine agenda: "Establishing an Advanced Diagnostics program". The core provides sperm DNA fragmentation in-house developed assay, no other lab in Qatar, currently outsourced or not offered and provides advanced serological test for SARS-CoV-2: Home-grown assay tests for 11 antigens (SARS-CoV2 + 6 other human CoV's), leading to MOPH approval as rapid antigenic/serology test, BAU validated, quantitative and qualitative assay.

Khadega Ibrahim, Giusy Gentilcore, Enas Dawoud.

Advanced Imaging Core

Aiming to empower precision medicine through advanced imaging technologies, the Advanced Imaging Core (AIC) specializes in enabling precision medicine by providing cutting-edge imaging technologies and expertise to researchers, clinicians, and innovators. Our mission is to accelerate discoveries and innovations that drive personalized healthcare solutions, with applications spanning oncology, genomics, drug development, and more. Our state-of-the-art facility is equipped to support a wide range of projects, from high-throughput screening to in-vivo imaging in zebrafish models. Through our collaborative and customer-focused approach, we aim to make advanced imaging accessible, intuitive, and impactful for every researcher and clinician we serve.

Farhia Abdullahi Ali, Abbirami Sathappan.

Clinical Trials Office

The Clinical Trials Office (CTO) serves as a centralized coordinating office for Clinical Research and Clinical Trials aiming at guiding researchers and clinicians through the local regulatory pathway (IRC, IRB, MoPH), and at conducting scientifically and ethically sound human subject research. Through the allocation of Research Coordinators' resources trained in the set-up and conduct of clinical research, the CTO's role and objective are to lead and oversee studies from protocol design to close-out. The CTO supports investigator-initiated and sponsored studies and functions as the point of contact for external sponsors including Contract Research Organizations (CROs) and Pharma companies. The CTO strives to enable both Academic and Pharma-sponsored Clinical Trials with benefits encompassing strategic value, public health, as well as financial value.

Divya Rangarajan, Treesa Jilson, Blessing Dason, Ilyas Ali, Chinnu Samuel, Antonella Cioce, Asma Jamil, Muhammad Ali Hameed, Dharati Tapse, Fathima Abubacker, Gulafsha Fatima, Mona Mahmoud, Aisha Kamil.

Research Operations Innovation and Strategy

The Research Operations Innovation and Strategy is led by Dr. Marla Beerens. Dr. Beerens pursued in Health law and obtained a Bachelor of Health Organization, Policy and Management and Economics at Maastricht University. She has a Master of Philosophy in Clinical Epidemiology and Health Technology Assessment and was awarded over 550.000 Euros in grant funding to conduct a multicenter randomized control trial, which helped her complete her PhD in Public Health. In the last 5 years at Sidra Medicine, Marla has focused on managing strategic, operational, and improvement programs while working in the Business Excellence Team.

Dr. Marla Beerens
Executive Director - Research Operations Innovation & Strategy

Department Overview

Our mission is to offer a "one-stop-shop" approach and solution-oriented admin service to researchers and clinicians. We help establish good laboratory practice, agile and fit-for-purpose processes, and high standards for managing research in a compliant manner. Our main administrative functions are as follows: The Project Management Office serves as a central repository and enabling service for research studies. The Outcomes & Reporting Office looks after strategic reporting, communications, education, and outreach. The Laboratories & Biosafety Office ensures labs are in good working conditions and safe practices. The Grants Office manages external and internal competitive awards. The Business Office handles budgets, finance, and procurement matters.

Zubair Pote, Maricris Salud, Dalia Salem, Dhanya Vasudeva, Rindai Magezah, Chetaram Nepali, Jeanna Marie, Patricia Hachem, Marla Beerens, Jason Ramm, Irem Mueed, Ashok Kumar, Mujubur Rahman, Farhan Mohammad, Roshan Ashraf, Mariam Yasser Nofal.

Research Support

Research Support Staff team has played a vital and multifaceted role in supporting the Research Branch since its inception in 2013. The diverse backgrounds in chemistry, psychology, literature, nursing, and business administration bring a broad range of expertise and perspectives to the team. This mix contributes to the team's success in managing both the administrative and organizational aspects of the research process.

Key Areas of Support Include:

Administrative Duties

Handling committee meetings, preparing agendas and minutes, managing HR-related matters within the Research department, and overseeing logistics for travel and events.

Overseeing the organization of major research conferences and symposiums, with a track record of successfully managing about 12 such events over the last nine years. This demonstrates not only logistical and organizational skills but also the ability to coordinate large-scale projects in a fast-paced, academic environment.

Events and Conference Management

Team Values

The emphasis on core values like Care, Efficiency, Innovation, Teamwork, Transparency, and Trust reflects a commitment to maintaining high standards while also fostering a collaborative and supportive work environment. Discipline, punctuality, problem-solving, and confidentiality are also clearly integral to the team's operations, ensuring the smooth running of the department.

Raoudha Essaker, Nelly EL Mistekawy, Rana Hamada, Shweta Chaudhary, Paulina Mari Jalandoni.

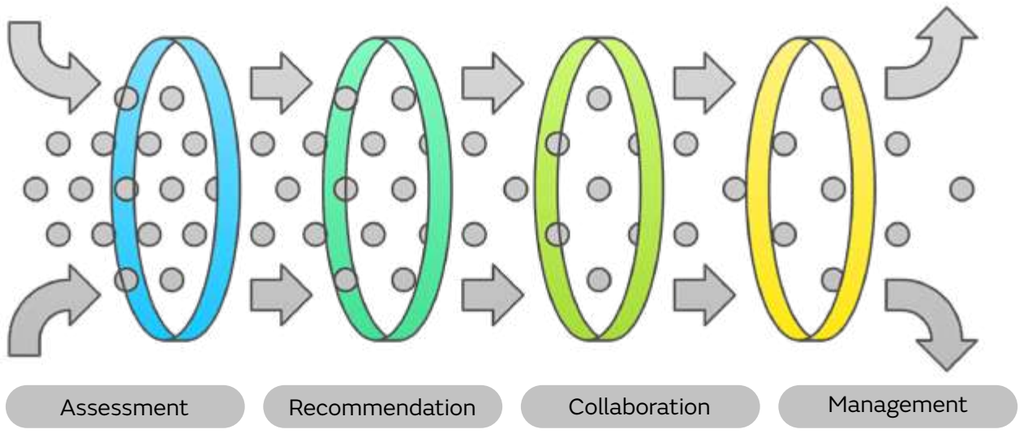
TECHNOLOGY TRANSFER AND INNOVATION

The Technology Transfer and Innovation function at Sidra Medicine plays a pivotal role in fostering innovation and translating groundbreaking research into tangible outcomes. The Technology Transfer function receives all invention disclosures from across the hospital for assessment and recommendation.

This milestone is a testament to our expertise and dedication to supporting innovators at Sidra Medicine. As part of its strategic efforts to support national innovation, the team is currently engaged in a study titled “Cultivating Innovation at Qatari Knowledge Institutions: A Case Study Approach”. The study, led by Dr. Marla Beerens (Lead PI) and Mariam Nofal (Co-PI), is supported under the Pathway Towards Prosperity Fund by QRDI.

This initiative aims to develop policies and strategies that nurture innovation and IP creation within Qatari institutions, positioning Sidra Medicine as a leading hub for medical innovation. The Technology Transfer and Innovation function works closely with innovators across the institution, assessing their invention disclosures and recommending optimal IP protection strategies. Through collaborations with key stakeholders, such as the Legal Department, the team ensures effective management of Sidra Medicine’s IP portfolio, safeguarding and advancing the institution’s innovative outputs.

Technology Transfer Process



What is Intellectual Property (IP) and Why is it Important?

Intellectual Property (IP) encompasses a range of assets such as patents, trademarks, copyrights, and trade secrets that protect the tangible outcomes of innovation and creativity. In the context of research, IP is particularly critical as it secures the rights to novel discoveries, enabling innovators to retain ownership and control over their work.

This is essential for translating research into practical applications, such as diagnostic tools, therapeutic solutions, and implementation research projects. IP serves as a bridge between groundbreaking ideas and their realization in the marketplace. It acts as a trading tool that facilitates partnerships with companies and collaborators who possess the resources and expertise to advance innovations and bring them to market.

By protecting these assets, Sidra Medicine ensures that its research outputs can attract investment, foster collaborations, and ultimately benefit patients and the broader community.

Beyond IP management, the function actively facilitates engagements and collaborations with industry partners, bridging the gap between research and commercialization. By connecting researchers with industry leaders, the team fosters opportunities for joint development, licensing, and innovation-driven partnerships, further advancing Sidra Medicine’s mission of driving medical and scientific breakthroughs.

This year, the function received five new invention disclosures and successfully elected two patent applications for full patent filings, marking significant progress in our intellectual property portfolio.

If you have an invention, research proposal that encompasses a novel implementational idea, idea for IP protection, or even a publication draft you would like the team to review, submit your invention disclosure or queries to Mariam Nofal at mnofal@sidra.org. The Technology Transfer and Innovation team is here to help bring your ideas to life.

EDUCATION AND CAPACITY BUILDING

CAPACITY BUILDING

Outreach and education at Sidra Medicine's Research is paramount, the department hosts several trainees, volunteers and visiting researchers/scientists coming from various universities and institutions, both locally and from around the world.

Sidra Medicine Research Branch prides itself as a teaching entity in alignment with the education pillar, one of the three pillars that form the foundation of Sidra Medicine's mission to provide patient care and biomedical research. Training at our research branch encourages young adults to hone their career path in science, medicine and public health. By training under varied professionals and experts, the trainee is provided with invaluable work experience, develops and refines skills and has access to a platform to network with other professionals in the field.

12 VISITING SCIENTISTS:

Mahmoud Mohamed, Hamad Medical Corporation
Farook Al-Ajli, Al Ghannas Qatari Society
Naziha Alem, University College London
Ayesha Yasmin, Hamad Medical Corporation
Tawa Olukade, Hamad Medical Corporation
Arash Rafii, Weill Cornell Medicine Qatar
Sawssan Ahmed, California State University
Abeer Fadda, Heidelberg University
Cristina Maccalli, Università degli Studi di Milano
Salim Bougarn, François Rabelais University
Nicholas Van Panhuys, University of Otago
Mohamed Alaghbar, Sidra Medicine Alumni

69 **Externs and volunteers enrolled in 2024**

11 **PhD students in 2024**

25 Local and international universities

STUDENT TESTIMONIALS

Dena Al Dasooqi, MSc

After graduating with my Bachelor's degree in Nutrition and Dietetics in Australia, I was eager to gain hands-on experience in nutrition research. Joining Dr Annalisa Terrenegra's Precision Nutrition team as an extern was the perfect way for me to do that. During my time here, I gained invaluable knowledge and skills which have built my confidence as a young researcher. Among other tasks, I worked on raw data processing, data analysis, and manuscript writing, and I had the pleasure of seeing our project through to completion. To top it all off, I found the most welcoming and supportive colleagues, and I had the chance to learn from like-minded people and professionals in the industry. This experience has inspired me to continue growing in the field, and it will be a huge asset to my future studies and research career. Thank you to everyone who I crossed paths with, you have made this a unique and unforgettable experience.

Fatima Mohamad Ahmad, Ph.D

I am a Ph.D. candidate in Biological and Biomedical Sciences at Hamad Bin Khalifa University, conducting cutting-edge research in collaboration with Sidra Medicine. During my externship in Sidra, I honed expertise in advanced wet and dry lab techniques, including DNA methylation analysis, 16S rDNA sequencing, and computational biology. My research is centered on maternal and fetal health, with a specific focus on multi-omics approaches, precision nutrition, and the discovery of gut microbial and epigenetic biomarkers. In addition to my research, I have actively contributed to scientific writing, aiming to publish in esteemed peer-reviewed journals. My work has been recognized through multiple awards, including Best Poster and First/ Second Place awards at prestigious local and international conferences. These experiences have not only enhanced my technical and analytical skills but also fostered personal and professional growth, equipping me with a strong foundation to excel in my future career in biomedical research.

Abdallah Al Miski, High School IB Student

My experience at Sidra Research under the mentorship of Ms. Zenab was rewarding and wonderful. I appreciate the organization of the program, aligning with my school's schedule and being timely managed. At first, I was taught how different researchers operate, beginning with receiving samples, writing pedigree charts, looking through DNA sequences that cause mutations, utilizing AI in research, and using statistics to formulate conclusions. I really thank Sidra and Ms. Zenab for providing me with this valuable experience.

Maria Esteves, MSc

This year I had the privilege of being an extern in Dr. Avella's Reproductive Biology lab as part of my MSc in Human Embryology and Developmental Biology at the University of Aberdeen. This experience provided me with lifelong skills for the research industry and the workplace in general. While studying the genetic causes of infertility, I was able to learn and develop key lab skills such as immunostaining and confocal microscopy, which was incredibly valuable for my future as a scientist. Additionally, I was also able to strengthen my ability to present scientific research in professional settings and contribute towards ongoing research for publications. I truly relish my experience at Sidra and getting to work in a team and institute full of remarkable scientists who taught me so much.

Noura Aldous, PhD

Pursuing my PhD at Sidra Medicine under the mentorship of Dr. Essam Abdelalim has been a magnificent opportunity. His expertise in stem cell biology and commitment to groundbreaking research have truly been inspiring. Throughout my time here, Dr. Abdelalim has not only guided my scientific inquiry but has also fostered an environment of intellectual curiosity and growth on both personal and academic levels. His approach to research emphasizes innovation, collaboration, and a deep understanding of the intricacies of biomedical science. At Sidra, I have had access to world-class facilities and a vibrant research community that has enriched my academic journey. The knowledge and experience I have gained here is invaluable, shaping me into a confident and capable scientist. I am grateful for the mentorship, which has been instrumental in my personal and professional growth throughout my PhD journey.

Zahra Yusuf, MSc

I am currently pursuing a Master's degree at Hamad Bin Khalifa University (HBKU) under the supervision of Dr. Luis Saraiva. Over the past nine months in Laboratory of Disease Modeling and Therapeutics, I have significantly developed my skills in communication, teamwork, problem-solving, and hands-on research techniques. I have gained the ability to work independently within the fields of zebrafish research and molecular biology. Additionally, I had the privilege of presenting my research findings at PMFG 2024, an experience that further reinforced my commitment to the field. I am grateful to be part of Saraiva's lab, where I have had the opportunity to collaborate with talented colleagues and learn from their expertise. This experience has deepened my passion for research and motivated me to continue pursuing a career in this field.

Nafisa Fadulelmula, BSc

My externship in the Pluripotent Stem Cell Lab with Dr. Essam Abdelalim at Sidra Medicine has been a rewarding experience. I gained hands-on expertise in differentiating iPSCs into pancreatic beta cells and developed essential skills in aseptic techniques, q-PCR, western blot, and immunostaining. This work also improved my understanding of signaling pathways involved in pancreatic development. Working under Dr. Essam's guidance helped me strengthen my ability to analyze and interpret experimental results, improving my problem-solving and critical thinking skills. Collaborating with a skilled and supportive team allowed me to learn from others and develop a collaborative mindset. Presenting findings to colleagues also enhanced my communication and presentation abilities. This externship has not only strengthened my technical and analytical capabilities but also fueled my passion for stem cell biology and regenerative medicine, preparing me for advanced biological and biomedical research.

Jamie Navarro, High School IB Student

I did a two-day shadowing experience with Dr. Younes Mokrab's team at the Medical and Population Genomics Lab, and I can say with confidence that this experience was a definite eye-opener to how innovative and exciting the field of medical research can be. I gained in-depth knowledge and understanding of the incredibly detailed process of medical research; the wonderful experts were excellent in explaining the concepts of their respective work. Understanding each critical step when solving cases, I developed my research and critical thinking skills. Incorporating artificial intelligence to aid in modern-day research was especially innovative and interesting to see.

FRESH GRADUATES

Mohammed Janahi
University College London
PhD in Medical Imaging

Fajr Mansoor Al-Marzooqi
Hamad bin Khalifa University
MSc in Biological and Biomedical Sciences

Abbirami Sathappan
University of Genova
PhD in Haemato-Oncology and CTIM

Shaikha Alabduljabar
Hamad bin Khalifa University
MSc in Genomics and Precision Medicine

Parul Singh
Hamad Bin Khalifa University
PhD in Genomics and Precision medicine

Noora Al-Muhanadi
Hamad bin Khalifa University
MSc in Genomics and Precision Medicine

Randa AlYafie
Hamad Bin Khalifa University
PhD in Genomics and Precision Medicine

Tariq Abu Saqri
University of Liverpool
MSc in Data Science and Artificial Intelligence

Asmaa Al-Naama
Hamad bin Khalifa University
MSc in Genomics and Precision Medicine

Mariam Nofal
Universita degli Studi de Turin
LLM Master of Laws in Intellectual Property

Eman AbuMoussa
Staffordshire University
MSc in Molecular Biology

Maricris Salud
Ateneo Graduate School of Business
Master's in Business Administration

Sidra Medicine Introduces Genomics to High School Students

Sidra Medicine has taught more than 400 high school students in its Introduction to Genomics (InGen) student programme in 2024. Launched in October 2023 by Sidra Medicine's Genomic Core team and lead by Iman Al Azwani, InGen focuses on providing students access to real-life research environments and helping them in their future career choices in science and research.

In collaboration with the Ministry of Education and Higher Education (MoEHE), the programme has welcomed 11th and 12th grade students from 35 public and private schools across the country.Sidra Medicine has a dedicated Biosafety Level 1 Laboratory for the InGen programme, where students have a chance to learn both theoretical and practical components in genetics including DNA extraction, DNA quality checking and DNA amplification. It provides a safe and controlled environment where students can conduct real-world experiments and enhance their understanding of complex genetic processes.

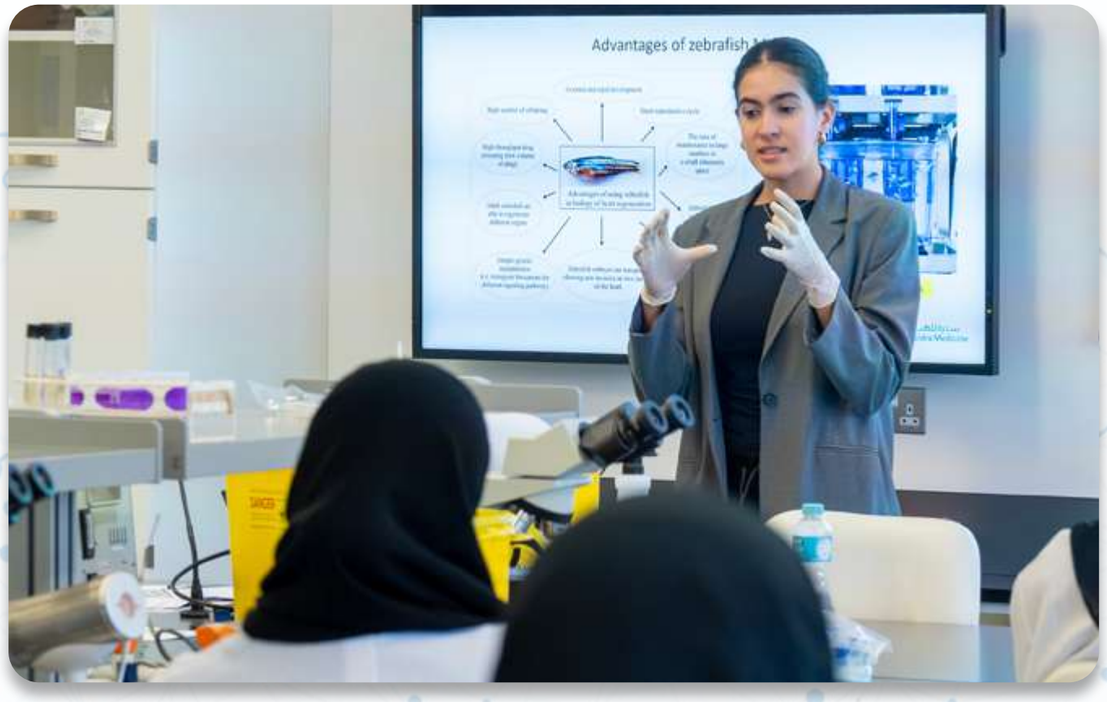
Sidra Medicine Continues Partnership in Empower Generations Consortium

The Empower Generations Consortium is an initiative founded by Qatar University to which Sidra Medicine has been a proud partner since its conception in 2019. Empower Generations Consortium solely aims to enhance the conceptual development of life sciences and grant youths life fulfilling careers that help them to dynamically engage with the societies, build their inner strengths, reshape their self-confidence, heighten their competency levels, improve their interpersonal skills, initiate their social contribution, and influence their adeptness to the surroundings.

It is the only project-based consortium that tackles the career related challenges from the secondary education's platform and connects the bridges between the (schools-universities- employments-national demands).

The project facilitates genuine engagement of high school students with professors and researchers, helps the new generations to meet their role models at various healthcare facilities, strengthens the national commitments and re-enforces responsibility.

This year, Sidra Medicine Research participated in a hands-on session led by Tala Abu Arja representing the Zebrafish Core Facility and the work done there. Students were introduced to the zebrafish model and the logic behind its application to human genetic research. The group of students were also invited to experience the larvae stages as seen through the microscope in a practical application.



Qatar Academy of Science and Technology Internship

Qatar Academy for Science and Technology (QAST) is a high school designed to develop Qatar's next generation of science, technology, engineering and mathematics (STEM) innovators. QAST students from across Qatar having a passion for science and technology and a desire to access the best universities and STEM related careers are supported and empowered to become innovators who master the knowledge and skills required to create solutions for challenges that face Qatar and the world.

For five Tuesdays in January and February, five 12th grade students from Qatar Academy of Science and Technology (QAST) joined an intense internship program at the Sidra Medicine Research facilitate as part of their mandatory "career buffet" school initiative.

In the internship program, researchers identify parts of their research projects that can be supported by QAST grade 11 & 12 students, and provide technical training and mentorship for them. Sidra Medicine representatives start with an overview to QAST and present their ongoing research, explaining how the students can support.

This helps researchers and students to reflect and match their interests and competencies, which also adds value to student distribution among the different labs, as per their interests. QAST Internship is a 5 week program (total of 35 hours).

International School of London Visit

The zebrafish facility works with researchers and clinicians leveraging the functional validation in the zebrafish model shedding light on gene discoveries, clinical presentations, disease prognosis, and treatment strategies.

The facility offers pediatric disease models for neurological disorders, cardiovascular diseases, congenital anomalies, and other diseases, making it the ideal visual learning platform for aspiring young scientists. The International School of London in Qatar has a mission to empower learners to lead through compassion, collaboration, creativity, and critical thinking. On March 24, students from the International School of London had a memorable experience visiting the Zebrafish facility.

Our staff guided them through zebrafish husbandry, genetic alteration, and behavioral studies, providing essential insights into biological research procedures.

Hands-on experiences with living organisms piqued their interest and enhanced their comprehension of scientific ideas, instilling a desire for scientific research. Immersed in the intriguing world of the zebrafish model, students saw cutting-edge research develop in real time. We appreciate our talented participants' enthusiasm to learn and explore alongside us.

Hamilton International School Visit

On February 19, 2024, 11th-grade students from Hamilton International School in Doha embarked on an enlightening journey into the realm of precision medicine during their recent visit to Human Disease Modeling Laboratory led by Dr. Luis Saraiva at the Research Branch of Sidra Medicine.

Immersed in the cutting-edge world of medical research, the students delved into the intricate web of precision medicine, and learned how it is being implemented at Sidra Medicine. Guided by Dr. Saraiva and his team, they explored the innovative methodologies employed in disease modeling and gained insights into the transformative potential of personalized healthcare approaches.

The immersive experience included guided tours of research labs, the zebrafish facility, and the hospital healing gardens, providing students with a firsthand glimpse into the evolving landscape of medical science.

This experience sparked their curiosity and nurtured a deeper appreciation for precision medicine's pivotal role in shaping the future of healthcare.

QRDI Corporate Innovation Leaders Program

In a globalised business landscape where technology is evolving at a rapid pace, corporates wishing to capitalize on the opportunities presented by this technological evolution have to adapt their strategies and be nimble. Adopting innovation allows corporations to gain a competitive advantage, enabling them to attract talent, bring innovative new products to market and further business objectives. To enable this, QRDI Council has launched a Corporate Innovation Leaders Program for large local enterprises. The program brings together strategy leaders from corporations that play a vital role in Qatar's innovation ecosystem.

The program aims to expand each organisation's internal capacity for carrying out innovation activities. Participating entities receive support in developing their own innovation strategies to boost technology adoption, and encourage partnerships with R&D-intensive businesses to deploy, implement and co-develop innovative solutions that enhance competitiveness and performance.

A team of delegates from Sidra Medicine, including from the research branch, attended the 6th edition of the prestigious QRDI Corporate Innovation Leaders Program in April. The program, delivered in partnership with Alchemist Accelerator, brought together multi-sector teams from around the Qatari innovation landscape for a week of inspiring talks, focused learning, mentorship and networking at Qatar Science and Technology Park.

The program culminated in the Sidra Medicine team pitching a very well-received idea to develop an online platform to transform continued care at Sidra Medicine for the benefit of patients in Qatar and the wider Arabic speaking world. Sidra Medicine delegates included Farhan Naim, Nour Saleh, Patricia Hachem, Maha Al-Henzab, Abdul-Aziz Zaghmout, and Aljori Al-Ajji.

GRANTS AND OUTPUTS

INTERNAL RESEARCH FUND

Sidra Medicine invited research proposals for the Internal Research Fund 2024 (IRF 24) awarded in Q1 2024. The purpose of this intramural grants program is to support competitive and innovative research initiatives that improve the patient's outcome by leading to early detection, better prevention, improving diagnostics, and treatments. Special attention was given to disorders that are prevalent in Qatar and that affect Sidra Medicine patients, and that fall within the following programs:

- Neurological disorders (e.g., autism, epilepsy)
- Cancer (e.g., pediatric solid tumors, leukemia)
- Genetic/metabolic disorders (e.g., rare genetic diseases, childhood diabetes)
- Immune dysregulations (e.g., IBD, primary immune deficiencies)

Applications need to be translational and outcome-driven; where clinical outcome improvements would be possible to measure and enabled by Precisions Medicine approaches. The primary purpose of IRF 2024 is to provide funds for activities that will lead to the development and submission of a competitive research proposal to an external agency (e.g. QRDI or others). The application should demonstrate how the proposed activities will enhance the probability of reaching definitive outcomes in a targeted, externally funded grant. It is mandatory for each project to have one LPI from the Research and the Clinical Department.

10 applications out of 32 submitted proposals got awarded with a total awarded amount of QAR6,771,698.

Awarded

Successful proposals receiving funding

Submitted

Total proposals submitted for consideration

Lead PI	Co-LPI	Project Title
AL-MARAGHI, Aljazi	BEN OMRAN, Tawfeg	Genome First: Building a gold-standard resource to accelerate newborn genomic screening in Qatar
AUGUSTINE, Tracy	YAJAMANYAM, Phani Kiran	Development of a Clinical Diagnostic Methodology for Early Identification of Non- IgE mediated Cow Milk Allergy and Prevention of FPIES Induction in pediatric subjects (NIGE-CMA Study)
FAWZI, Mahmoud	MOKRAB, Younes	Genomic medicine of neuromuscular disorders
RAYNAUD, Christophe	SALEH, Ayman	SLFN11 in Pediatric cancer
KARIM, Mohammed Yousef	LO, Bernice	High Frequency In-home Transcriptomics in Kids' Inflammatory Diseases (Hi-FIT KID) study
HENDRICKX, Wouter	OZER, Erdener	Advanced Pediatric Omics
AL KHODOR, Souhaila	RAPPAI, Shiga	Delineating the mechanistic role of gut microbiota associated Neuropathy in children with type 1 diabetes (T1D)
SYED, Najeeb	AL-SALEH, Rehab	Harnessing the potential of RNA-Seq as a complementary diagnostic method for WGS-negative Mendelian patients
THORNTON, Lisa	MOKRAB, Younes	Improving the diagnostic yield of cerebral palsy
AHMED, Ikhlak BRANCO, Ricardo	ALYAFEI, Khalid VAN PANHUYS, Nicholas	Early identification and prognosis of pediatric sepsis and organ dysfunction phenotypes using RNA and circRNA expression

EXTERNAL GRANTS

23 total Grants from the Qatar Research Development and Innovation Council (QRDI) and other external funds were awarded to Sidra Medicine in the last 18 months.
Total awarded amount is more than QAR 22M.

Breakdown of Grant Application In The Last 18 Months

Grant Application	Submitted	Awarded
Path Towards Precision Medicine (PPM 06, PPM 07)	25	3
Academic Research Grant (ARG 01, ARG 02)	39	5
Highschool Research Experience Program (HSREP05 HSREP06)	2	2
Conference and Workshop Sponsorship Program (CWSP23)	4	2
Pathways Toward Prosperity (PTP 01)	1	1
Economic Sustainability Call (ESC01)	1	-
Displaced Arab Researcher (DAR01)	2	TBC
Equine Research Call (QMRC01)	2	1
Open Innovation Call	4	4
Best Representative Image of an Outcome (BRIO08)	1	1
Technology Development Grant (TDG)	3	TBC
Leading House for the Middle East and North Africa "Research Partnership Grants"*	1	1
Orphan Disease Center, IQSEC2 Research and Advocacy Foundation Research Grant Program 2023*	1	1
G-Rex Grant Program Plan*	1	1
Global Grants for Gut Health call 2024*	1	1
Pfizer Independent Education Grants*	1	-
Orphan Disease Center, Million Dollar Bike Ride (ODC MDBR) Pilot Grant Program*	1	-
Incubator Grant 2024 Call from the Mito Foundation*	1	-
Alex Lemonade Foundation Crazy 8 Initiative*	1	-
Cure Epilepsy Grant Opportunities*	1	-
2024 CDKL5 Program of Excellence Pilot Grant Program*	1	-
Waterloo Foundation: Child Development*	3	-
Childhood Arthritis & Rheumatology Research Alliance CARRA*	1	-
Eagles Autism Foundation Grants: Pilot Grants*	1	-
Collaborative Pediatric Cancer Research Awards Program*	1	-

*International grants and awards

TOP ORIGINAL PUBLICATIONS

01

Long-term Radiological and Pulmonary Function Abnormalities at 3-year post COVID-19 Hospitalization: A Longitudinal Cohort Study.
Authors: Osamah Alwalid.
Journal: European Respiratory Journal.

02

The immunopathological landscape of human pre-TCRα deficiency: From rare to common variants.
Authors: Andrea Guenoun, Taushif Khan, Manar Ata, Fatima Al Ali, Nico Marr.
Journal: Science.

03

Biallelic NAA60 variants with impaired n-terminal acetylation capacity cause autosomal recessive primary familial brain calcifications.
Authors: Sahar I Da'as, Khalid A Fakhro.
Journal: Nature Communications.

04

Integrated care of diabetes during pregnancy: a Qatari nationwide cohort.
Authors: Ibrahim Ibrahim.
Journal: EClinical Medicine.

05

A Catalogue of Structural Variation across Ancestrally Diverse Asian Genomes.
Authors: Sonia Davila.
Journal: Nature Communications.

06

Major Adverse Kidney Events in Pediatric Continuous Kidney Replacement Therapy.
Authors: Ahmad Kaddourah.
Journal: Jama Network Open.

07

Predisposition footprints in the somatic genome of Wilms tumours.
Authors: Gordan M Vujanic.
Journal: Cancer Discovery.

08

Impaired development of memory B cells and antibody responses in humans and mice deficient in PD-1 signaling.
Authors: Fatima Al Ali , Mahbuba Rahman , Nico Marr.
Journal: Immunity.

09

Trial of Selective Early Treatment of Patent Ductus Arteriosus with Ibuprofen.
Authors: Samir Gupta.
Journal: New England Journal Of Medicine.

10

Factors associated with successful liberation from continuous renal replacement therapy in children and young adults: analysis of the worldwide exploration of renal replacement outcomes collaborative in Kidney Disease Registry.
Authors: Ahmad Kaddourah.
Journal: Intensive Care Medicine.

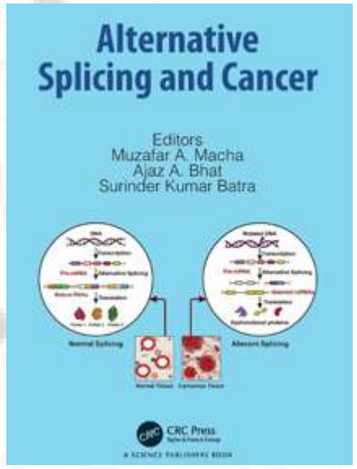
11

Loss of the TRPM4 channel in humans causes immune dysregulation with defective monocyte migration.
Authors: Satanay Hubrack , Christophe M Raynaud , Asha Elmi , Rafah Mackeh , Nourhen Agrebi , Hesham Al Saloos , Frank Schmidt, Bernice Lo , Amel Hassan.
Journal: Journal of Allergy and Clinical Immunology.

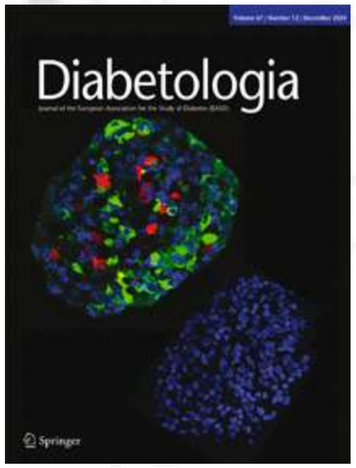
12

Covered Stent Correction for Sinus Venosus Atrial Septal Defects, an Emerging Alternative to Surgical Repair: Results of an International Registry.
Authors: Younes Boudjemline , Ziyad M Hijazi.
Journal: Circulation.

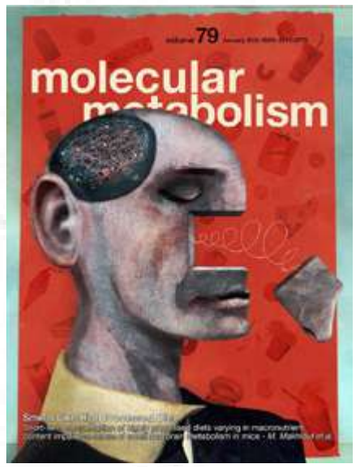
PUBLICATIONS ON JOURNAL COVERS



The book Alternative Splicing and Cancer co-edited by Dr. Ajaz Bhat explores the crucial role alternative splicing, a post-transcriptional process, plays in human health and diseases, particularly cancer. Diving deep into the complexities of gene expression and protein diversity, the book illuminates how abnormal splicing contributes to aggressive tumor formation, affecting cellular functions such as proliferation, survival, and immune evasion. With a focus on understanding molecular mechanisms, this book unravels potential diagnostic and prognostic targets, opening doors for enhanced anti-cancer treatment efficacy.



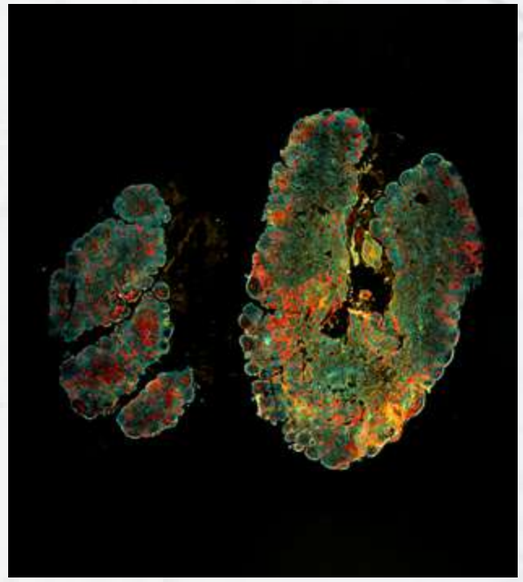
The cover picture of Diabetologia December 2024 issue shows an immunofluorescence micrograph of pancreatic islet organoids derived from normal induced pluripotent stem cells and iPSCs lacking regulatory factor X6, showing insulin, glucagon and nuclei. Aldous et al report that loss-of-function mutations in RFX6 do not impact the generation of iPSC-derived pancreatic progenitors. However, the absence of RFX6 leads to diminished islet cell formation and smaller islet organoids, which is associated with decreased expression of critical pancreatic endocrine genes and lower levels of the antioxidant catalase.



The paper titled Short-term consumption of highly processed diets varying in macronutrient content impair the sense of smell and brain metabolism in mice, co-authored by Melanie Makhlouf, Smija Kurian, Asma Al-Naama, Reem Hasnah, Neethu Venugopal, Diogo Manoel, and Luis R. Saraiva made the journal cover of Molecular Metabolism Journal, issue of January 2024. The image portrays artwork illustrating the link between the sense of small and the brain. Link to the article: https://www.sciencedirect.com/science/article/pii/S2212877823001710

BRIO-8 AWARD

Dr. Abbirami Sathappan, head of the Advanced Imaging Core at Sidra Medicine, has received the BRIO-8 Award for Best Representative Image of an Outcome in a QRDI-funded project. The award-winning image from the Pediatric Precision Oncology Initiative captures pivotal insights in pediatric cancer research, supported by contributions from Dr. Wouter Hendricks, Lead PI of the Pediatric Cancer Omics Laboratory, Dr. Erdener Ozer, Division Chief of Anatomical Pathology, and Farhia Abdullahi Ali, Lab Assistant in the Advanced Imaging Core. This recognition reflects Sidra Medicine's dedication to pioneering research and precision oncology in Qatar. Dr. Sathappan's BRIO-8 Award celebrates Sidra Medicine's advanced imaging capabilities, reinforcing the institution's impact on pediatric oncology and its commitment to advancing precision medicine for children in Qatar and the region.



EVENTS AND ACHIEVEMENTS

Precision Medicine and the Future of Genomics

PMFG 2024 Summit

Sidra Medicine marked a decade of innovation in genomic medicine with the opening of the 10th annual Precision Medicine and the Future of Genomics (PMFG 2024) Summit at QNCC. The three day event, which concludes 5 December welcomed 1100 attendees, featured over 50 distinguished speakers, showcased over 42 booths from sponsors and partners – highlighting the latest advancements in personalized healthcare, genomic research, and the ethical considerations surrounding this rapidly evolving field. Ms. Khadija Benganna from Al Jazeera Arabic was the Master of Ceremonies who opened the event with stories of hope featuring patient narratives.

PMFG 2024 Chairs, Dr. Ammira Al-Shabeeb Akil and Prof. Khalid Fakhro said: "PMFG serves as a vital platform for collaboration in precision health, bringing together the brightest minds to drive innovation and progress. Let's all work towards hope for future generations by building partnerships and pushing the boundaries of personalized healthcare."

Sessions on Day 1 of PMFG 2024 focused on advancements in genomic newborn screening, rare disease diagnosis, and population genomic cohorts. Discussions explored the ethical, legal, and social implications of integrating genomic data into healthcare, strategies for early detection and personalized treatment, and the role of international collaborations in shaping global genomic research.

During her welcome remarks at the opening ceremony of the PMFG 2024 Summit, CEO Dr. Iyabo Tinubu-Karch said: "I am proud of the progress we have achieved and of how PMFG has evolved into a platform where the brightest talent and minds come together annually. Our shared insights into the latest research and best practices have a profound impact on patient populations globally, especially in the areas of genetic and rare diseases." Dr. Robert Green, Director of the Genomes2People Research Program at Harvard Medical School, delivered a compelling keynote address titled 'The Path to Lifelong Genomic Medicine': "Since the days of the Human Genome Project, people have envisioned a future where medicine transitions from reactive to proactive, and even to preventive.

We are entering a new era, with large-scale studies launching globally to generate evidence on how genomics can be used in screening. The next frontier is not just newborn sequencing, but lifelong genomics-informed healthcare that is accessible to all." Dr. Akil emphasized PMFG's key goals, stating: "Our mission is to promote innovation in precision medicine, driving breakthroughs in genomics to enhance personalized healthcare and improve patient outcomes.

This summit also serves as a platform for empowering knowledge sharing, where insights on cutting-edge research, clinical applications, and emerging technologies in genomics can be exchanged to shape the future of healthcare."

PMFG 2024 was held under the patronage of the Human Genome Organization (HUGO) and the Global Alliance for Genomics and Health, with Qatar Precision Health Institute as a strategic partner, the Children's Hospital of Philadelphia as a knowledge partner, Qatar National Bank as the Official Diamond Patronage and Sponsor, and Msheireb Museums as a community partner.

Sidra Medicine's First MENA Microbiome Conference

Our Research branch successfully organized the inaugural MENA Microbiome Conference, on September 28-29, bringing together over 800 attendees, including clinicians, scientists, and healthcare professionals from across the Middle East and North Africa (MENA) region. We had the opportunity to showcase our cutting-edge microbiome research in collaboration with clinical teams.

The two-day event, hosted in collaboration with the Ministry of Public Health (MOPH), Children's Hospital of Philadelphia (USA), Qatar Research Development and Innovation (QRDI), DH Arab, and Qatar Tourism Authority (QTA), featured a packed agenda of workshops, keynote presentations, and panel discussions. The main conference featured 38 expert speakers alongside presentations from 11 young scientists. Among the highlights was a panel discussion with prominent experts to establish with prominent experts to establish the MENA Microbiome Consortium. The conference underscored the growing potential of establishing the MENA Microbiome Consortium, leveraging local multidisciplinary expertise, and fostering collaboration with international centers. Ahead of the conference, a hands-on workshop was held on September 26th at our research facility.

The workshop focused on training attendees in microbiome sample processing and data analysis. It attracted 24 scientists from local institutions, such as Weill Cornell, Qatar Armed Forces, Qatar University, Primary Healthcare Corporation, and Hamad Medical Corporation. Additionally, international participants from Libya, Iraq, Tunisia, India and the UAE attended the workshop. The conference marked the start of promising new collaborations in microbiome research within the region.

Inaugural Conference on Primary Immune Dysregulation Disorders

Sidra Medicine, in collaboration with the MENAT-NIAID initiative, proudly hosted the Recent Advances in Primary Immunodysregulation Disorders (RAPID) conference in May, 2024. The inaugural event, which brought together close to 250 attendees, including global authorities in the field, experts from the Middle East, North Africa and Turkey (MENAT) and the National Institute of Allergy and Infectious Diseases (NIAID), demonstrated notable advancements in addressing the challenges and opportunities related to primary immune dysregulation disorders in the region.

RAPID also served as a powerful call to action for researchers, healthcare providers, and other stakeholders to help enhance the global understanding of these disorders.

The Career Development Panel session, featuring experts from Sidra Medicine, Hamad Medical Corporation, Qatar University, Weill-Cornell Medicine Qatar, Hamad Bin Khalifa University, and Mohammed Bin Rashid University (UAE), inspired the next generation of professionals to dedicate themselves to advancing care and research in this field.

The Jeffrey Modell Foundation's generous sponsorship at RAPID 2024, allowed young doctors and scientists from across the region, including those from lower-income countries, to attend and present their research. This investment in the future generation of researchers will have a lasting impact on the field of immune dysregulation.

Launch of Qatar's First Cord Blood Banking Service

Sidra Medicine has launched a state-of-the-art cord blood banking service. This is the country's first local cord blood storage facility and will offer families a unique opportunity to preserve their newborns' stem cells in Qatar, for potential future medical needs.

Cord blood banking is the process of collecting and storing the blood from a newborn's umbilical cord and placenta after birth. The collection is painless, non-invasive, and risk-free for the mother and baby. Cord blood is rich in hematopoietic stem cells, which have the potential to treat various medical conditions, including certain cancers, blood disorders, and immune system diseases.

Prof. Johnny Awwad, Chair of Women's Services at Sidra Medicine, said: "As the only facility in Qatar providing local cord blood storage, Sidra Medicine offers an unparalleled advantage by keeping the samples in the country." This ensures their optimal quality and immediate access when needed most, compared to having them shipped from abroad. All the cord blood samples will be sent to Sidra Medicine's Cord Blood Bank in its Good Manufacturing Practice (GMP) facility, where cryogenic freezing will allow them to be stored securely for over 30 years.

Prof. Khalid Fakhro, Chief Research Officer at Sidra Medicine said: "Our cord blood banking service is another successful milestone for our precision medicine strategy."

Clinical Trials Offer Hope to Children with Rare Diseases

Sidra Medicine aims to transform precision healthcare through clinical trials, offering a new lease of hope to young patients with rare and complex diseases. The Clinical Trials Programme at Sidra Medicine focuses on clinical trials that benefit children in the Arab region, particularly those with rare diseases that lack effective treatment. This initiative will position Sidra Medicine as a regional leader in clinical research, offering personalised treatment options to children with rare diseases.

The trials could offer children the chance to receive beneficial treatment whether it is a new drug, therapy, device or procedure — before it becomes widely available. Prof Khalid A. Fakhro, chief research officer at Sidra Medicine, said: "We are building towards undertaking complex research, including critical Phase 1 through Phase 4 studies, which will establish us as a regional leader in clinical trials. We were able to achieve this in collaboration with global academic and health partners, Pharmaceutical companies and with the support of stakeholders such as Qatar Foundation (QF) and Qatar Precision Health Institute (QPHI). By becoming a regional leader in clinical trials, we will be able to bring innovative therapies to our patients, offering access to potentially life-changing outcomes to children with rare diseases." A historical lack of research within the Arab population has led to a significant data gap, limiting the development of effective and personalised treatments.

The clinical trials at Sidra Medicine will play a crucial role in addressing this gap, building a robust database of knowledge that will enable more effective and personalised treatment approaches tailored to the unique needs of the population. Sidra Medicine's clinical trials will be based on medicines, medical devices and medical procedures that have either been approved for adults but not yet studied for children or are not yet government approved.

Sidra Medicine and Msheireb Museums Launch Science Café

Sidra Medicine and Msheireb Museums launched their first Science Café series in 2024 with the concept based on inviting the public, including students and families, to connect with science and for scientists and engineers to informally share their research during a conversational exchange in a friendly setting. The Sidra Medicine-led Science Cafe focuses on groundbreaking advancements that are reshaping the country's healthcare delivery.

Through engaging discussions led by expert speakers, attendees discover how precision medicine can tailor treatment strategies for individual characteristics - from genetics to lifestyle. Dr Khalid Fakhro, chief research officer at Sidra Medicine, said: "Initiatives like the Science Cafe is our way to engage with the community and make science accessible to everyone as well as applicable to their day to day lives. Together, we can unlock the potential of precision medicine and its ability to transform lives and improve health for all."

The Science Café series is free to attend and is open to everyone in the community who wants to learn about the latest technologies and applications in healthcare and research. Attendees will also be able to gain valuable insights that can empower them to make informed decisions about their health and well-being.

Dr Sahar Da'as, research manager at Sidra Medicine, who is leading the Science Café initiative, said: "We are really excited to start our own version of Science Café in Qatar and discussing science, research and health in bite sized pieces. This year, we will cover a range of topics and how precision medicine can help with diseases like diabetes, obesity, autism, paediatric cancers and address mental health to pregnancy and fertility challenges."

Largest Research on Rare Genetic Disease Risk in the Middle East

A study on rare genetic diseases in a wide-ranging and diverse Middle Eastern cohort from Qatar conducted by our research team, has been published in the prestigious Genome Medicine journal. Titled Burden of Mendelian Disorders in a Middle Eastern Biobank, the study provides key insights into the distribution of risk for genetic diseases in Qatar, which will help with public health planning for the country's population and that of the wider region.

Led by Dr Khalid Fakhro and Dr Younes Mokrab and in collaboration with the Qatar Genome Programme (QGP), Qatar Biobank (QBB), and Hamad Medical Corporation (HMC) the study analyzed more than 6,000 whole genomes and corresponding health data from Qatar. The study established a comprehensive catalogue of disease mutations stratified by genetic ancestries, including the major groups of Peninsular Arabs, General Arabs, Persian Arabs and African Arabs; making it the largest such collection of genomes and clinical data to be investigated in a Middle Eastern population to date.

The researchers identified several damaging mutations specific to certain ancestries, known as founder mutations, that can serve as an invaluable epidemiological resource for policy making in the healthcare system. The information will also enable the healthcare system to offer screening and genetic counselling to families who may be at risk of inherited diseases.

They also identified novel disease-related genes/variants linked to common diseases in Qatar such as diabetes. By establishing a catalogue of Mendelian genetic variants, the study can also help improve annotation of global public genetics databases (ex., ClinVar database), especially for genetic variants that are common in the Qatari population and underrepresented in other databases. Ultimately, baseline genome studies such as the one by Sidra Medicine can help healthcare systems allocate resources more efficiently by targeting interventions to those patients who are most likely to benefit based on their genetic profile.

First Arab Middle Eastern Genetics Research in Autism Goes Global

Sidra Medicine celebrated the impact of its long-standing initiative, the BARAKA-Qatar study (Building a Resource for the Advancement of Knowledge of Autism in Qatar) on World Autism Awareness Day, marked on April 2 annually.

The study, which has been at the forefront of Autism Spectrum Disorder (ASD) research in the region for several years and published its pilot phase in the prestigious Genome Medicine journal, has not only enhanced the understanding of ASD within the Arab world but has also pushed Middle Eastern genetics onto the global stage. Despite its global prevalence, the comprehension of ASD's genetic origins in the Arab world is historically limited.

The BARAKA study, conceived and conducted by Sidra Medicine in Qatar, shattered these boundaries, focusing on Middle Eastern genetics and their implications for ASD. Conducted in academic collaboration with the Hospital for Sick Children (SickKids) in Toronto, Canada, the study renders Middle Eastern genetics accessible and comprehensible on an international scale.

This was made possible through SickKids's partnership with the Autism Speaks' MSSNG Whole Genome Sequencing Project (MSSNG), an innovative open-science based collaboration platform between Autism Speaks, Google, and the research community.

Dr Fakhro also noted that around 350 families, totalling approximately 1,500 participants, have been enroled from Qatar. He added: "Our collaboration with SickKids and MSSNG have assisted us in designing the BARAKA study to international standards, using shared models and analysis pipelines across our respective groups. Over the years, we have ensured that a number of trainees and sub-projects benefited from this joint mentorship. We continue to increase the size of our cohort to capture more individuals living with ASD in Qatar, which will aid in understanding underlying causes and development of personalised interventions in the future."

Sidra Medicine and Genialis Partnership: Enhancing Research and Innovation

Sidra Medicine is pleased to announce a collaboration with Genialis, an RNA-biomarker company. This partnership marks a significant step in our mission to advance precision medicine through robust research and innovative industrial collaborations. The integration of Genialis' advanced AI models into our research infrastructure allows us to delve deeper into the molecular diversity of our patient population. This collaboration ensures that our diagnostic and treatment protocols are informed by real-world data, making them more accurate and clinically relevant. It empowers us to predict patient responses to therapies more precisely, improving outcomes and setting new standards in pediatric cancer care. Dr. Wouter Hendrickx, Lead Principal Investigator of the Precision Oncology Initiative at Sidra Medicine, underscores the importance of this partnership: "Collaborating with Genialis represents a transformative step in our oncology program. By leveraging their technology, we can tailor treatments to the unique genetic profiles of our patients, enhancing the effectiveness of our therapies."

The partnership with Genialis enriches our research by incorporating diverse patient data into their AI models. This real-world data is vital for validating biomarkers and refining our understanding of disease mechanisms. It ensures that our research is not only cutting-edge but also directly applicable to the diverse populations we serve. Prof. Khalid Fakhro, Chief Research Officer at Sidra Medicine, highlights the broader impact of industry partnerships: Collaborations with the private sector are essential for accelerating research and improving patient care. Genialis, in particular, has built a remarkable record in developing clinically actionable RNA-based biomarkers. By integrating Genialis' suite of predictive algorithms into our workflows, we can begin to understand disease better and deliver personalized medicine.

These partnerships enable us to stay at the forefront of medical innovation, bringing the latest scientific advancements to our patients.

At Sidra Medicine, we believe that partnerships with industry leaders are key to driving medical innovation and improving healthcare outcomes. Our collaboration with Genialis is a testament to our commitment to research excellence and precision medicine. We are excited about the future advancements this partnership will bring and remain dedicated to enhancing the lives of our patients through pioneering research and innovative collaborations.

Distinguished Panelist at QPHI Launch

Chairperson of Qatar Foundation HH Sheikha Moza bint Nasser formally launched Qatar Precision Health Institute (QPHI) in April 2024, an umbrella institute bringing together existing strengths in the field of health sciences and genomics within Qatar Biobank and Qatar Genome Program to help accelerate the countrys adoption of personalized healthcare.

Dr. Kholoud Al-Shafai, a Staff Scientist - Associate Level at the Research Department of Sidra Medicine participated as a distinguished panelist at the event held at Qatar National Convention Center. Dr. Kholoud brought her expertise and insightful perspectives to the discussion on Precision Health. She discussed the genetic projects she currently leads and the implementation plans toward precision medicine. Dr Kholoud provided a clear vision for the role of Precision Health in transforming Qatar's healthcare landscape and highlighted on the necessity of intensive collaboration between various stakeholders, including researchers, healthcare providers, policymakers, and the community toward achiveing this goal.

Sidra Medicine Article 'Up front' in Diabetologia

Each month the Editor of Diabetologia selects five papers from the issue that merit special attention. These five papers are featured at the front of the print issue ('Up front') and appear on the Diabetologia homepage with a short piece of text summarising their importance.

Dr. Essam Abdelalim's article has been chosen to be featured 'Up front' in the December 2024 issue. The article titled *Deletion of RFX6 impairs iPSC-derived islet organoid development and survival, with no impact on PDX1+/NKX6.1+ progenitors,* PMID 39080045 explores how mutations in the RFX6 gene lead to monogenic diabetes with a hypoplastic pancreas. In this issue, Aldous et al investigate the mechanisms behind the impairment of pancreatic islet development caused by RFX6 loss-of-function mutations.

The authors utilise human embryonic stem cells and a gene-edited induced pluripotent stem cell model to investigate the role of RFX6 during differentiation into human pancreatic islets.

Findings suggest that RFX6 mutations primarily disrupt islet cell formation through increased cell death and suppression of essential pancreatic endocrine genes. The authors conclude that these insights may pave the way for potential therapeutic strategies, such as enhancing catalase levels, to mitigate diabetes related to RFX6 defects.

Zebrafish Leads the Way in Diagnosis, Treatment of Rare Paediatric Diseases

The Zebrafish Functional Genomics Facility at Sidra Medicine is leading the way in determining the cause and treatment of inherited disorders in children. The facility has adopted a remarkable approach to swiftly identify the causes of rare diseases and explore potential treatment solutions.

According to the Centre for Arab Genomic Studies, there are 2.8 million people living with rare diseases in the Middle East. Recognising the prevalence of inherited blood disorders like sickle cell disease and rare conditions in the Arab world, often stemming from single gene mutations, the hospital employs cutting-edge techniques to accelerate the diagnostic process. Specifically designed to address the unique challenges of diagnosing and treating rare diseases, Sidra Medicine focuses on paediatric patients, aiming to become a regional hub for this critical aspect of healthcare. Despite challenges posed by the diagnostic odyssey, typically taking five to seven years, Sidra Medicine has streamlined the process. Utilising the zebrafish, a species sharing 70 per cent of its genes with humans, researchers can rapidly study the effects of gene mutations. If the patient is found to carry a particularly unusual mutation, one that scientists have never encountered before, they begin the process of attempting to replicate the biology in a zebrafish embryo. Zebrafish offer advantages over traditional models, as they can be easily maintained in large numbers and exhibit rapid development, providing valuable insights within a week, equivalent to months in humans.

Sidra Medicine's approach allows for a quick transition from identifying rare diseases to potential treatments, with the goal of delivering personalised therapies within three months, a remarkable feat compared to the typical five-year timeline for diagnosis reported by the European Commission. Sidra Medicine also plans to collaborate with pharmaceutical companies for clinical trials, aiming to develop novel medicines tailored to patients with rare disease.

Study a Major Advancement in Cancer Microbiome Field

Sidra Medicine has announced that one of its research studies published in Nature Medicine in May 2023 has been featured in the Year in Review section of Nature Reviews Gastroenterology and Hepatology, which focuses on key advances in the field of cancer microbiome in 2023. Titled 'Microbiota-based biomarkers and therapeutics for cancer management', the article provides a comprehensive overview of the latest discoveries and applications of microbiota-based approaches for improving cancer prevention, prognostication and therapy, with a focus on colorectal cancer.

The research study from Sidra Medicine 'An integrated tumor, immune and microbiome atlas of colon cancer' by Roelands et al, revealed the impact of our immune system and microbiota on our ability to survive colon cancer. The study was done in collaboration with Leiden University Medical Center (LUMC) in the Netherlands. The study comprehensively characterised the genomic, transcriptomic, immunological and microbial features of a cohort of 348 patients with colorectal cancer, sequenced at Sidra Medicine, with long-term follow-up data to devise a composite score for prognostication. The Sidra Medicine and LUMC team analysed various aspects of primary colon cancers, including the characteristics of cancer cells, cancer immune responses and microbiota composition.

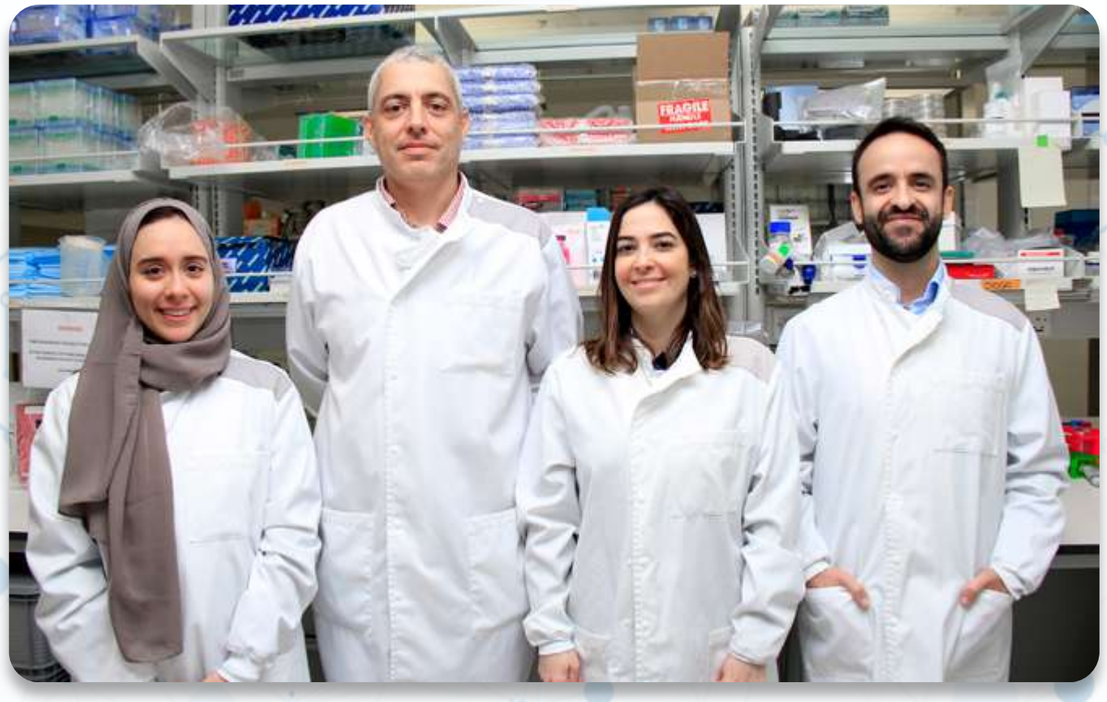
They found that a specific composition of bacteria in the tumour and intratumoural immune response were associated with a more favourable prognosis for colon cancer patients. The Sidra Medicine study highlighted how combining a tumour inflammation score with the microbial signature into a composite score termed mICRoScore, maximised the prognostic performance, in which a mICRoScore-high group corresponded to a subgroup of patients with colorectal cancer with a 97 per cent and five-year overall survival rate.

Study Reveals Impact of Highly Processed Foods on Brain Metabolism, Sense Of Smell

Researchers at Sidra Medicine in collaboration with teams from the Universidade Federal do Rio Grande do Sul (Brazil) and Monell Chemical Senses Center (USA), have published a groundbreaking study in the journal Molecular Metabolism, demonstrating how the short-term consumption of highly processed diets can impair brain metabolism and the sense of smell (olfactory) functions in mice.

Led by Dr. Luis R. Saraiva, Principal Investigator and A/Director of the Human Disease Modeling and Therapeutics Division at Sidra Medicine, the research team undertook the study to explore the short-term impact of consuming highly processed foods, especially in light of increasing global obesity rates and health concerns. The study involved an elaborate experimental design where mice, over a period of less than two months were fed three distinct diets: a standard grain-based chow diet, a highly processed control diet, and a highly processed high-fat diet.

Researchers conducted a comprehensive series of tests, including behavioral and metabolic phenotyping, electro-olfactogram recordings, brain glucose metabolism imaging, and mitochondrial respirometry. Advanced (ribonucleic acid) RNA-sequencing was performed on samples from the nose and various brain regions to understand the genetic impact. The study, co-funded by Sidra Medicine and a grant from Qatar National Research Fund, adds to the existing literature on the health impacts of processed foods and raises essential questions about dietary choices in contemporary society.



Qatar Foundation Experts Discuss Biomedical, Ethical Perspectives on Genetic Modification

A progressive move taken by Qatar to do generic screening for potential spouses has made it possible to identify hereditary diseases that a child may be born with but also take early intervention measures to prevent them. Dr. Sahar Da'as, Laboratory Manager of the Zebrafish Facility at Sidra Medicine, member of Qatar Foundation (QF), explains that if one or both parents carry a genetic mutation that increases the likelihood of their child inheriting a hereditary disease.

However early intervention and planning can be done by screening that particular gene in the embryos' DNA to prevent its inheritance or alleviate the resulting symptoms at early stages. Pre-marital medical tests, which are mandatory in Qatar, include performing genetic testing for potential spouses to detect potential genetic mutations that may affect their future children. Despite the promising results shown by the uses of precision medicine and genetic therapy, Dr. Da'as points out that much of it is still in the early stages and under experimentation. When talking about genetic modification, ethical aspects and boundaries cannot be ignored. While some view genetic testing as a means to reduce the spread of hereditary diseases and improve the health of future generations, others believe that this approach may lead to ethical challenges such as (genetic) discrimination or pressuring individuals to make decisions that may not align with their personal values.

According to Dr. Mohammed Ghaly, Professor of Islam and Biomedical Ethics at QF's Hamad Bin Khalifa University (HBKU), Research Center for Islamic Legislation and Ethics (CILE), religious scholars encourage genetic testing in the pre-marital stage, so individuals are aware of potential health conditions their children may have and can make an informed decision. Dr. Ghaly underscores the considerable ethical debates surrounding genetic modification or gene editing, particularly in the context of germline gene editing. This form of modification entails the permanent editing of genes in foundational cells, rendering the reversal of changes challenging, if not entirely impossible.

Pioneering Clinical Whole Genome Sequencing

We are pleased to announce the successful implementation of our Whole Genome Sequencing (WGS) service, as an advanced diagnostic-grade genetic test for our patients. The successful implementation of WGS is the culmination of years of Research infrastructure development, expertise building, and steady collaboration within various divisions, including genetic pathology, quality, the clinical genomic laboratory, and genomic data science core.

The method has the power to transform pediatric healthcare at our hospital by enabling more personalized diagnoses with accuracy and speed. WGS is a comprehensive genetic test that analyzes an individual's entire genome to identify genetic variations linked to diseases. It can quickly detect almost any genetic issue, including rare conditions that might otherwise go undiagnosed.

The availability of the test in Qatar, significantly eliminates the need to send samples abroad, reducing turnaround times from months to weeks. This is particularly crucial for critically ill patients where timely diagnosis can be lifesaving. WGS is a complex project that required a significant investment in advanced DNA sequencing technologies and coordinated teamwork.

The implementation was supported by the Illumina Corporation. As the cost of WGS continues to decrease, we will consider making it a routine part of its pediatric care services especially for young patients with unexplained health conditions. The program will also enable proactive and preventive measures for the hospital's patients including fetuses and young babies, by identifying genetic risks in advance and developing personalized.

Award for the Global Grants for Gut Health

Dr. Souhaila Al Khodor, Director - Perinatal and Reproductive Health Division, and her team from the Laboratory of Microbiome and Biomarkers Discovery received a Nature award for "The Global Grants for Gut Health", thus winning the "Best Abstract Prize" for Translational Science. Titled: Multiomics Profiling for a Comprehensive Understanding of Immune and Microbial Signatures In Pediatric Inflammatory Bowel Disease, the study is funded by QNRF under NPRP10- 0125-170242 and is a collaboration between Dr. Al Khodor's research team and Dr. Elawad's clinical team.

The Global Grants for Gut Health (GGGH) is a competitive programme for investigator-initiated research into the human gut microbiota, supported by Yakult and Nature Portfolio. As part of the International Human Microbiome conference in June 2024, the GGGH gave awards to 3 top abstracts submitted to the conference in different research categories, including translational science. Sidra Medicine's project won the Best Abstract prize for translational Science from almost 600 abstracts that were evaluated. The patients were all recruited from Sidra Medicine, and the study started in 2018.

This study, which is highly aligned with Sidra Medicine's mission to advance clinical care for women and Children living in Qatar, recruited IBD patients seeking treatment at Sidra Medicine. Several biological samples and extensive data was collected from the patients.

Using the State-of- the-art facility in the research department at Sidra Medicine, a unique gene expression and microbial signature for each IBD subtype was identified, with clear distinctions during disease flare compared to remission and healthy controls. This comprehensive understanding of the microbial-immune system interaction has the potential to reveal novel mechanisms and, ultimately, facilitate the discovery of innovative therapeutic targets to treat IBD.

Award-Winning Study on Treatable Inherited Metabolic Disorders in Qatar

Sidra Medicine published a groundbreaking study in the journal 'Genetics in Medicine, an official journal of the American College of Medical Genetics and Genomics (ACMG)'. The research titled "Mapping the Genetic Landscape of Treatable Inherited Metabolic Disorders in a large Middle Eastern Biobank" was the recipient of the journal's Editor's Choice Award.

The study was also awarded first place for 'abstract presentation' at the MENA Congress for Rare Diseases 2024 in Abu Dhabi. Inherited Metabolic Disorders (IMDs) are a group of rare conditions caused by enzyme deficiencies with a genetic basis that disrupt the body's metabolism. Although each IMD is rare, their collective incidence is considerable, commonly estimated at 1 in 2,500 to 5,000 live births. Led by Prof. Khalid Fakhro in collaboration with (Qatar Precision Health Institute) QPHI, the study analyzed the genome sequencing data of more than 14,000 participants from Qatar Biobank focusing on 125 genes associated with 115 treatable IMDs.

The study revealed a significant carrier frequency and disease burden for 46 treatable IMDs within the Qatari population. The results showed that approximately 1 in 13 unrelated individuals (eight percent) were carriers of at least one of these IMDs, with thirty-one participants (0.2 percent) carrying more than one disease-causing variant. Dr. Geethanjali Devadoss Gandhi, Senior Postdoctoral Fellow at Sidra Medicine and the first author of the published article said: "Our findings underscore the immediate need for comprehensive research and its potential to reshape public health policies, such as carrier and newborn screening programs, to address this previously unrecognized health concern."

The study's findings offer valuable insights into the prevalence and complexity of treatable inherited metabolic disorders (IMDs) within the Qatari population, underscoring the need for further research and treatment options.

Pediatric Oncology Report 2023

To mark World Cancer Research Day and Childhood Cancer Awareness Month, Sidra Medicine, a member of Qatar Foundation, has published its 'Pediatric Oncology Report 2023.' This year's report presents information on the treatment modalities employed at Sidra Medicine and the remarkable outcomes achieved for its young patients. It also takes a deeper dive by exploring the specifics of leukemia and brain tumors, going beyond the previous reporting of solid and non-solid cancers statistics.

The report offers an analysis of pediatric cancer types treated at the hospital, with a clear distinction between solid cancers (69 percent) and non-solid cancers (31 percent). Regarding patient demographics, the majority are of Arab descent (60 percent), followed by Asian patients (32 percent). The remaining less than 10 percent represent other ethnicities.

Among the diagnoses, Leukemia emerges as the most frequent at 31 percent, closely followed by Central Nervous System malignancies at 23 percent. Since launching its pediatric precision oncology initiative in 2018, treatment abroad has gone down from 20 percent in 2019 to only 11 percent in 2023.

Sidra Medicine's commitment to pediatric cancer care is highlighted by the upcoming launch of Qatar's first pediatric Hematopoietic Stem Cell Transplant (HSCT) program. This initiative, in partnership with Children's Hospital of Philadelphia, will provide life-saving treatment for children with cancer by replacing diseased bone marrow cells with their own healthy stem cells, or that of a donor.

Establishment of Institutional Animal Care and Use Committee (IACUC)

Our Research Department is excited to announce that we have now established our own IACUC committee for all animal research conducted in our organization. This committee will continue to be instrumental in ensuring that all animal-related research conducted within our institution adheres to ethical standards, regulatory guidelines, and institutional policies.

Its responsibilities include reviewing and approving research protocols involving animals, monitoring ongoing projects, and safeguarding the well-being of the animals involved. Comprised of interdisciplinary experts in fields such as veterinary science, research ethics, and animal welfare, the IACUC encourages close collaboration with researchers and staff engaged in animal research to uphold the highest standards of care and ethical conduct.

By fostering a culture that prioritizes animal welfare and promoting responsible scientific inquiry, the committee aims to make a positive impact within our organization's research community and beyond. We look forward to the positive impact that the IACUC will have on our organization's research community and the broader scientific community.

Sidra Medicine Advocates for Inclusive Genomic Databases

In an article titled Addressing Inequity in Medical Research: The Need to Expand Genomic Databases published on Biopharma Trend, Prof. Khalid Fakhro addresses the critical need to address inequity in medical research by expanding genomic databases including Qatar and the region has been emphasized by the Chief Research Officer at Sidra Medicine, Prof. Khalid Fakhro. He shed light on the importance of global representation in databases to make breakthrough discoveries in health conditions and treatments. Prof. Fakhro acknowledges the progress made but emphasizes the long road ahead in making genome databases representative of global populations.

The underrepresentation of certain populations poses a significant challenge to the development of equitable and effective healthcare solutions. Prof. Fakhro points out that the lack of diversity in genomic databases can result in less effective care, as treatment approaches may vary based on genetic makeup.

The Middle East, with a population exceeding 400 million people, remains among the most underrepresented in genomic databases. Prof. Fakhro stresses the need for local pediatric databases to address the unique healthcare needs of children. The lack of diversity not only contributes to healthcare inequality but also limits medical research in the region.

To overcome the challenges, Prof. Fakhro emphasizes the importance of government and academic support, along with industry partnerships. He calls for increased international pharma and tech presence in the Middle East, citing the growing global next-generation sequencing (NGS) informatics market, expected to reach $4.3bn by 2030. Prof. Fakhro anticipates that groundbreaking research and treatment development will benefit research bodies, industry partners, and local populations alike, paving the way for a more inclusive and equitable future in precision medicine.

International Day of Women and Girls in Science

Sidra Medicine celebrated a very happy International Day of Women and Girls in Science with our female colleagues at Sidra Medicine. CEO Dr. Iyabo Tinubu-Karch said: “Whether it is diagnosing a health condition; finding a cure or a pathway to treat a patient; developing an IT or engineering platform to enable smoother processes – women have played a pivotal role across science, research, pathology, technology and engineering at Sidra Medicine.

Their excellence in these fields speaks of their passion in pursuing diverse careers. Thank you for your hard work and positioning us as an organization committed to offering personalized healthcare for all our patients and their families.

May you continue to be an inspiration for young women and girls everywhere.” Women make important contributions to the field of research and innovation.

Whether they make fundamental scientific discoveries, find new ways to translate research results into real-world applications, or work to create optimal conditions for researchers to perform at their best, their impact is undeniable.

However, women’s contributions to research and innovation are often a lot less visible than men’s. In addition, not only the research profession is stereotypically associated with men, but women remain widely underrepresented in science.

Launch of IT Council

The Research IT Council, chaired by Dr. Sonia Davila, has been launched with the primary objective to streamline processes including gathering, evaluating, and prioritizing user requirements. The Council would serve as a centralized body to ensure that all requests are thoroughly reviewed, duplication is merged or eliminated, and only the most impactful and feasible functionalities are pursued.

This approach will not only enhance efficiency but will also ensure that projects remain aligned with end-users’ needs and the division’s strategic goals. The council meets monthly to discuss submitted requests. Kindly direct any questions or feedback on IMT matters to your PI or Core manager via email. They will ensure this is forwarded to one of the Team Members for inclusion in the agenda of the monthly meeting.

Goals:

- Aid IMT team in approving projects to pursue
- Help IMT team prioritize projects, both internally and with external dependencies
- Help allocate budget
- Discuss concerns, both for IMT and Research users. End-users could notify their PIs of any item they would like to be brought up to the Council.
- Drive alignment to CRO Goals

Team members:

Sonia Davila (Chair); Younes Mokrab (Core Member); Wouter Hendrickx (Core Member); Abdul Rahman Salhab (Core Member); Sasirekha Palaniswamy (Core Member); Farhan Mohammad Naim (Core Member); Ahmed Abdellatief (IMT Member); Ahmad El Khouly (IMT Member); Tariq Abu Saqri (IMT Member); Mehshad Hamza (IMT Member).

PUBLICATION REGISTRY

GENETICS

Trimble EA, Kell PA, Avella MA, France CR, Rhudy JL**. Opioid Receptor Mu 1 Gene (OPRM1) A118G Polymorphism and Emotional Modulation of Pain.** J Pain Res. 2024 Feb 1;17:489-500. doi: 10.2147/JPR.S442431. PMID: 38328016; PMCID: PMC10849056.

Kumar MA, Baba SK, Sadida HQ, Marzooqi SA, (...), Al-Shabeeb Akil AS, Macha MA, Mir R, Bhat AA. **Extracellular vesicles as tools and targets in therapy for diseases.** Signal Transduct Target Ther. 2024 Feb 5;9(1):27. doi: 10.1038/s41392-024-01735-1. PMID: 38311623; PMCID: PMC10838959.

Chelban V, Aksnes H, Maroofian R, (...), SYNaPS Study Group; Arnesen T, Houlden H. **Biallelic NAA60 variants with impaired n-terminal acetylation capacity cause autosomal recessive primary familial brain calcifications.** Nat Commun. 2024 Mar 13;15(1):2269. doi: 10.1038/s41467-024-46354-0. PMID: 38480682; PMCID: PMC10937998.

Alhamad M, Anand D. **Congenital diaphragmatic hernia with associated broncho-pulmonary sequestration: A report of two cases and a literature review.** J Neonatal Perinatal Med. 2024;17(1):123-131. doi: 10.3233/NPM-230042. PMID: 38189715.

Alhalabi O, Abdulwahab A, Thomas M. **The First Case of a Homozygous CCNO NM 021147.4 Mutation Associated With Primary Ciliary Dyskinesia in Two Indian Siblings.** Cureus. 2024 Jan 13;16(1):e52237. doi: 10.7759/cureus.52237. PMID: 38222993; PMCID: PMC10787941.

Alkhidir S, El-Akouri K, Al-Dewik N, Khodjet-El-Khil H, Okashah S, Islam N, Ben-Omran T, Al-Shafai M. **The genetic basis and the diagnostic yield of genetic testing related to nonsyndromic hearing loss in Qatar.** Sci Rep. 2024 Feb 20;14(1):4202. doi: 10.1038/s41598-024-52784-z. PMID: 38378725; PMCID: PMC10879212.

von Schnurbein J, Zorn S, Nunziata A, Brandt S, Moepps B, Funcke JB, Hussain K, Farooqi IS, Fischer-Posovszky P, Wabitsch M. **Classification of Congenital Leptin Deficiency.** J Clin Endocrinol Metab. 2024 Sep 16;109(10):2602-2616. doi: 10.1210/clinem/dgae149. PMID: 38470203; PMCID: PMC11403321.

Yong PFK, Annals R, Diwakar L, Elkhalifa S, Gompels M, Jain R, Karim MY, Khan S, Metcalfe A, Noorani S, Steele C, Kiani-Alikhan S, Garcez T. **Prophylaxis in hereditary angioedema: a United Kingdom Delphi consensus.** Clin Exp Immunol. 2024 Jun 20;217(1):109-116. doi: 10.1093/cei/uxae020. PMID: 38456386; PMCID: PMC11188536.

Al-Sarraj Y, Taha RZ, Al-Dous E, (...), Alshaban F, El-Shanti H, Albagha OME. **The genetic landscape of autism spectrum disorder in the Middle Eastern population.** Front Genet. 2024 Mar 20;15:1363849. doi: 10.3389/fgene.2024.1363849. PMID: 38572415; PMCID: PMC10987745.

Wang Y, Xu J, Ben Abid F, Salah H, (...), Tang P, Perez-Lopez A, Tsui CKM. **Population genomic analyses reveal high diversity, recombination and nosocomial transmission among Candida glabrata (Nakaseomyces glabrata) isolates causing invasive infections.** Microb Genom. 2024 Jan;10(1):001179. doi: 10.1099/mgen.0.001179. PMID: 38226964; PMCID: PMC10868614.

Shaath R, Al-Maraghi A, Ali H, AlRayahi J, Kennedy AD, DeBalsi KL, Hussein S, Elbashir N, Padmajeya SS, Palaniswamy S, Elsea SH, Akil AA, Yousri NA, Fakhro KA. **Integrating Genome Sequencing and Untargeted Metabolomics in Monozygotic Twins with a Rare Complex Neurological Disorder.** Metabolites. 2024 Mar 4;14(3):152. doi: 10.3390/metabo14030152. PMID: 38535312; PMCID: PMC10972350.

Rinchai D, Brummaier T, A Marr A, Habib T, Toufiq M, Kino T, Nosten F, Al Khodor S, Terranegra A, McGready R, Kabeer BSA, Chaussabel D. **A data browsing application for accessing gene and module-level blood transcriptome profiles of healthy pregnant women from high- and low-resource settings.** Database (Oxford). 2024 Apr 2;2024:baae021. doi: 10.1093/database/baae021. PMID: 38564425; PMCID: PMC10986794.

Schmitz JE, Aggarwal N, Laufer L, Walter J, Salhab A, Rahmann S. **EpiSegMix: a flexible distribution hidden Markov model with duration modeling for chromatin state discovery.** Bioinformatics. 2024 Mar 29;40(4):btae178. doi: 10.1093/bioinformatics/btae178. PMID: 38565260; PMCID: PMC11026141.

Ahmed S, Salem A, Hamadan N, Khalfallah M, Alfaki M**. Identification of the Hub Genes Involved in Chikungunya Viral Infection.** Cureus. 2024 Apr 4;16(4):e57603. doi: 10.7759/cureus.57603. PMID: 38707036; PMCID: PMC11069395.

Al-Saei O, Malka S, Owen N, Aliyev E, Vempalli FR, Ocieczek P, Al-Khathlan B; Genomics England Research Consortium; Fakhro K, Moosajee M. **Increasing the diagnostic yield of childhood glaucoma cases recruited into the 100,000 Genomes Project.** BMC Genomics. 2024 May 16;25(1):484. doi: 10.1186/s12864-024-10353-8. PMID: 38755526; PMCID: PMC11097485.

Khan FU, Khan H, Ullah K, (...), Lakhani SA, Ansar M, Ahmad W. **Clinical and genetic investigation of 14 families with various forms of short stature syndromes.** Clin Genet. 2024 Sep;106(3):347-353. doi: 10.1111/cge.14550. Epub 2024 May 22. PMID: 38774940.

Raveendran S, Al Massih A, Al Hashmi M, Saeed A, Al-Azwani I, Mathew R, Tomei S. **Urinary miRNAs: Technical Updates.** Microrna. 2024;13(2):110-123. doi: 10.2174/0122115366305985240502094814. PMID: 38778602.

Rossi N, Syed N, Visconti A, Aliyev E, Berry S, Bourbon M, Spector TD, Hysi PG, Fakhro KA, Falchi M. **Rare variants at KCNJ2 are associated with LDL-cholesterol levels in a cross-population study.** NPJ Genom Med. 2024 Jun 28;9(1):36. doi: 10.1038/s41525-024-00417-9. PMID: 38942744; PMCID: PMC11213907.

Elsayed AK, Aldous N, Alajez NM, Abdelalim EM. **Identifying miRNA Signatures Associated with Pancreatic Islet Dysfunction in a FOXA2-Deficient iPSC Model.** Stem Cell Rev Rep. 2024 Oct;20(7):1915-1931. doi: 10.1007/s12015-024-10752-0. Epub 2024 Jun 25. PMID: 38916841; PMCID: PMC11445299.

Da'as SI, Thanassoulas A, Calver BL, Saleh A, Abdelrahman D, Hasan W, Safieh-Garabedian B, Kontogianni I, Nasrallah GK, Nounesis G, Lai FA, Nomikos M. **Divergent Biochemical Properties and Disparate Impact of Arrhythmogenic Calmodulin Mutations on Zebrafish Cardiac Function.** J Cell Biochem. 2024 Aug;125(8):e30619. doi: 10.1002/jcb.30619. Epub 2024 Jun 30. PMID: 38946237.

Laver TW, Wakeling MN, Caswell RC, (...), Hussain K, Owens NDL, Flanagan SE. **Chromosome 20p11.2 deletions cause congenital hyperinsulinism via the loss of FOXA2 or its regulatory elements.** Eur J Hum Genet. 2024 Jul;32(7):813-818. doi: 10.1038/s41431-024-01593-z. Epub 2024 Apr 11. PMID: 38605124; PMCID: PMC11220097.

Johnston RA, Pilkington AW 4th, Atkins CL, Boots TE, Brown PL, Jackson WT, Spencer CY, Siddiqui SR, Haque IU. **Inconsequential role for chemerin-like receptor 1 in the manifestation of ozone-induced lung pathophysiology in male mice.** Physiol Rep. 2024 Apr;12(8):e16008. doi: 10.14814/phy2.16008. PMID: 38631890; PMCID: PMC11023814.

Chakithandy S, Nazzal H, Matoug-Elwerfelli M, Narasimhan S, Uddin S, Prabhu KS, Zarif L, Mumtaz N, Sharma A, Al-Khelaifi M. **Plasma neurological biomarkers as a measure of neurotoxicity in pediatric dental general anesthesia: a prospective observational feasibility study.** Eur Arch Paediatr Dent. 2024 Apr;25(2):267-275. doi: 10.1007/s40368-024-00884-9. Epub 2024 Apr 22. PMID: 38649631; PMCID: PMC11058848.

Kamal M, Ahmed A, Nashwan AJ. **Autism Spectrum Disorder in a Single Family: A Case Series of Three Siblings.** Cureus. 2024 May 15;16(5):e60362. doi: 10.7759/cureus.60362. PMID: 38882979; PMCID: PMC11178277.

Al-Naimi AR, Abu-Hasan M, Belavendra A, Janahi I. **Prevalence, Severity, and Treatment of Obstructive Sleep Apnea in Children with Down Syndrome in Qatar.** Cureus. 2024 Jun 6;16(6):e61777. doi: 10.7759/cureus.61777. PMID: 38975488; PMCID: PMC11227032.

Aamer W, Al-Maraghi A, Syed N, Gandhi GD, Aliyev E, Al-Kurbi AA, Al-Saei O, Kohailan M, Krishnamoorthy N, Palaniswamy S, Al-Malki K, Abbasi S, Agrebi N, Abbaszadeh F, Akil ASA, Badii R, Ben-Omran T, Lo B; Qatar Genome Program Research Consortium; Mokrab Y, Fakhro KA. **Burden of Mendelian disorders in a large Middle Eastern biobank.** Genome Med. 2024 Apr 8;16(1):46. doi: 10.1186/s13073-024-01307-6. PMID: 38584274; PMCID: PMC11000384.

Mackeh R, El Bsat Y, Elmi A, Bibawi H, Karim MY, Hassan A, Lo B. **Novel Synonymous Variant in IL7R Causes Preferential Expression of the Soluble Isoform.** J Clin Immunol. 2024 Apr 8;44(4):96. doi: 10.1007/s10875-024-01688-8. PMID: 38587703; PMCID: PMC11001715.

Al-Maraghi A, Aamer W, Ziab M, Aliyev E, Elbashir N, Hussein S, Palaniswamy S, Anand D, Love DR, Charles A, A S Akil A, Fakhro KA. **A loss-of-function AGTR1 variant in a critically-ill infant with renal tubular dysgenesis: case presentation and literature review.** BMC Nephrol. 2024 Apr 22;25(1):139. doi: 10.1186/s12882-024-03569-z. PMID: 38649831; PMCID: PMC11034062.

Yu F, Hubrack S, Raynaud CM, Elmi A, Mackeh R, Agrebi N, Thareja G, Belkadi A, Al Saloos H, Ahmed AA, Purayil SC, Mohamoud YA, Suhre K, Abi Khalil C, Schmidt F, Lo B, Hassan A, Machaca K. **Loss of the TRPM4 channel in humans causes immune dysregulation with defective monocyte migration.** J Allergy Clin Immunol. 2024 Sep;154(3):792-806. doi: 10.1016/j.jaci.2024.02.026. Epub 2024 May 14. PMID: 38750824.

Fakhro KA, Awwad J, Garibova S, Saraiva LR, Avella M. **Conserved genes regulating human sex differentiation, gametogenesis and fertilization.** J Transl Med. 2024 May 19;22(1):473. doi: 10.1186/s12967-024-05162-2. PMID: 38764035; PMCID: PMC11103854.

Elgaali E, Mezzavilla M, Ahmed I, Elanbari M, Ali A, Abdelaziz G, Fakhro KA, Saleh A, Ben-Omran T, Almulla N, Cugno C. **Genetic background of primary and familial HLH in Qatar: registry data and population study.** Front Pediatr. 2024 May 9;12:1326489. doi: 10.3389/fped.2024.1326489. PMID: 38808104; PMCID: PMC11130942.

Latt KZ, Yoshida T, Shrivastav S, (...), Rosenberg AZ, Susztak K, Kopp JB. **Single-Nucleus RNA Sequencing Reveals Loss of Distal Convoluted Tubule 1 Renal Tubules in HIV Viral Protein R Transgenic Mice.** Am J Pathol. 2024 Oct;194(10):1844-1856. doi: 10.1016/j.ajpath.2024.06.006. Epub 2024 Jul 18. PMID: 39032602; PMCID: PMC11536472.

Aldous N, Elsayed AK, Memon B, Ijaz S, Hayat S, Abdelalim EM. **Deletion of RFX6 impairs iPSC-derived islet organoid development and survival, with no impact on PDX1+/NKX6.1+ progenitors.** Diabetologia. 2024 Dec;67(12):2786-2803. doi: 10.1007/s00125-024-06232-2. Epub 2024 Jul 30. PMID: 39080045; PMCID: PMC11604831.

Paracha SA, Nawaz S, Tahir Sarwar M, (...), Fakhro KA, Umair M, Ansar M. **The genetic cause of neurodevelopmental disorders in 30 consanguineous families.** Front Med (Lausanne). 2024 Aug 30;11:1424753. doi: 10.3389/fmed.2024.1424753. PMID: 39281811; PMCID: PMC11392838.

Hendi NN, Bengoechea-Alonso MT, Ericsson J, Nemer G. **Functional characterization of the SDR42E1 reveals its role in vitamin D biosynthesis.** Heliyon. 2024 Aug 17;10(17):e36466. doi: 10.1016/j.heliyon.2024.e36466. PMID: 39263177; PMCID: PMC11387231.

Zehri Z, Khan H, Ahmed S, Khan MJ, Shahwani NA, Nawaz S, Umair M. **Delineating the Disease Boundaries: Homozygous CDC14A Variants Underlying Nonsyndromic Hearing Loss and Hearing Impairment Infertile Male Syndrome.** Mol Syndromol. 2024 Aug;15(4):269-274. doi: 10.1159/000536016. Epub 2024 Feb 8. PMID: 39119445; PMCID: PMC11305659.

Ak B, Parıltay E, Gümüşburun R, Dalgıç CT, Aykut A, Durmaz A, Akın H, Ardeniz Ö, Lo B. **Uniparental Disomy of Chromosome 4: A Case of Whole Chromosome UPD Presenting with LRBA Deficiency.** J Clin Immunol. 2024 Sep 18;45(1):10. doi: 10.1007/s10875-024-01803-9. PMID: 39289195.

Carriço JN, Gonçalves CI, Al-Naama A, Syed N, (...), Sabino T, Saraiva LR, Lemos MC. **Genetic architecture of congenital hypogonadotropic hypogonadism: insights from analysis of a Portuguese cohort.** Hum Reprod Open. 2024 Sep 11;2024(3):hoae053. doi: 10.1093/hropen/hoae053. PMID: 39308770; PMCID: PMC11415827.

Abiib S, Khodjet-El-Khil H, El-Akouri K, (...), Ben-Omran T, Al-Thani A, Al-Shafai M. **Qatar's genetic counseling landscape: Current insights and future prospects.** Genet Med Open. 2024 Jul 6;2(Suppl 2):101866. doi: 10.1016/j.gimo.2024.101866. PMID: 39712968; PMCID: PMC11658542.

Rots D, Choufani S, Faundes V, (...), Kleefstra T, Weksberg R, Banka S. **Pathogenic variants in KMT2C result in a neurodevelopmental disorder distinct from Kleefstra and Kabuki syndromes.** Am J Hum Genet. 2024 Aug 8;111(8):1626-1642. doi: 10.1016/j.ajhg.2024.06.009. Epub 2024 Jul 15. PMID: 39013459; PMCID: PMC11339626.

Devadoss Gandhi G, Aliyev E, Syed N, Vempalli FR, Saad C, Mbarek H, Al-Saei O, Al-Maraghi A, Abdi M, Krishnamoorthy N, Badii R; Qatar Genome Program Research Consortium; Akil AA, Ben-Omran T, Fakhro KA. **Mapping the genetic landscape of treatable inherited metabolic disorders in a large Middle Eastern biobank.** Genet Med. 2024 Dec;26(12):101268. doi: 10.1016/j.gim.2024.101268. Epub 2024 Sep 14. PMID: 39286960.

Saettini F, Guerra F, Mauri M, (...), Piazza R, Barberis M, Biondi A. **Biallelic PI4KA Mutations Disrupt B-Cell Metabolism and Cause B-Cell Lymphopenia and Hypogammaglobulinemia.** J Clin Immunol. 2024 Sep 23;45(1):15. doi: 10.1007/s10875-024-01793-8. PMID: 39312004.

Bougarn S, Guennoun A, Khan T, Mackeh R, Adeli M, Marr N. **Concomitant Ultrarare Mutations in TLR3 and CTPS2 in a Patient with Severe and Recurrent Respiratory Infections in Early Life.** J Clin Immunol. 2024 Sep 23;45(1):14. doi: 10.1007/s10875-024-01804-8. PMID: 39312089; PMCID: PMC11420255.

Tan JHJ, Li Z, Porta MG, Rajaby R, (...), Prabhakar S, Tan P, Bertin N. **A Catalogue of Structural Variation across Ancestrally Diverse Asian Genomes.** Nat Commun. 2024 Nov 4;15(1):9507. doi: 10.1038/s41467-024-53620-8. PMID: 39496583; PMCID: PMC11535549.

Younuskunju S, Mohamoud YA, Mathew LS, Mayer KFX, Suhre K, Malek JA. **The genetics of fruit skin separation in date palm.** BMC Plant Biol. 2024 Nov 6;24(1):1050. doi: 10.1186/s12870-024-05713-1. PMID: 39506645; PMCID: PMC11539790.

Kuttikrishnan S, Ansari AW, Suleman M, Ahmad F, Prabhu KS, El-Elimat T, Alali FQ, Al Shabeeb Akil AS, Bhat AA, Merhi M, Dermime S, Steinhoff M, Uddin S. **The apoptotic and anti-proliferative effects of Neosetophomone B in T-cell acute lymphoblastic leukaemia via PI3K/AKT/mTOR pathway inhibition.** Cell Prolif. 2024 Nov 14:e13773. doi: 10.1111/cpr.13773. Epub ahead of print. PMID: 39542458.

Raveendran S, Saeed A, Kalikiri MKR, Manjunath HS, Al Massih A, Al Hashmi M, Al Azwani I, Kabeer BSA, Mathew R, Tomei S. **Automation and miniaturization of high-throughput qPCR for gene expression profiling.** SLAS Technol. 2024 Dec 25;31:100241. doi: 10.1016/j.slast.2024.100241. Epub ahead of print. PMID: 39725274.

Ahmed S, Elgizouli M, Kilpatrick ES, Morris TJ. **Familial hypercholesterolaemia with high triglycerides: A diagnostic challenge.** Ann Clin Biochem. 2024 Oct 10:45632241289275. doi: 10.1177/00045632241289275. Epub ahead of print. PMID: 39389087.

Maimaris J, Roa-Bautista A, Sohail M, Booth C, Cugno C, Chenchara L, Omran TB, Hacohen Y, Lim M, Gilmour K, Griffiths G, Rao K, Elfeky R, Kusters M. **Griscelli Syndrome Type 2: Comprehensive Analysis of 149 New and Previously Described Patients with RAB27A Deficiency.** J Clin Immunol. 2024 Nov 28;45(1):50. doi: 10.1007/s10875-024-01842-2. PMID: 39607447; PMCID: PMC11604824.

CANCER

Sadida HQ, Abdulla A, Marzooqi SA, Hashem S, Macha MA, Akil ASA, Bhat AA. **Epigenetic modifications: Key players in cancer heterogeneity and drug resistance.** Transl Oncol. 2024 Jan;39:101821. doi: 10.1016/j.tranon.2023.101821. Epub 2023 Nov 4. PMID: 37931371; PMCID: PMC10654239.

Patil K, Khan AQ, Ahmad F, Kuttikrishnan S, Anver R, Mateo JM, Ahmad A, Bhat AA, Buddenkotte J, Steinhoff M, Uddin S. **Sanguinarine Triggers Apoptosis in Cutaneous Squamous Cell Carcinoma Cells through Reactive Oxygen Species-Dependent c-Jun N-Terminal Kinase Signaling Pathway.** Front Biosci (Landmark Ed). 2024 Jan 23;29(1):40. doi: 10.31083/j.fbl2901040. PMID: 38287817.

Mason M, Lapuente-Santana Ó, Halkola AS, (...), Szustakowski JD, Vincent BG, Carbone DP. **A community challenge to predict clinical outcomes after immune checkpoint blockade in non-small cell lung cancer.** J Transl Med. 2024 Feb 21;22(1):190. doi: 10.1186/s12967-023-04705-3. PMID: 38383458; PMCID: PMC10880244.

Zhu H, Roelands J, Ahmed EI, Stouten I, Hoorntje R, van Vlierberghe RLP, Ijsselsteijn ME, Lei X, de Miranda NFCC, Tollenaar RAEM, Vahrmeijer AL, Bedognetti D, Hendrickx WRL, Kuppen PJK. **Location matters: spatial dynamics of tumor-infiltrating T cell subsets is prognostic in colon cancer.** Front Immunol. 2024 Feb 5;15:1293618. doi: 10.3389/fimmu.2024.1293618. PMID: 38375478; PMCID: PMC10875018.

Kuttikrishnan S, Hasan M, Prabhu KS, El-Elimat T, Oberlies NH, Pearce CJ, Alali FQ, Ahmad A, Pourkarimi E, Bhat AA, Yalcin HC, Uddin S. **Exploring the in vivo anti-cancer potential of Neosetophomone B in leukemic cells using a zebrafish xenograft model.** Exp Cell Res. 2024 Feb 1;435(1):113907. doi: 10.1016/j.yexcr.2023.113907. Epub 2024 Jan 4. PMID: 38184222.

Prabhu KS, Sadida HQ, Kuttikrishnan S, Junejo K, Bhat AA, Uddin S**. Beyond genetics: Exploring the role of epigenetic alterations in breast cancer.** Pathol Res Pract. 2024 Feb;254:155174. doi: 10.1016/j.prp.2024.155174. Epub 2024 Jan 26. PMID: 38306863.

Rayan M, Sayed TS, Hussein OJ, Therachiyil L, Maayah ZH, Maccalli C, Uddin S, Prehn JHM, Korashy HM. **Unlocking the secrets: exploring the influence of the aryl hydrocarbon receptor and microbiome on cancer development.** Cell Mol Biol Lett. 2024 Mar 6;29(1):33. doi: 10.1186/s11658-024-00538-0. PMID: 38448800; PMCID: PMC10918910.

Kheraldine H, Gupta I, Cyprian FS, Vranic S, Al-Farsi HF, Merhi M, Dermime S, Al Moustafa AE. **Targeting HER2-positive breast cancer cells by a combination of dasatinib and BMS-202: Insight into the molecular pathways.** Cancer Cell Int. 2024 Mar 2;24(1):94. doi: 10.1186/s12935-023-03195-z. PMID: 38431613; PMCID: PMC10909263.

Bhat GR, Sethi I, Sadida HQ, Rah B, Mir R, Algehainy N, Albalawi IA, Masoodi T, Subbaraj GK, Jamal F, Singh M, Kumar R, Macha MA, Uddin S, Akil ASA, Haris M, Bhat AA. **Cancer cell plasticity: from cellular, molecular, and genetic mechanisms to tumor heterogeneity and drug resistance.** Cancer Metastasis Rev. 2024 Mar;43(1):197-228. doi: 10.1007/s10555-024-10172-z. Epub 2024 Feb 8. PMID: 38329598; PMCID: PMC11016008.

Eletr LF, Ibnouf SH, Salih TA, Ibrahim HI, Mustafa MI, Alhashmi NA, Alfaki M**. Comprehensive Analysis Reveals Deoxyribonuclease 1 as a Potential Prognostic and Diagnostic Biomarker in Human Cancers.** Cureus. 2024 Mar 14;16(3):e56171. doi: 10.7759/cureus.56171. PMID: 38618458; PMCID: PMC11015913.

Gordon M, Sinopoulou V, Akobeng AK, Sarian A, Moran GW. **Infliximab for maintenance of medically-induced remission in Crohn's disease.** Cochrane Database Syst Rev. 2024 Feb 19;2(2):CD012609. doi: 10.1002/14651858.CD012609.pub2. PMID: 38372447; PMCID: PMC10875719.

Vujanić GM, Graf N, D'Hooghe E, (...); International Society of Paediatric Oncology Renal Tumour Study Group (SIOP-RTSG). **Omission of adjuvant chemotherapy in patients with completely necrotic Wilms tumor stage I and radiotherapy in stage III: The 30-year SIOP-RTSG experience.** Pediatr Blood Cancer. 2024 Mar;71(3):e30852. doi: 10.1002/pbc.30852. Epub 2024 Jan 7.

Bertucci F, Lerebours F, Ceccarelli M, Guille A, Syed N, Finetti P, Adélaïde J, Van Laere S, Goncalves A, Viens P, Birnbaum D, Mamessier E, Callens C, Bedognetti D. **Mutational landscape of inflammatory breast cancer.** J Transl Med. 2024 Apr 18;22(1):374. doi: 10.1186/s12967-024-05198-4. PMID: 38637846; PMCID: PMC11025259.

Prabhu KS, Jessy S, Kuttikrishnan S, Mujeeb F, Mariyam Z, Habeeba U, Ahmad N, Bhat AA, Uddin S. **Anticancer Potential and Molecular Targets of Pristimerin in Human Malignancies.** Pharmaceuticals (Basel). 2024 Apr 30;17(5):578. doi: 10.3390/ph17050578. PMID: 38794148; PMCID: PMC11123949.

Salem A, Ahmed S, Khalfallah M, Hamadan N, ElShikh W, Alfaki M. **A Comprehensive Pan-Cancer Analysis Reveals Cyclin-Dependent Kinase Inhibitor 2A Gene as a Potential Diagnostic and Prognostic Biomarker in Colon Adenocarcinoma.** Cureus. 2024 May 19;16(5):e60586. doi: 10.7759/cureus.60586. PMID: 38894777; PMCID: PMC11184547.

Prabhu KS, Ahmad F, Kuttikrishnan S, Leo R, Ali TA, Izadi M, Mateo JM, Alam M, Ahmad A, Al-Shabeeb Akil AS, Bhat AA, Buddenkotte J, Pourkarimi E, Steinhoff M, Uddin S. **Bortezomib exerts its anti-cancer activity through the regulation of Skp2/p53 axis in non-melanoma skin cancer cells and C. elegans.** Cell Death Discov. 2024 May 9;10(1):225. doi: 10.1038/s41420-024-01992-7. PMID: 38724504; PMCID: PMC11082213.

Prabhu KS, Kuttikrishnan S, Ahmad N, Habeeba U, Mariyam Z, Suleman M, Bhat AA, Uddin S. H2AX: **A key player in DNA damage response and a promising target for cancer therapy.** Biomed Pharmacother. 2024 Jun;175:116663. doi: 10.1016/j.biopha.2024.116663. Epub 2024 Apr 30. PMID: 38688170.

Vujanić GM, Mifsud W. **Anaplasia in Wilms tumor: A critical review.** Pediatr Blood Cancer. 2024 Jul;71(7):e31000. doi: 10.1002/pbc.31000. Epub 2024 Apr 11. PMID: 38605554.

Khan IR, Sadida HQ, Hashem S, Singh M, Macha MA, Al-Shabeeb Akil AS, Khurshid I, Bhat AA. **Therapeutic implications of signaling pathways and tumor microenvironment interactions in esophageal cancer.** Biomed Pharmacother. 2024 Jul;176:116873. doi: 10.1016/j.biopha.2024.116873. Epub 2024 Jun 5. PMID: 38843587.

Chauhan R, Malhotra L, Gupta A, Dagar G, Mendiratta M, Masoodi T, Hashem S, Al Marzooqi S, Das D, Uddin S, Ethayathulla AS, Macha MA, Akil AA, Sahoo RK, Rai E, Bhat AA, Singh M. **Bergenin inhibits growth of human cervical cancer cells by decreasing Galectin-3 and MMP-9 expression.** Sci Rep. 2024 Jul 3;14(1):15287. doi: 10.1038/s41598-024-64781-3. PMID: 38961106; PMCID: PMC11222472.

Ahmad N, Moton S, Kuttikrishnan S, Prabhu KS, Masoodi T, Ahmad S, Uddin S**. Fatty acid synthase: A key driver of ovarian cancer metastasis and a promising therapeutic target.** Pathol Res Pract. 2024 Aug;260:155465. doi: 10.1016/j.prp.2024.155465. Epub 2024 Jul 14. PMID: 39018927.

Dagar G, Gupta A, Shankar A, Chauhan R, Macha MA, Bhat AA, Das D, Goyal R, Bhoriwal S, Pandita RK, Prasad CP, Sarkar PS, Pandita TK, Singh M. **The future of cancer treatment: combining radiotherapy with immunotherapy.** Front Mol Biosci. 2024 Jul 9;11:1409300. doi: 10.3389/fmolb.2024.1409300. PMID: 39044839; PMCID: PMC11263218.

Makawi A, Khalafallah SA, Faris IM, Alfaki M. **Comprehensive Analysis Reveals Epithelial Growth Factor Receptor as a Potential Diagnostic Biomarker in Glioblastoma Multiforme.** Cureus. 2024 Jul 14;16(7):e64506. doi: 10.7759/cureus.64506. PMID: 39139341; PMCID: PMC11320889.

Abdallah MM, Yahia M, Tagelsir Ahmed Y, Alfaki M**. WNT5A in Cancer: A Pan-Cancer Analysis Revealing Its Diagnostic and Prognostic Biomarker Potential.** Cureus. 2024 Jul 23;16(7):e65190. doi: 10.7759/cureus.65190. PMID: 39176352; PMCID: PMC11340256.

Taha MY, Mohamed NO, Alhaj LG, Altayeb I, Basheer A, Idrees S, Said AM, Alfaki M. **CCND1 as a Prognostic and Diagnostic Biomarker and the Impact of Its Epigenetic Alterations on Cancer Survival.** Cureus. 2024 Jul 27;16(7):e65504. doi: 10.7759/cureus.65504. PMID: 39188436; PMCID: PMC11346133.

Khalafallah SA, Eltayeb Ahmed EA, Elnour LS, Mohammed R, Makawi A, Mohamed AK, Balla A, Alamin MF, Alfaki M. **Bioinformatic Analysis Reveals Bone Marrow Kinase as a Potential Diagnostic and Prognostic Biomarker for Multiple Cancer Types.** Cureus. 2024 Aug 29;16(8):e68093. doi: 10.7759/cureus.68093. PMID: 39347140; PMCID: PMC11437519.

Fageer SM, Alamin MF, Attaelmanan AM, Alfaki M. **Pan-Cancer Analysis Reveals Long Non-coding RNA (lncRNA) Embryonic Stem Cell-Related Gene (ESRG) as a Promising Diagnostic and Prognostic Biomarker.** Cureus. 2024 Aug 21;16(8):e67389. doi: 10.7759/cureus.67389. PMID: 39310490; PMCID: PMC11414139.

Faris IFM, Ibrahim N, Zeanelabdeen TS, Alfaki M. **Pan-Cancer Analysis Confirms the Prognostic and Immunological Implications of the 1,25-Dihydroxy Vitamin D3 Receptor in Cervical Squamous Cell Carcinoma.** Cureus. 2024 Aug 12;16(8):e66743. doi: 10.7759/cureus.66743. PMID: 39268267; PMCID: PMC11391166.

Khurshid S, Usmani S, Ali R, Hamid S, Masoodi T, Sadida HQ, Ahmed I, Khan MS, Abeer I, Albalawi IA, Bedaiwi RI, Mir R, Al-Shabeeb Akil AS, Bhat AA, Macha MA. **Integrating network analysis with differential expression to uncover therapeutic and prognostic biomarkers in esophageal squamous cell carcinoma.** Front Mol Biosci. 2024 Aug 21;11:1425422. doi: 10.3389/fmolb.2024.1425422. PMID: 39234567; PMCID: PMC11371674.

Ahmed N, Cavattoni I, Villiers W, Cugno C, Deola S, Mifsud B. **Multi-omic analysis of longitudinal acute myeloid leukemia patient samples reveals potential prognostic markers linked to disease progression.** Front Genet. 2024 Sep 27;15:1442539. doi: 10.3389/fgene.2024.1442539. PMID: 39399221; PMCID: PMC11466779.

Kiss R, Micsik T, Bedics G, Papp G, Csóka M, Jenővári Z, Szabó S, Tornóczki T, Vujanic G, Kuthi L. **Pediatric thyroid-like follicular renal cell carcinoma-a post-neuroblastoma case with comprehensive genomic profiling data.** Virchows Arch. 2024 Sep;485(3):583-588. doi: 10.1007/s00428-024-03867-9. Epub 2024 Jul 11. PMID: 38990362.

Sudour-Bonnange H, van Tinteren H, Ramírez-Villar GL, (...), Graf N, Bergeron C, Furtwängler R**. Characteristics and outcome of synchronous bilateral Wilms tumour in the SIOP WT 2001 Study: Report from the SIOP Renal Tumour Study Group (SIOP-RTSG).** Br J Cancer. 2024 Oct;131(6):972-981. doi: 10.1038/s41416-024-02799-0. Epub 2024 Jul 30. PMID: 39080350; PMCID: PMC11405756.

Bashiri FA, Hundallah K, Abukhaled M, (...), Alshuaibi W, Alotaibi F, Aldhalaan H. **Diagnosis and management of neurofibromatosis type 1 in Arabian Gulf Cooperation Council Region: challenges and recommendations.** Front Oncol. 2024 Aug 27;14:1323176. doi: 10.3389/fonc.2024.1323176. Erratum in: Front Oncol. 2024 Oct 22;14:1487777. doi: 10.3389/fonc.2024.1487777. PMID: 39257551; PMCID: PMC11385870.

Bertucci F, Guille A, Lerebours F, Ceccarelli M, Syed N, Adélaïde J, Finetti P, Ueno NT, Van Laere S, Viens P, De Nonneville A, Goncalves A, Birnbaum D, Callens C, Bedognetti D, Mamessier E. **Whole-exome profiles of inflammatory breast cancer and pathological response to neoadjuvant chemotherapy.** J Transl Med. 2024 Oct 27;22(1):969. doi: 10.1186/s12967-024-05790-8. PMID: 39465437; PMCID: PMC11514970.

Dzhuma K, Oostveen M, Watson T, Powis M, Vujanic G, Saunders D, Al-Saadi R, Chowdhury T, Lopez A, Brok J, Irtan S, Williams R, Tugnait S, Shelmerdine SC, Olsen O, Pritchard-Jones K. **Multimodality detection of tumour rupture in children with Wilms tumour.** Pediatr Blood Cancer. 2024 Nov;71(11):e31226. doi: 10.1002/pbc.31226. Epub 2024 Aug 8. PMID: 39118247.

Attaelmanan AM, Alzubair S, Ahmmed AS, Abdelgalil A, Ali F, Khalafalla AS, Attaelmanan GA, Alfaki M. **A Comprehensive Pan-Cancer Analysis Reveals GRB7 as a Potential Diagnostic and Prognostic Biomarker.** Cureus. 2024 Dec 1;16(12):e74907. doi: 10.7759/cureus.74907. PMID: 39742197; PMCID: PMC11687406.

Treger TD, Wegert J, Wenger A, (...), Pritchard-Jones K, Gessler M, Behjati S. **Predisposition Footprints in the Somatic Genome of Wilms Tumors.** Cancer Discov. 2025 Feb 7;15(2):286-298. doi: 10.1158/2159-8290.CD-24-0878. PMID: 39665570; PMCID: PMC7617291.

SURGERY

Emil S, Langer JC, Blair G, Aspirot A, Brisseau G, Hancock BJ. **The Canadian Pediatric Surgery Workforce: A 10-year Prospective Assessment.** J Pediatr Surg. 2024 May;59(5):757-762. doi: 10.1016/j.jpedsurg.2024.01.026. Epub 2024 Feb 1. PMID: 38395684.

Ahmed MB, Doi SA, Habib AM, Glass GE, Hammouda A, Alyazji ZTN, Al-Mohannadi FS, Khoogaly H, Syed A, Alsherawi A, Badran S. **Bioelectrical Impedance Analysis Detects Body Fat Changes After Surgical Subcutaneous Fat Removal.** Metab Syndr Relat Disord. 2024 May;22(4):281-286. doi: 10.1089/met.2023.0223. Epub 2024 Mar 18. PMID: 38502809.

Briatico D, Flageole H, Al-Shahwani N, Farrokhyar F, VanHouwelingen L. **Pre-operative mechanical bowel preparation and prophylactic oral antibiotics for pediatric patients undergoing elective colorectal surgery: a protocol for a randomized controlled feasibility trial.** Pilot Feasibility Stud. 2024 May 25;10(1):85. doi: 10.1186/s40814-024-01476-6. PMID: 38796500; PMCID: PMC11127310.

Din TF, Abdulkader F, Chang KW. **Endoscopic-Assisted Cochlear Implantation via a "Microfacial Recess".** Laryngoscope. 2024 Nov;134(11):4806-4809. doi: 10.1002/lary.31562. Epub 2024 Jun 5. PMID: 38837783.

Alhalabi O, Al-Naimi AR, Abdulkader F, Abu-Hasan M. **Persistent Obstructive Sleep Apnea Post-adenotonsillectomy in Children.** Cureus. 2024 Jul 5;16(7):e63899. doi: 10.7759/cureus.63899. PMID: 39100070; PMCID: PMC11298153.

Wani TM, Siddique AY, Khan WN, Rehman S, Tram NK, Tobias JD. **Endotracheal tube cuff position in relationship to the walls of the trachea: A retrospective computed tomography-based analysis.** Saudi J Anaesth. 2024 Jul-Sep;18(3):346-351. doi: 10.4103/sja.sja_36_24. Epub 2024 Jun 4. PMID: 39149725; PMCID: PMC11323902.

Heilingoetter AL, See GB, Brookes J, (...), Wiedermann JP, Yeung J, Maddalozzo J. **Comprehensive management and classification of first branchial cleft anomalies: An International Pediatric Otolaryngology Group (IPOG) consensus statement.** Int J Pediatr Otorhinolaryngol. 2024 Nov;186:112095. doi: 10.1016/j.ijporl.2024.112095. Epub 2024 Sep 7. PMID: 39278130.

Abbas T, Tiryaki S, Tekin A, Fernandez N, Fawzy M, Ulman I, Numanoglu A, Hadidi A, Ali M, Hassan I, Chowdhury M. **Hypospadias Reconstruction Training: Development of an Ex-Vivo Model for Objective Evaluation of Surgical Skills.** Urology. 2025 Jan;195:112-119. doi: 10.1016/j.urology.2024.09.013. Epub 2024 Sep 19. PMID: 39306302.

Saeed L, Sharif G, Eda S, Raju Tullimalli I, Amin A, Riyalat AA, Alrashid FF, Abdelrahim AA. **Comparative Effectiveness of Bariatric Metabolic Surgery Versus Glucagon-Like Peptide-1 Receptor Agonists on Cardiovascular Outcomes and Mortality: A Meta-Analysis.** Cureus. 2024 Oct 17;16(10):e71684. doi: 10.7759/cureus.71684. PMID: 39552962; PMCID: PMC11568484.

Fariyike OA, Yao J, Baqri M, Liao P, Mohr C, Korir G, Din TF, Kushner AL, Wren SM. **See one, teach yourself one, do one: Barriers and opportunities in self-administered training and assessment for global surgical education.** Surg Open Sci. 2024 Nov 16;22:74-78. doi: 10.1016/j.sopen.2024.11.001. PMID: 39649290; PMCID: PMC11621498.

Ibrahim L, Deghidy J, Kanth B, Fazlullah H, Layug A, Abid I, Gad AI. **Unplanned Extubation in Extremely Preterm Neonates: Incidence, Risk Factors, and Impact on Clinical Outcomes.** Cureus. 2024 Nov 14;16(11):e73688. doi: 10.7759/cureus.73688. PMID: 39677257; PMCID: PMC11646050.

Idoudi S, Saleh A, Akkbik M, Amine L, Alansari K, Rachid O, Alkilany AM. **Investigating Strategies to Enhance the Aqueous Solubility of Ketamine HCl for Intranasal Delivery.** Pharmaceutics. 2024 Nov 22;16(12):1502. doi: 10.3390/pharmaceutics16121502. PMID: 39771482; PMCID: PMC11677332.

Elawad A, Haroon A, Ahmad J, Alsbeti J, Cherigui S, Arar S, Chandrasekharam VVS, Abbas TO. **Megameatus intact prepuce: a systematic review of surgical techniques and long-term outcomes.** Pediatr Surg Int. 2024 Dec 3;41(1):17. doi: 10.1007/s00383-024-05898-4. PMID: 39625549; PMCID: PMC11614969.

Taha IAA, Ibrahim MY, Helali M, Taha SME, Alshareif BA, Altayeib H, Idriss R, Abdalgadir ES. **Intrathoracic ectopic kidney with pulmonary sequestration: clinical and surgical insights: a case report.** J Surg Case Rep. 2024 Dec 3;2024(12):rjae757. doi: 10.1093/jscr/rjae757. PMID: 39664268; PMCID: PMC11630026.

Rosenthal E, Qureshi SA, Sivakumar K, (...), Thomson J, Tome P, Zahn EM. **Covered Stent Correction for Sinus Venosus Atrial Septal Defects, an Emerging Alternative to Surgical Repair: Results of an International Registry.** Circulation. 2024 Dec 19. doi: 10.1161/CIRCULATIONAHA.124.070271. Epub ahead of print. PMID: 39697167.

Kabir S, Sarmun R, Ramírez-Velázquez E, Takvani A, Ali M, Chowdhury MEH, Abbas TO. **Automated detection of posterior urethral valves in voiding cystourethrography images: A novel AI-Based pipeline for enhanced diagnosis and classification.** Comput Biol Med. 2025 Feb;185:109509. doi: 10.1016/j.compbiomed.2024.109509. Epub 2024 Dec 19. PMID: 39705793.

Alabassi K, Ata YM, Alshahwani N, Elkadhi A. **Unusual intravesical findings: a case report on foreign body in the bladder of an adolescent female.** J Surg Case Rep. 2024 Dec 26;2025(1):rjae819. doi: 10.1093/jscr/rjae819. PMID: 39726571; PMCID: PMC11670773.

ENDOCRINOLOGY

Qaraqe M, Elzein A, Belhaouari S, Ilam MS, Petrovski G. **A novel few shot learning derived architecture for long-term HbA1c prediction.** Sci Rep. 2024 Jan 4;14(1):482. doi: 10.1038/s41598-023-50348-1. PMID: 38177624; PMCID: PMC10766611.

Boucsein A, Zhou Y, Haszard JJ, Jefferies CA, Wiltshire EJ, Styles SE, Crocket HR, Galland BC, Pasha M, Petrovski G, Paul RG, de Bock MI, Wheeler BJ. **Protocol for a prospective, multicenter, parallel-group, open-label randomized controlled trial comparing standard care with Closed lOoP In chiLdren and yOuth with Type 1 diabetes and high-risk glycemic control: the CO-PILOT trial.** J Diabetes Metab Disord. 2024 Mar 7;23(1):1397-1407. doi: 10.1007/s40200-024-01397-4. PMID: 38932805; PMCID: PMC11196497.

Rinne C, Soultoukis GA, Oveisi M, Leer M, Schmidt-Bleek O, Burkhardt LM, Bucher CH, Moussa EA, Makhlouf M, Duda GN, Saraiva LR, Schmidt-Bleek K, Schulz TJ. **Caloric restriction reduces trabecular bone loss during aging and improves bone marrow adipocyte endocrine function in male mice.** Front Endocrinol (Lausanne). 2024 Jun 5;15:1394263. doi: 10.3389/fendo.2024.1394263. PMID: 38904042; PMCID: PMC11188307.

Bashir M, Ibrahim I, Beer S, Shahbic H, Eltaher F, Al-Mutawaa K, Zirie M, Abou-Samra AB. **Integrated care of diabetes during pregnancy: a Qatari nationwide cohort.** EClinicalMedicine. 2024 Apr 22;72:102605. doi: 10.1016/j.eclinm.2024.102605. PMID: 38680518; PMCID: PMC11053263.

Lenters-Westra E, Atkin SL, Kilpatrick ES, Slingerland RJ, Sato A, English E. **Limitations of glycated albumin standardization when applied to the assessment of diabetes patients.** Clin Chem Lab Med. 2024 Jun 17;62(12):2526-2533. doi: 10.1515/cclm-2024-0591. PMID: 38874995.

Abu Aqel Y, Alnesf A, Aigha II, Islam Z, Kolatkar PR, Teo A, Abdelalim EM. **Glucokinase (GCK) in diabetes: from molecular mechanisms to disease pathogenesis.** Cell Mol Biol Lett. 2024 Sep 8;29(1):120. doi: 10.1186/s11658-024-00640-3. PMID: 39245718; PMCID: PMC11382428.

Carobene A, Kilpatrick E, Bartlett WA, Fernández Calle P, Coşkun A, Díaz-Garzón J, Jonker N, Locatelli M, Sandberg S, Aarsand AK; European Federation of Clinical Chemistry and Laboratory Medicine Working Group on Biological Variation. **The biological variation of insulin resistance markers: data from the European Biological Variation Study (EuBIVAS).** Clin Chem Lab Med. 2024 Jul 12;63(1):110-117. doi: 10.1515/cclm-2024-0672. PMID: 38987271.

Elbarbary N, Alguwaihes A, Zarif H, Hassanein M, Deeb A, Petrovski G, Al Dahash R, Alamoudi R, Hussain S, Ibrahim M, Shaikh S, Zainudin SB, Chaar W, van den Heuvel T, Al-Sofiani ME**. MiniMed 780G System Use in Type 1 Diabetes During Ramadan Intermittent Fasting: A Systematic Literature Review and Expert Recommendations.** Diabetes Technol Ther. 2025 Jan;27(1):72-85. doi: 10.1089/dia.2024.0200. Epub 2024 Aug 22. PMID: 39052333.

Tan LS, Lau HH, Abdelalim EM, Khoo CM, O'Brien RM, Tai ES, Teo AKK. **The role of glucose-6-phosphatase activity in glucose homeostasis and its potential for diabetes therapy.** Trends Mol Med. 2025 Feb;31(2):152-164. doi: 10.1016/j.molmed.2024.09.005. Epub 2024 Oct 18. PMID: 39426930.

Murugesan S, Yousif G, Djekidel MN, Gentilcore G, Grivel JC, Al Khodor S. **Microbial and proteomic signatures of type 2 diabetes in an Arab population.** J Transl Med. 2024 Dec 20;22(1):1132. doi: 10.1186/s12967-024-05928-8. PMID: 39707404; PMCID: PMC11662572.

Boucsein A, Zhou Y, Michaels V, Haszard JJ, Jefferies C, Wiltshire E, Paul RG, Parry-Strong A, Pasha M, Petrovski G, de Bock MI, Wheeler BJ. **Automated Insulin Delivery for Young People with Type 1 Diabetes and Elevated A1c.** NEJM Evid. 2024 Oct;3(10):EVIDoa2400185. doi: 10.1056/EVIDoa2400185. Epub 2024 Sep 24. PMID: 39315863.

Koçkaya G, Battelino T, Petrovski G, Jendle J, Sármán B, Elbarbary N, Gökşen D, Alharbi M, Tibet B, Sharaf AM, Ökçün S, Öztürk F, Kurnaz M. **Clinical perspective on innovative insulin delivery technologies in diabetes management.** Front Endocrinol (Lausanne). 2024 Oct 1;15:1308319. doi: 10.3389/fendo.2024.1308319. PMID: 39411309; PMCID: PMC11473347.

Shabil M, Gaidhane S, Lakhanpal S, Irshaidat S, Ballal S, Kumar S, Bhat M, Sharma S, Ravi Kumar M, Rustagi S, Nazli Khatib M, Kumar Mishra S, Sah S, Abu Serhan H, Bushi G, Padhi BK. **Burden of diabetes in correctional facilities: A global systematic review and meta-analysis.** J Clin Transl Endocrinol. 2024 Nov 22;39:100374. doi: 10.1016/j.jcte.2024.100374. PMID: 39801810; PMCID: PMC11719280.

Kilpatrick ES, Kallner A, Atkin SL, Sathyapalan T. **The variability of measured and calculated low-density lipoprotein (LDL) cholesterol in statin-treated diabetes patients.** Ann Clin Biochem. 2024 Dec 5:45632241305936. doi: 10.1177/00045632241305936. Epub ahead of print. PMID: 39636720.

OBESITY

Vazhiyelethil J, Minisha F, Al Obaidly S, AlQubaisi M, Salama H, Ali N, Khenyab N, Mohan S, Pallivalappil AR, Al-Dewik N, Al Rifai H, Farrell T. I**mpact of bariatric surgery on maternal gestational weight gain and pregnancy outcomes in women with obesity: A population-based cohort study from Qatar.** Qatar Med J. 2024 Jan 22;2024(1):2. doi: 10.5339/qmj.2024.2. PMID: 38264267; PMCID: PMC10801433.

Petrovski G, Campbell J, Pasha M, Hussain K, Khalifa A, Umer F, Almajaly D, Hamdar M, Heuvel TVD, Edd SN. **Twelve-Month Follow-up from a Randomized Controlled Trial of Simplified Meal Announcement Versus Precise Carbohydrate Counting in Adolescents with Type 1 Diabetes Using the MiniMed™ 780G Advanced Hybrid Closed-Loop System.** Diabetes Technol Ther. 2024 Mar;26(S3):76-83. doi: 10.1089/dia.2023.0429. PMID: 38377327; PMCID: PMC10890955.

Bashir M, Fagier Y, Ahmed B, C Konje J. **An overview of diabetes mellitus in pregnant women with obesity.** Best Pract Res Clin Obstet Gynaecol. 2024 Mar;93:102469. doi: 10.1016/j.bpobgyn.2024.102469. Epub 2024 Feb 10. PMID: 38359580.

Siddiqui F, Kalache K, Ahmed B, Konje JC. **Challenges of prenatal diagnosis in obese pregnant women.** Best Pract Res Clin Obstet Gynaecol. 2024 Jul;95:102470. doi: 10.1016/j.bpobgyn.2024.102470. Epub 2024 Mar 21. PMID: 38637254.

AlMarzooqi SK, Almarzooqi F, Sadida HQ, Jerobin J, Ahmed I, Abou-Samra AB, Fakhro KA, Dhawan P, Bhat AA, Al-Shabeeb Akil AS. **Deciphering the complex interplay of obesity, epithelial barrier dysfunction, and tight junction remodeling: Unraveling potential therapeutic avenues.** Obes Rev. 2024 Aug;25(8):e13766. doi: 10.1111/obr.13766. Epub 2024 May 14. PMID: 38745386.

Butler AE, Hunt SC, Kilpatrick ES. **Using nephropathy as an outcome to determine the HbA1c diagnostic threshold for type 2 diabetes.** Diabetes Metab Syndr. 2024 Apr;18(4):103005. doi: 10.1016/j.dsx.2024.103005. Epub 2024 Apr 10. PMID: 38615570.

Gad H, Mohammed I, Dauleh H, Pasha M, Al-Barazenji T, Hussain K, Malik RA**. Case report: Nerve fiber regeneration in children with melanocortin 4 receptor gene mutation related obesity treated with semaglutide.** Front Endocrinol (Lausanne). 2024 Jun 21;15:1385463. doi: 10.3389/fendo.2024.1385463. PMID: 38974580; PMCID: PMC11227249.

Dauleh H, Pasha M, Gad H, Haris B, Petrovski G, Afyouni H, Khalifa A, Shehzad S, Amin R, Chirayath S, Mohamadsalih G, Mohammed S, Malik RA, Hussain K. **Single-Center Experience of Using Liraglutide in Adolescents With Obesity +/- Type 2 Diabetes.** Cureus. 2024 Apr 22;16(4):e58720. doi: 10.7759/cureus.58720. PMID: 38779269; PMCID: PMC11110091.

Missous G, Van Panhuys N. **Circulating interleukin-33 levels in obesity and type 2 diabetes: a systematic review and meta-analysis.** Am J Physiol Endocrinol Metab. 2024 Dec 1;327(6):E686-E699. doi: 10.1152/ajpendo.00157.2024. Epub 2024 Aug 22. PMID: 39171751; PMCID: PMC11684861.

Badran S, Braizat O, Aljassem G, Alyazji Z, Farsakoury R, Iskeirjeh S, Asim M, Glass GE, Muneer M. **The Impact of Prior Obesity Surgery on Bleeding after Abdominal Body Contouring Surgery.** Plast Reconstr Surg Glob Open. 2024 Jul 3;12(7):e5959. doi: 10.1097/GOX.0000000000005959. PMID: 38962152; PMCID: PMC11221844.

Abu-Rub LI, Al-Barazenji T, Abiib S, Hammad AS, Abbas A, Hussain K, Al-Shafai M. **Identification of KSR2 Variants in Pediatric Patients with Severe Early-Onset Obesity from Qatar.** Genes (Basel). 2024 Jul 23;15(8):966. doi: 10.3390/genes15080966. PMID: 39202327; PMCID: PMC11353872.

Gad H, Dauleh H, Chirayath S, Amin R, (...), Ponirakis G, Hussain K, Malik RA. **Corneal nerve loss in adolescents with obesity and acanthosis nigricans.** PLoS One. 2024 Oct 21;19(10):e0309761. doi: 10.1371/journal.pone.0309761. PMID: 39432507; PMCID: PMC11493272.

Abbas A, Hammad AS, Zakaria ZZ, Al-Asmakh M, Hussain K, Al-Shafai M**. gnas Knockdown Induces Obesity and AHO Features in Early Zebrafish Larvae.** Int J Mol Sci. 2024 Nov 26;25(23):12674. doi: 10.3390/ijms252312674. PMID: 39684386; PMCID: PMC11641299.

Mohammed I, Selvaraj S, Ahmed WS, Al-Barazenji T, Dauleh H, Love DR, Saraiva LR, Hussain K. **Functional Evaluation of a Novel Homozygous ADCY3 Variant Causing Childhood Obesity.** Int J Mol Sci. 2024 Nov 3;25(21):11815. doi: 10.3390/ijms252111815. PMID: 39519366; PMCID: PMC11547096.

UROLOGY

Abbas TO, Parangusan H, Yalcin HC, Hassan M, Zakrif L, Zandi N, Pennisi CP. **Trilayer composite scaffold for urethral reconstruction:in vitroevaluation of mechanical, biological, and angiogenic properties.** Biomed Mater. 2024 Jan 25;19(2). doi: 10.1088/1748-605X/ad1c9c. PMID: 38194708.

Fuhrman DY, Stenson EK, Alhamoud I, (...), Zangla E, Gist KM; WE-ROCK Investigators. **Major Adverse Kidney Events in Pediatric Continuous Kidney Replacement Therapy.** JAMA Netw Open. 2024 Feb 5;7(2):e240243. doi: 10.1001/jamanetworkopen.2024.0243. PMID: 38393726; PMCID: PMC10891477.

Abbas TO, Sennert M, Tiryaki S, Fernandez N, Fawzy M, Hadidi A. **Hypospadias-associated penile curvature assessment and management: A global survey of current practice.** J Pediatr Urol. 2024 Jun;20(3):440.e1-440.e10. doi: 10.1016/j.jpurol.2024.02.006. Epub 2024 Feb 13. PMID: 38418260.

Stenson EK, Alhamoud I, Alobaidi R, (...), Zangla E, Gist KM; WE-ROCK Investigators. **Factors associated with successful liberation from continuous renal replacement therapy in children and young adults: analysis of the worldwide exploration of renal replacement outcomes collaborative in Kidney Disease Registry.** Intensive Care Med. 2024 Jun;50(6):861-872. doi: 10.1007/s00134-024-07336-4. Epub 2024 Mar 4. PMID: 38436726; PMCID: PMC11164640.

Butler AE, Lubbad W, Akbar S, Kilpatrick ES, Sathyapalan T, Atkin SL. **A Cross-Sectional Study of Glomerular Hyperfiltration in Polycystic Ovary Syndrome.** Int J Mol Sci. 2024 Apr 30;25(9):4899. doi: 10.3390/ijms25094899. PMID: 38732117; PMCID: PMC11084759.

Toma HM, Al-Naimi AR, Abushahin A. **Management Challenges of Sleep-Disordered Breathing in a Child With Chronic Kidney Disease: A Case Report of a Child on Peritoneal Dialysis.** Cureus. 2024 May 23;16(5):e60890. doi: 10.7759/cureus.60890. PMID: 38910690; PMCID: PMC11193103.

Vallasciani S, Al Saeedi A, Khalil IA, Mohamed RB, Muneer E, Abdelmaguid N, Pippi Salle JL. **Permanent cutaneous vesicostomy: a pragmatic approach to safely manage lower urinary tract dysfunction in pediatric patients with chronic and life-limiting conditions and neuropathic bladders.** Front Pediatr. 2024 Jun 25;12:1409608. doi: 10.3389/fped.2024.1409608. PMID: 38983461; PMCID: PMC11231433.

Leerssen ECM, Lindeboom SNS, Chrzan R, Abbas TO, Garvelink M, Schroeder RPJ. **Seeking clinical consensus on risk assessment in anatomical infravesical obstruction of boys - A Delphi study.** J Pediatr Urol. 2024 Dec;20(6):1142-1151. doi: 10.1016/j.jpurol.2024.07.026. Epub 2024 Aug 2. PMID: 39179472.

Situmorang GR, Hasan, Wahyudi I, Abbas T, Rodjani A, Raharja PAR. **Hypospadias risk associated with chronic hypertension during pregnancy: A systematic review and meta-analysis.** J Pediatr Urol. 2024 Dec;20(6):1064-1071. doi: 10.1016/j.jpurol.2024.07.029. Epub 2024 Aug 5. PMID: 39214745.

Bachir BG, Yacoubian A, Nasrallah OG, El Taha L, Choucair F. **Are urologists underrepresented on fertility clinic websites? A web-based analysis.** Urol Ann. 2024 Jul-Sep;16(3):210-214. doi: 10.4103/ua.ua_97_23. Epub 2024 Jun 10. PMID: 39290218; PMCID: PMC11404711.

Hasson DC, Gist KM, Seo J, (...); Worldwide Exploration of Renal Replacement Outcomes Collaborative in Kidney Disease (WE-ROCK) Collaborative. **The Association Between Vasopressin and Adverse Kidney Outcomes in Children and Young Adults Requiring Vasopressors on Continuous Renal Replacement Therapy.** Crit Care Explor. 2024 Sep 20;6(10):e1156. doi: 10.1097/CCE.0000000000001156. PMID: 39318499; PMCID: PMC11419489.

Stanski NL, Gist KM, Hasson D, Stenson EK, Seo J, Ollberding NJ, Muff-Luett M, Cortina G, Alobaidi R, See E, Kaddourah A, Fuhrman DY; Worldwide Exploration of Renal Replacement Outcomes Collaborative in Kidney Disease (WE-ROCK) Investigators. **Characteristics and Outcomes of Children and Young Adults With Sepsis Requiring Continuous Renal Replacement Therapy: A Comparative Analysis From the Worldwide Exploration of Renal Replacement Outcomes Collaborative in Kidney Disease (WE-ROCK).** Crit Care Med. 2024 Nov 1;52(11):1686-1699. doi: 10.1097/CCM.0000000000006405. Epub 2024 Sep 11. PMID: 39258974.

Puchertova M, Rychly B, Kolenova A, Vujanić GM. **A Unique Case of Cystic Partially Differentiated Nephroblastoma Associated With Botryoid Intralobar Nephrogenic Rests.** Pediatr Dev Pathol. 2024 Dec 8:10935266241304691. doi: 10.1177/10935266241304691. Epub ahead of print. PMID: 39648335.

Abbas TO, Sturm R, Raharja PAR, Ulman I, Smith G, Jamil A, Chokor FAZ. **International consensus on research priorities in hypospadias using a Delphi study approach.** J Pediatr Urol. 2024 Dec 12:S1477-5131(24)00622-3. doi: 10.1016/j.jpurol.2024.12.005. Epub ahead of print. PMID: 39734143.

IMMUNOLOGY

Neehus AL, Carey B, Landekic M, (...), Trapnell BC, Casanova JL, Bustamante J. **Human inherited CCR2 deficiency underlies progressive polycystic lung disease.** Cell. 2024 Jan 18;187(2):390-408.e23. doi: 10.1016/j.cell.2023.11.036. Epub 2023 Dec 28. PMID: 38157855; PMCID: PMC10842692.

Rosain J, Kiykim A, Michev A, Kendir-Demirkol Y, Rinchai D, Peel JN, Li H, Ocak S, Ozdemir PG, Le Voyer T, Philippot Q, Khan T, Neehus AL, Migaud M, Soudée C, Boisson-Dupuis S, Marr N, Borghesi A, Casanova JL, Bustamante J. **Recombinant IFN-γ1b Treatment in a Patient with Inherited IFN-γ Deficiency.** J Clin Immunol. 2024 Feb 16;44(3):62. doi: 10.1007/s10875-024-01661-5. PMID: 38363432; PMCID: PMC10873451.

Materna M, Delmonte OM, Bosticardo M, (...), Notarangelo LD, Casanova JL, Béziat V. **The immunopathological landscape of human pre-TCRα deficiency: From rare to common variants.** Science. 2024 Mar;383(6686):eadh4059. doi: 10.1126/science.adh4059. Epub 2024 Mar 1. PMID: 38422122; PMCID: PMC10958617.

Guérin A, Moncada-Vélez M, (...), Bustamante J, Franco JL, Tangye SG. **Helper T cell immunity in humans with inherited CD4 deficiency.** J Exp Med. 2024 May 6;221(5):e20231044. doi: 10.1084/jem.20231044. Epub 2024 Apr 1. PMID: 38557723; PMCID: PMC10983808.

Momenilandi M, Lévy R, Sobrino S, Li J, (...), Bossuyt X, Casanova JL, Béziat V. **FLT3L governs the development of partially overlapping hematopoietic lineages in humans and mice.** Cell. 2024 May 23;187(11):2817-2837.e31. doi: 10.1016/j.cell.2024.04.009. Epub 2024 May 3. PMID: 38701783; PMCID: PMC11149630.

Bettacchioli E, Chiche L, Chaussabel D, Cornec D, Jourde-Chiche N, Rinchai D. **An interactive web application for exploring systemic lupus erythematosus blood transcriptomic diversity.** Database (Oxford). 2024 May 28;2024:baae045. doi: 10.1093/database/baae045. PMID: 38805754; PMCID: PMC11131423.

Huang SSY, Toufiq M, Eghtesady P, Van Panhuys N, Garand M. **The molecular landscape of sepsis severity in infants: enhanced coagulation, innate immunity, and T cell repression.** Front Immunol. 2024 May 16;15:1281111. doi: 10.3389/fimmu.2024.1281111. PMID: 38817614; PMCID: PMC11137207.

Al-Aghbar MA, Espino Guarch M, van Panhuys N. **IL-2 amplifies quantitative TCR signalling inputs to drive Th1 and Th2 differentiation.** Immunology. 2024 Sep;173(1):196-208. doi: 10.1111/imm.13821. Epub 2024 Jun 17. PMID: 38887097.

Chan YH, Liu Z, Bastard P, (...), Studer L, Casanova JL, Zhang SY. **Human TMEFF1 is a restriction factor for herpes simplex virus in the brain.** Nature. 2024 Aug;632(8024):390-400. doi: 10.1038/s41586-024-07745-x. Epub 2024 Jul 24. PMID: 39048830; PMCID: PMC11306101.

Arias AA, Neehus AL, Ogishi M, Meynier V, Krebs A, Lazarov T, Lee AM, Arango-Franco CA, Yang R, Orrego J, Corcini Berndt M, Rojas J, Li H, Rinchai D, Erazo-Borrás L, Han JE, Pillay B, Ponsin K, Chaldebas M, Philippot Q, Bohlen J, Rosain J, Le Voyer T, Janotte T, Amarajeeva K, Soudée C, Brollo M, Wiegmann K, Marquant Q, Seeleuthner Y, Lee D, Lainé C, Kloos D, Bailey R, Bastard P, Keating N, Rapaport F, Khan T, Moncada-Vélez M, (...), Bustamante J, Casanova JL, Boisson-Dupuis S. **Tuberculosis in otherwise healthy adults with inherited TNF deficiency.** Nature. 2024 Sep;633(8029):417-425. doi: 10.1038/s41586-024-07866-3. Epub 2024 Aug 28. PMID: 39198650; PMCID: PMC11390478.

Arango-Franco CA, Ogishi M, Unger S, (...), Warnatz K, Casanova JL, Puel A. **IL-7-dependent and -independent lineages of IL-7R-dependent human T cells.** J Clin Invest. 2024 Oct 1;134(19):e180251. doi: 10.1172/JCI180251. PMID: 39352394; PMCID: PMC11444196.

Rosain J, Le Voyer T, Liu X, (...), Landegren N, Anderson MS, Casanova JL. **Incontinentia pigmenti underlies thymic dysplasia, autoantibodies to type I IFNs, and viral diseases.** J Exp Med. 2024 Nov 4;221(11):e20231152. doi: 10.1084/jem.20231152. Epub 2024 Oct 1. PMID: 39352576; PMCID: PMC11448874.

Ogishi M, Kitaoka K, Good-Jacobson KL, (...), Honjo T, Casanova JL, Tangye SG. **Impaired development of memory B cells and antibody responses in humans and mice deficient in PD-1 signaling.** Immunity. 2024 Dec 10;57(12):2790-2807.e15. doi: 10.1016/j.immuni.2024.10.014. Epub 2024 Nov 26. PMID: 39603236; PMCID: PMC11634639.

CARDIOLOGY

Gupta S, Subhedar NV, Bell JL, Field D, Bowler U, Hutchison E, Johnson S, Kelsall W, Pepperell J, Roberts T, Sinha S, Stanbury K, Wyllie J, Hardy P, Juszczak E; Baby-OSCAR Collaborative Group. **Trial of Selective Early Treatment of Patent Ductus Arteriosus with Ibuprofen.** N Engl J Med. 2024 Jan 25;390(4):314-325. doi: 10.1056/NEJMoa2305582. PMID: 38265644; PMCID: PMC7615774.

Kagiyama Y, Kenny D, Hijazi ZM. **Current status of transcatheter intervention for complex right ventricular outflow tract abnormalities.** Glob Cardiol Sci Pract. 2024 Jan 3;2024(1):e202407. doi: 10.21542/gcsp.2024.7. PMID: 38404661; PMCID: PMC10886730.

Al Nasef M, Erdem A, Aldudak B, (...), Al Tamimi O, Alissa M, Al Otay AM, Momenah T. **Multicenter Experience for Early and Mid-Term Outcome of MyVal Transcatheter Pulmonary Valve Implantation.** Pediatr Cardiol. 2024 Mar;45(3):570-579. doi: 10.1007/s00246-023-03398-1. Epub 2024 Jan 31. PMID: 38296854.

Mahgoub S, Sundaram M, Durward A. **The innominate artery, a seemingly benign artery that can cause major airway complications.** Qatar Med J. 2024 Mar 26;2024(2):17. doi: 10.5339/qmj.2024.qitc.17. PMID: 38680392; PMCID: PMC11046097.

Aggarwal V, Butera G, Boe B, Celebi A, Downing T, Rossi RF, Kenny D, Linsky N, Pan X, Sivakumar K, Whiteside W, Hijazi ZM, Armstrong AK; of the PICS Society. **Assessing the State of Training in Congenital Interventional Cardiology: A Global Survey of Program Directors.** Pediatr Cardiol. 2024 May 10. doi: 10.1007/s00246-024-03501-0. Epub ahead of print. PMID: 38727825.

Hamad SG, Sawahreh M, E'mar ARA, Abushahin A, Abu-Hasan M**. Long-Term Outcome of Surgically Repaired and Non-repaired Double Aortic Arch in Children.** Cureus. 2024 May 16;16(5):e60463. doi: 10.7759/cureus.60463. PMID:

38764709; PMCID: PMC11099556.

Jacob S, Abuarja T, Shaath R, Hasan W, Balayya S, Abdelrahman D, Almana K, Afreen H, Hani A, Nomikos M, Fakhro K, Elrayess MA, Da'as SI. **Deciphering metabolomics and lipidomics landscape in zebrafish hypertrophic cardiomyopathy model.** Sci Rep. 2024 Sep 19;14(1):21902. doi: 10.1038/s41598-024-72863-5. PMID: 39300306; PMCID: PMC11413214.

Boudjemline Y, Hijazi ZM, Sallehuddin A, Ghez O. **Transcatheter Fontan completion: Creation of an extracardiac Fontan.** Catheter Cardiovasc Interv. 2024 Aug;104(2):264-271. doi: 10.1002/ccd.31131. Epub 2024 Jul 8. PMID: 38973374.

Mohamed M, Harahsheh A, Choueiter N, (...), Salih AF, Sulaiman M, Dahdah N. **Advancing Kawasaki Disease Research in the Arab World: Scoping Literature Review Analysis with Emphasis on Giant Coronary Aneurysms.** Pediatr Cardiol. 2024 Jul 22. doi: 10.1007/s00246-024-03589-4. Epub ahead of print. PMID: 39037592.
Manyama M, Al Sayegh D, Al-Sulaiti K, Almasri M, Sharma O, El Jerbi A, Al-Riyami Z, Sarada PK, Gupta S, Al-Saloos H, Al-Shafai KN. **Congenital heart defects and consanguinity: An analysis of the Sidra cardiac registry data in Qatar.** Int J Cardiol Congenit Heart Dis. 2024 Jul 20;17:100529. doi: 10.1016/j.ijcchd.2024.100529. PMID: 39711761; PMCID: PMC11657160.

Holzer RJ, Hijazi ZM**. Delivery systems for transcatheter therapies of congenital heart disease.** Expert Rev Med Devices. 2024 Oct;21(10):903-913. doi: 10.1080/17434440.2024.2402034. Epub 2024 Sep 13. PMID: 39245978.

Gupta S, Donn SM. **Management of patent ductus arteriosus - Evidence to practice.** Semin Fetal Neonatal Med. 2024 Dec;29(6):101565. doi: 10.1016/j.siny.2024.101565. Epub 2024 Nov 12. PMID: 39550255.

Malakan Rad E, Hijazi ZM. T**ranscatheter Pulmonary Flow Restrictors: Current Trends and Future Perspectives.** Catheter Cardiovasc Interv. 2025 Jan;105(1):165-180. doi: 10.1002/ccd.31308. Epub 2024 Dec 1. PMID: 39618067.

COVID

Bastard P, Gervais A, Taniguchi M, (...), Puel A, Cobat A, Casanova JL. **Higher COVID-19 pneumonia risk associated with anti-IFN-α than with anti-IFN-ω auto-Abs in children.** J Exp Med. 2024 Feb 5;221(2):e20231353. doi: 10.1084/jem.20231353. Epub 2024 Jan 4. PMID: 38175961; PMCID: PMC10771097.
Han X, Chen L, Guo L, Wu L, Alwalid O, Liu J, Zheng Y, Chen L, Wu W, Li H, Luo Q, Zhao H, Zhang L, Bai Y, Sun B, Sun T, Gui Y, Nie T, Chen L, Yang F, Fan Y, Shi H, Zheng C. **Long-term radiological and pulmonary function abnormalities at 3 years after COVID-19 hospitalisation: a longitudinal cohort study**. Eur Respir J. 2024 Jul 18;64(1):2301612. doi: 10.1183/13993003.01612-2023. PMID: 38387969; PMCID: PMC11255387.

Abushahin A, Toma H, Alnaimi A, Abu-Hasan M, Alneirab A, Alzoubi H, Belavendra A, Janahi I. **Impact of COVID19 pandemic restrictions and subsequent relaxation on the prevalence of respiratory virus hospitalizations in children.** BMC Pediatr. 2024 Feb 2;24(1):91. doi: 10.1186/s12887-024-04566-9. PMID: 38302912; PMCID: PMC10835825.

Zedan HT, Smatti MK, Al-Sadeq DW, Al Khatib HA, Nicolai E, Pieri M, Bernardini S, Hssain AA, Taleb S, Qotba H, Issa K, Abu Raddad LJ, Althani AA, Nasrallah GK, Yassine HM. **SARS-CoV-2 infection triggers more potent antibody-dependent cellular cytotoxicity (ADCC) responses than mRNA-, vector-, and inactivated virus-based COVID-19 vaccines.** J Med Virol. 2024 Mar;96(3):e29527. doi: 10.1002/jmv.29527. PMID: 38511514.

Chemaitelly H, Ayoub HH, Tang P, (...), Al-Khal A, Bertollini R, Abu-Raddad LJ. **Addressing bias in the definition of SARS-CoV-2 reinfection: implications for underestimation.** Front Med (Lausanne). 2024 Mar 11;11:1363045. doi: 10.3389/fmed.2024.1363045. PMID: 38529118; PMCID: PMC10961414.

Thomas S, Smatti MK, Alsulaiti H, Zedan HT, Eid AH, Hssain AA, Abu Raddad LJ, Gentilcore G, Ouhtit A, Althani AA, Nasrallah GK, Grivel JC, Yassine HM. **Antibody-dependent enhancement (ADE) of SARS-CoV-2 in patients exposed to MERS-CoV and SARS-CoV-2 antigens.** J Med Virol. 2024 May;96(5):e29628. doi: 10.1002/jmv.29628. PMID: 38682568.

Sukik L, Chemaitelly H, Ayoub HH, Coyle P, Tang P, (...), Bertollini R, Abdel-Rahman ME, Abu-Raddad LJ. **Effectiveness of two and three doses of COVID-19 mRNA vaccines against infection, symptoms, and severity in the pre-omicron era: A time-dependent gradient.** Vaccine. 2024 May 22;42(14):3307-3320. doi: 10.1016/j.vaccine.2024.04.026. Epub 2024 Apr 14. PMID: 38616439.

El-Malah SS, Saththasivam J, K AK, Abdul Jabbar K, Gomez TA, Wahib S, Lawler J, Tang P, Mirza F, Al-Hail H, Ouararhni K, Abdul Azis TK, Abu Raddad LJ, Chemaitelly HS, Abu Halaweh HA, Khalife S, Bertollini R, Mahmoud KA. **Leveraging wastewater surveillance for managing the spread of SARS-CoV-2 and concerned pathogens during FIFA World Cup Qatar 2022.** Heliyon. 2024 Apr 26;10(9):e30267. doi: 10.1016/j.heliyon.2024.e30267. PMID: 38711666; PMCID: PMC11070812.

Ibrahim W, Mahmood R, Farag E, Bansal D, Alfaki M, Al-Romaihi HE, Al-Thani M, Binti Hami R. **Assessing the Variation in COVID-19 Severity Among the Different Nationalities Living in Qatar.** Cureus. 2024 Apr 24;16(4):e58918. doi: 10.7759/cureus.58918. PMID: 38800320; PMCID: PMC11116737.

Wu L, Han X, Chen L, Guo L, Li Y, Alwalid O, Nie T, Wu F, Zhi X, Fan Y, Shi H, Zheng C. Impact of **Diabetes on Persistent Radiological Abnormalities and Pulmonary Diffusion Dysfunction in COVID-19 Survivors: A 3-Year Prospective Cohort Study.** Acad Radiol. 2025 Jan;32(1):471-481. doi: 10.1016/j.acra.2024.07.016. Epub 2024 Jul 27. PMID: 39069434.

Selim B, Satti A, Abdelgadir IS. **COVID-19 autism spectrum disorder-like transient neurocognitive clinical presentation.** BMJ Case Rep. 2024 Sep 12;17(9):e259782. doi: 10.1136/bcr-2024-259782. PMID: 39266039.

Chemaitelly H, Ayoub HH, Coyle P, Tang P, (...), Al-Khal A, Bertollini R, Abu-Raddad LJ. **BNT162b2 Versus mRNA-1273 Vaccines: Comparative Analysis of Long-Term Protection Against SARS-CoV-2 Infection and Severe COVID-19 in Qatar. Influenza Other Respir Viruses.** 2024 Oct;18(10):e13357. doi: 10.1111/irv.13357. PMID: 39343986; PMCID: PMC11439586.

INFECTIOUS DISEASES

Fernandes Q, Sher G, Prabhu KS, Kuttikrishnan S, Merhi M, Dermime S, Junejo K, Bhat AA, Uddin S. **Beyond Viral Infections: The Multifaceted Roles of Human Papillomavirus and Epstein-Barr Virus in Shaping the Tumor Microenvironment.** Discov Med. 2024 Jan;36(180):1-15. doi: 10.24976/Discov.Med.202436180.1. PMID: 38273742.

Ibrahim K, Tahsin M, Rahman A, Rahman SM, Rahman MM. **Surveillance of Bacterial Load and Multidrug-Resistant Bacteria on Surfaces of Public Restrooms.** Int J Environ Res Public Health. 2024 Apr 30;21(5):574. doi: 10.3390/ijerph21050574. PMID: 38791788; PMCID: PMC11120863.

Ali GA, Pérez-López A, Tsui C, Shunnar K, Sharma A, Ibrahim EB, Tang P, Alsoub H, Goravey W. **Streptococcus gordonii-associated infective endocarditis: Case series, literature review, and genetic study.** Clin Case Rep. 2024 Apr 5;12(4):e8684. doi: 10.1002/ccr3.8684. PMID: 38585580; PMCID: PMC10996068.

Suleiman M, Tang P, Imam O, Morales P, Altrmanini D, Barr KL, Roberts JC, Pérez-López A**. Use of PCR Cycle Threshold and Clinical Interventions to Aid in the Management of Pediatric Clostridioides difficile Patients.** Microorganisms. 2024 Jun 11;12(6):1181. doi: 10.3390/microorganisms12061181. PMID: 38930564; PMCID: PMC11205759.

Morales P, Tang P, Mariano E, Gopalan A, Aji N, Pérez-López A, Suleiman M**. Evaluation of Direct Antimicrobial Susceptibility Testing of Gram-Negative Bacilli and Staphylococcus aureus from Positive Pediatric Blood Culture Bottles Using BD Phoenix M50.** Microorganisms. 2024 Aug 18;12(8):1704. doi: 10.3390/microorganisms12081704. PMID: 39203546; PMCID: PMC11357252.

Garegrat R, Patnaik S, Suryawanshi S, Chetan C, Banait N, Singh P, Kallimath A, Soni NB, Singh Y, Suryawanshi P**. A pilot randomized controlled trial comparing noradrenaline and adrenaline as a first-line vasopressor for fluid-refractory septic shock in neonates.** Front Pediatr. 2024 Oct 3;12:1443990. doi: 10.3389/fped.2024.1443990. PMID: 39421034; PMCID: PMC11484266.

Imam O, Tang P, Almaslamani E, Sawahreh M, Suleiman M, Sharma A, Lopez AP. **First Reported Case of Brain Abscess in an Infant Caused by Staphylococcus argenteus.** Pediatr Infect Dis J. 2025 Mar 1;44(3):e107. doi: 10.1097/INF.0000000000004600. Epub 2024 Oct 24. PMID: 39446694.

Tsui CK, Ben Abid F, McElheny CL, Hamed MM, Perez-Lopez A, Omrani AS, Doi Y. **Characterization of bla$_{NDM}$ in two Escherichia coli ST1193 clinical isolates in the Gulf region.** JAC Antimicrob Resist. 2024 Nov 6;6(6):dlae166. doi: 10.1093/jacamr/dlae166. PMID: 39507943; PMCID: PMC11538964.

Jihwaprani MC, Sula I, Coha D, Alhebshi A, Alsamal M, Hassaneen AM, Alreshidi MA, Saquib N. **Bacterial profile and antimicrobial susceptibility patterns of common neonatal sepsis pathogens in Gulf Cooperation Council countries: A systematic review and meta-analysis.** Qatar Med J. 2024 Nov 11;2024(4):62. doi: 10.5339/qmj.2024.62. PMID: 39552951; PMCID: PMC11568195.

MICROBIOME

Chopra C, Kumar V, Kumar M, Bhushan I. **Role of vaginal microbiota in idiopathic infertility: a prospective study.** Microbes Infect. 2024 May-Jun;26(4):105308. doi: 10.1016/j.micinf.2024.105308. Epub 2024 Feb 2. PMID: 38311069.

Sinopoulou V, Gordon M, Gregory V, Saadeh A, Akobeng AK. **Prebiotics for induction and maintenance of remission in ulcerative colitis.** Cochrane Database Syst Rev. 2024 Mar 19;3(3):CD015084. doi: 10.1002/14651858.CD015084.pub2. PMID: 38501688; PMCID: PMC10949417.

Kumar M, Murugesan S, Ibrahim N, Elawad M, Al Khodor S. **Predictive biomarkers for anti-TNF alpha therapy in IBD patients.** J Transl Med. 2024 Mar 16;22(1):284. doi: 10.1186/s12967-024-05058-1. PMID: 38493113; PMCID: PMC10943853.
Gordon M, Khudr J, Sinopoulou V, Lakunina S, Rane A, Akobeng A. **Quality of reporting inflammatory bowel disease randomised controlled trials: a systematic review.** BMJ Open Gastroenterol. 2024 Apr 17;11(1):e001337. doi: 10.1136/bmjgast-2023-001337. PMID: 38631808; PMCID: PMC11033348.

Chibwe K, Sundararaju S, Zhang L, Tsui C, Tang P, Ling F. **Intra-hospital microbiome variability is driven by accessibility and clinical activities.** Microbiol Spectr. 2024 Aug 6;12(8):e0029624. doi: 10.1128/spectrum.00296-24. Epub 2024 Jun 28. PMID: 38940596; PMCID: PMC11302010.

Gordon M, Grafton-Clarke C, Rajindrajith S, Benninga MA, Sinopoulou V, Akobeng AK. **Treatments for intractable constipation in childhood.** Cochrane Database Syst Rev. 2024 Jun 19;6(6):CD014580. doi: 10.1002/14651858.CD014580.pub2. PMID: 38895907; PMCID: PMC11190639.

Suleiman M, Iqbal M, Tang P, Pérez-López A. **Comparison of QIAstat-Dx and BioFire FilmArray Gastrointestinal Panels in a Pediatric Population.** Microorganisms. 2024 Nov 10;12(11):2282. doi: 10.3390/microorganisms12112282. PMID: 39597670; PMCID: PMC11596080.

Augustine T, Murugesan S, Badri F, Gentilcore G, Grivel JC, Akobeng A, Elawad M, Adeli M, Al Khodor S, van Panhuys N. **Immunoglobulin-coating patterns reveal altered humoral responses to gut bacteria in pediatric cow milk allergies.** J Transl Med. 2024 Nov 12;22(1):1021. doi: 10.1186/s12967-024-05850-z. PMID: 39533360; PMCID: PMC11558889.

IMAGING

Aalam SW, Ahanger AB, Masoodi TA, Bhat AA, Akil ASA, Khan MA, Assad A, Macha MA, Bhat MR. **Deep learning-based identification of esophageal cancer subtypes through analysis of high-resolution histopathology images.** Front Mol Biosci. 2024 Mar 19;11:1346242. doi: 10.3389/fmolb.2024.1346242. PMID: 38567100; PMCID: PMC10985197.

Abid I, Qureshi N, Lategan N, Williams S, Shahid S. **Point-of-care lung ultrasound in detecting pneumonia: A systematic review.** Can J Respir Ther. 2024 Jan 29;60:37-48. doi: 10.29390/001c.92182. PMID: 38299193; PMCID: PMC10830142.

Han X, Chen L, Guo L, Wu L, Alwalid O, Liu J, Zheng Y, Chen L, Wu W, Li H, Luo Q, Zhao H, Zhang L, Bai Y, Sun B, Sun T, Gui Y, Nie T, Chen L, Yang F, Fan Y, Shi H, Zheng C. **Long-term radiological and pulmonary function abnormalities at 3 years after COVID-19 hospitalisation: a longitudinal cohort study.** Eur Respir J. 2024 Jul 18;64(1):2301612. doi: 10.1183/13993003.01612-2023. PMID: 38387969; PMCID: PMC11255387.

Junaid Tahir M, Aymen U, Mehmood Q, Sohaib Asghar M, Kumari U, Hassan Z, Naz N, Rafiq N, Tayyeb M, Ullah I, Abbasher Hussien Mohamed Ahmed K, Alwalid O. **Digital eye strain and its associated factors among radiology physicians in Pakistan: a cross-sectional survey using logistic regression analysis.** Ann Med Surg (Lond). 2024 Mar 4;86(4):1933-1941. doi: 10.1097/MS9.0000000000001882. PMID: 38576948; PMCID: PMC10990352.

Daoud G, Karayil Mohammad Ali S, Chakkarapani AA, Durrani NUR**. Intervention Bundle for Optimization of Procedural Sedation for Newborns Undergoing Magnetic Resonance Imaging: A Single-Center Quality Improvement Project in Qatar.** Biomed Hub. 2024 May 22;9(1):73-82. doi: 10.1159/000538762. PMID: 39015198; PMCID: PMC11249786.

Wu L, Han X, Chen L, Guo L, Li Y, Alwalid O, Nie T, Wu F, Zhi X, Fan Y, Shi H, Zheng C. **Impact of Diabetes on Persistent Radiological Abnormalities and Pulmonary Diffusion Dysfunction in COVID-19 Survivors: A 3-Year Prospective Cohort Study.** Acad Radiol. 2025 Jan;32(1):471-481. doi: 10.1016/j.acra.2024.07.016. Epub 2024 Jul 27. PMID: 39069434.

Al-Naimi AR, Hamad SG, Shabani A, Abu-Hasan M. **Evaluation of Complex Upper Airway Obstruction in Children Using Cine-MRI: A Single-Center Experience and Literature Review.** Cureus. 2024 Jul 21;16(7):e65025. doi: 10.7759/cureus.65025. PMID: 39165475; PMCID: PMC11334095.

NEUROLOGY

Mushtaq N, Qureshi BM, Javed G, (...), Mushtaq YR, Rana ZA, Bouffet E, Minhas K**. Capacity building for pediatric neuro-oncology in Pakistan- a project by my child matters program of Foundation S.** Front Oncol. 2024 Feb 29;14:1325167. doi: 10.3389/fonc.2024.1325167. PMID: 38487721; PMCID: PMC10938908.

Collier T, Castillo J, Thornton L, Vallasciani S, Castillo H. **Analysis of a newly developed multidisciplinary program in the Middle East informed by the recently revised spina bifida guidelines.** J Pediatr Rehabil Med. 2024 Aug 23. doi: 10.3233/PRM-230034. Epub ahead of print. PMID: 39213106.

Muthaffar OY, Alyazidi AS, Alsowat D, Alasiri AA, Albaradie R, Jad LA, Kayyali H, Jan MMS, Bamaga AK, Alsubaie MA, Daghistani R, Baeesa SS, Alaifan MA, Makraz A, Alsharief AN, Naseer MI. **Short-term effectiveness and side effects of ketogenic diet for drug-resistant epilepsy in children with genetic epilepsy syndromes.** Front Neurol. 2024 Sep 18;15:1484752. doi: 10.3389/fneur.2024.1484752. PMID: 39359873; PMCID: PMC11445179.

Al Hariri B, Hassan MA, Sharif M, Alsakaji OA, Hassan YA, Khalid MK. **Periodic Paralysis: A Case Series with a Literature Review.** Case Rep Neurol. 2024 Oct 2;16(1):274-280. doi: 10.1159/000541585. PMID: 39450326; PMCID: PMC11501104.

Aden M, Fawzi MO, Prosser D, Ather M, Raja M, Ederies MA, Al-Kharazi K, Maaz AU. **Central nervous system manifestations of tuberous sclerosis complex: A single centre experience in Qatar.** Saudi Med J. 2024 Nov;45(11):1245-1252. doi: 10.15537/smj.2024.45.11.20240444. PMID: 39510572; PMCID: PMC11549607.

Jihwaprani MC, Ismirahmadani TD, Sun Y, Sayekti AW, Sula I, Saquib N. **Tolerability and efficacy of botulinum toxin injection in the treatment of bromhidrosis: a systematic review and meta-analysis of clinical trials.** Acta Dermatovenerol Alp Pannonica Adriat. 2024 Dec;33(4):179-187. PMID: 39707893.

REPRODUCTIVE HEALTH

Reiter A, Balayla J, Dahdouh EM, Awwad JT. **The Effects of Long-Term Dienogest Therapy on In Vitro Fertilization Outcomes in Women with Endometriosis: A Systematic Review and Meta-Analysis.** J Obstet Gynaecol Can. 2024 Apr;46(4):102339. doi: 10.1016/j.jogc.2023.102339. Epub 2024 Jan 2. PMID: 38176680.

Almohammadi A, Choucair F, El Taha L, Burjaq H, Albader M, Cavanillas AB, Awwad JT. **The reproductive potential of vitrified-warmed euploid embryos declines following repeated uterine transfers.** Reprod Biol Endocrinol. 2024 Feb 13;22(1):23. doi: 10.1186/s12958-024-01192-z. PMID: 38350949; PMCID: PMC10863213.

Mattei DN, Harman RM, Van de Walle GR, Smith R, Grivel JC, Abdelalim EM, Vinardell T. **Effect of pregnancy on isolation efficiency and in vitro proliferation of equine peripheral-blood derived mesenchymal stromal cells.** Theriogenology. 2024 Aug;224:107-118. doi: 10.1016/j.theriogenology.2024.05.015. Epub 2024 May 14. PMID: 38761667.

Stickler E, Avella M**. Disruption of gamete fusion alters the sperm-egg ratio at gamete interaction.** J Transl Med. 2024 Dec 20;22(1):1134. doi: 10.1186/s12967-024-05948-4. PMID: 39707334; PMCID: PMC11662466.

Almohammadi A, Choucair F, Khan KS, Bueno-Cavanillas A, Cano-Ibáñez N. **Interventions for recurrent embryo implantation failure: An umbrella review.** Int J Gynaecol Obstet. 2024 Dec 5. doi: 10.1002/ijgo.16066. Epub ahead of print. PMID: 39636199.

Awwad J, Peramo B, Elgeyoushi B, Melado L, Salame A, Chawla M, Jibrel S, Detho S, Al Rumaih H, Tomsu M, Fahim K, Abd-ElGawad M, Fouad A, Humaidan P. **FSH/LH co-stimulation in Advanced Maternal Age (AMA) and hypo-responder patients - Arabian gulf delphi consensus group.** Front Endocrinol (Lausanne). 2024 Dec 12;15:1506332. doi: 10.3389/fendo.2024.1506332. PMID: 39726844; PMCID: PMC11669953.

EMERGENCY MEDICINE

Kallimath A, Garegrat R, Patnaik S, Singh Y, Soni NB, Suryawanshi P. **Hemodynamic effects of noradrenaline in neonatal septic shock: a prospective cohort study.** J Trop Pediatr. 2024 Feb 7;70(2):fmae001. doi: 10.1093/tropej/fmae001. PMID: 38324898.

Khan A. **Child with Closed Head Injury and Persistent Vomiting.** Clin Pract Cases Emerg Med. 2024 May;8(2):171-173. doi: 10.5811/cpcem.4814. PMID: 38869345; PMCID: PMC11166064.

Prithula J, Chowdhury MEH, Khan MS, Al-Ansari K, Zughaier SM, Islam KR, Alqahtani A. **Improved pediatric ICU mortality prediction for respiratory diseases: machine learning and data subdivision insights.** Respir Res. 2024 May 23;25(1):216. doi: 10.1186/s12931-024-02753-x. PMID: 38783298; PMCID: PMC11118601.

Al Dhouyani B, Al-Naimi AR. **Spontaneous Pneumothorax in a Term Neonate.** Cureus. 2024 Jul 6;16(7):e63999. doi: 10.7759/cureus.63999. PMID: 39109114; PMCID: PMC11301117.

Khan A, Elsheikh AM, Alansari K. **Etiology of septic arthritis in children of Qatar.** J Am Coll Emerg Physicians Open. 2024 Oct 17;5(5):e13313. doi: 10.1002/emp2.13313. PMID: 39430668; PMCID: PMC11486801.

Khan A. **Severe Hyperkalemia in a Child with Vomiting and Diarrhea.** Clin Pract Cases Emerg Med. 2024 Nov;8(4):391-393. doi: 10.5811/cpcem.21173. PMID: 39704584; PMCID: PMC11661257.

Khan A. **Infant with lower extremity weakness.** J Am Coll Emerg Physicians Open. 2024 Dec 17;5(6):e13273. doi: 10.1002/emp2.13273. PMID: 39697808; PMCID: PMC11652315.

PEDIATRIC MEDICINE

Ahmad F, Niaz S, Durrani N, Kumar V. **Ineffective ventilation in a very low birth weight infant with H-type Tracheoesophageal Fistula with bilateral chemical pneumonitis. A lesson learned.** Pak J Med Sci. 2024 Jan;40(2ICON Suppl):S91-S93. doi: 10.12669/pjms.40.2(ICON).8958. PMID: 38328660; PMCID: PMC10844918.

Greydanus DE, Nazeer A, Qayyum Z, Patel DR, Rausch R, Hoang LN, Miller C, Chahin S, Apple RW, Saha G, Prasad Rao G, Javed A. **Pediatric suicide: Review of a preventable tragedy.** Dis Mon. 2024 Sep;70(9):101725. doi: 10.1016/j.

disamonth.2024.101725. Epub 2024 Mar 12. PMID: 38480023.

Abushahin A, Hamad SG, Sabouni A, Alomar S, Sudarsanan A, Kammouh H, Chandra P. **Incidence and Predictors of Bronchopulmonary Dysplasia Development and Severity Among Preterm Infants Born at 32 Weeks of Gestation or Less.** Cureus. 2024 Apr 30;16(4):e59425. doi: 10.7759/cureus.59425. PMID: 38694676; PMCID: PMC11061581.

Van Wyk L, Austin T, Barzilay B, (...), Gupta S; ESPR Special Interest Group on Non-Invasive Cardiac Output Monitoring. **A recommendation for the use of electrical biosensing technology in neonatology.** Pediatr Res. 2024 Jul 8. doi: 10.1038/s41390-024-03369-z. Epub ahead of print. PMID: 38977797.

Munshi FM, Desai PP, Azizi B, Alabdulkarim SO, Mujlli GA, Alaskary HA, McIntire CR, Alhegelan RS, Yaqinuddin A, Izquierdo JP. **The imperative of the child life profession in KSA in transforming the quality of pediatric healthcare.** J Taibah Univ Med Sci. 2024 Jul 4;19(4):790-799. doi: 10.1016/j.jtumed.2024.06.004. PMID: 39135962; PMCID: PMC11318472.

Suleiman M, Tang P, Imam O, Morales P, Altrmanini D, Roberts JC, Pérez-López A. **Clostridioides difficile Infections in Children: What Is the Optimal Laboratory Diagnostic Method?** Microorganisms. 2024 Aug 28;12(9):1785. doi: 10.3390/microorganisms12091785. PMID: 39338460; PMCID: PMC11434531.

Hammoudeh S, Chandra P, Janahi IA. **Risk factors and associations with atopic diseases in the pediatric population in Qatar.** Qatar Med J. 2024 Sep 23;2024(3):49. doi: 10.5339/qmj.2024.49. PMID: 39372688; PMCID: PMC11450276.

ARTIFICIAL INTELLIGENCE

AlSaad R, Abd-Alrazaq A, Choucair F, Ahmed A, Aziz S, Sheikh J. **Harnessing Artificial Intelligence to Predict Ovarian Stimulation Outcomes in In Vitro Fertilization: Scoping Review.** J Med Internet Res. 2024 Jul 5;26:e53396. doi: 10.2196/53396. PMID: 38967964; PMCID: PMC11259766.

Chowdhury AT, Salam A, Naznine M, Abdalla D, Erdman L, Chowdhury MEH, Abbas TO. **Artificial Intelligence Tools in Pediatric Urology: A Comprehensive Review of Recent Advances.** Diagnostics (Basel). 2024 Sep 17;14(18):2059. doi: 10.3390/diagnostics14182059. PMID: 39335738; PMCID: PMC11431426.

Khondker A, Kwong JCC, Rickard M, Erdman L, Gabrielson AT, Nguyen DD, Kim JK, Abbas T, Fernandez N, Fischer K, 't Hoen LA, Keefe DT, Nelson CP, Viteri B, Wang HS, Weaver J, Yadav P, Lorenzo AJ. **AI-PEDURO - Artificial intelligence in pediatric urology: Protocol for a living scoping review and online repository.** J Pediatr Urol. 2024 Oct 5:S1477-5131(24)00523-0. doi: 10.1016/j.jpurol.2024.10.003. Epub ahead of print. PMID: 39424499.

Thadani S, Wu TC, Wu DTY, Kakajiwala A, Soranno DE, Cortina G, Srivastava R, Gist KM, Menon S; Worldwide Exploration of Renal Replacement Outcomes Collaborative in Kidney Diseases (WE-ROCK) Collaborators**. Machine Learning-Based Prediction Model for ICU Mortality After Continuous Renal Replacement Therapy Initiation in Children.** Crit Care Explor. 2024 Dec 17;6(12):e1188. doi: 10.1097/CCE.0000000000001188. PMID: 39688905; PMCID: PMC11654792.

OTHER

Kane T, Ford J, Al Saady RM, Vranic S, Musa OAH, Suliman S. **What Matters Most: Determinants Associated with the Selection of Medical Residencies in Qatar.** Adv Med Educ Pract. 2024 Feb 28;15:141-151. doi: 10.2147/AMEP.S429758. PMID: 38434442; PMCID: PMC10909370.

Johnson J, Mohamed H, Lowe T, Khraim F, Wolsey C, Haque S, Al-Farsi A, Schnurman D, Chowdhury N, Raihan MMH, Turin TC. **Addressing the effectiveness of health literacy programs within the Gulf Corporation Council: an integrative review.** Health Promot Int. 2024 Jun 1;39(3):daae062. doi: 10.1093/heapro/daae062. PMID: 38949405; PMCID: PMC11215791.

Pillay M, Kara R, Govindasamy P, Motala R. **Food security and disability in South Africa: an analysis of General Household Survey data.** Disabil Rehabil. 2024 Aug 14:1-9. doi: 10.1080/09638288.2024.2388264. Epub ahead of print. PMID: 39140161.

Thorakkattil SA, Parakkal SA, Mohammed Salim KT, Arain S, Krishnan G, Madathil H, Kuzhiyil AK, Aslam A, Abdulsalim S, Karuppannan M, Sridhar SB, Shareef J, Unnikrishnan MK**. Improving patient safety and access to healthcare: The role of pharmacist-managed clinics in optimizing therapeutic outcomes.** Explor Res Clin Soc Pharm. 2024 Oct 11;16:100527. doi: 10.1016/j.rcsop.2024.100527. PMID: 39469652; PMCID: PMC11513600.

Safra IF, Alnaimi SJ, Gad G, Abraham A, Al-Hammadi AH, Bayoumi MAA, Alyafai F, Gad A**. Parental attitudes and perceptions towards the recruitment of children to clinical trials: a cross-sectional survey.** Front Pediatr. 2024 Nov 13;12:1490274. doi: 10.3389/fped.2024.1490274. PMID: 39606695; PMCID: PMC11598326.

Managing editor **Noor Faisal** (nfaisal@sidra.org)
Designer and Developer **Zubair Pote** (zpote@sidra.org)
Research Operations Innovation and Strategy

SIDRA MEDICINE RESEARCH
P.O.Box 26999
Doha, Qatar.
www.sidra.org