

التقدم العلمي

**Wildlife
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Hamad Ali Yaseen
**Polycystic Kidney
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Reem Ameen
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more lives
using advanced
matching
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Nawaf Al-Ahmad Al-Jaber Al-Sabah**



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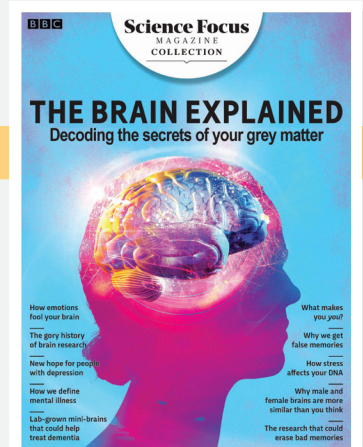
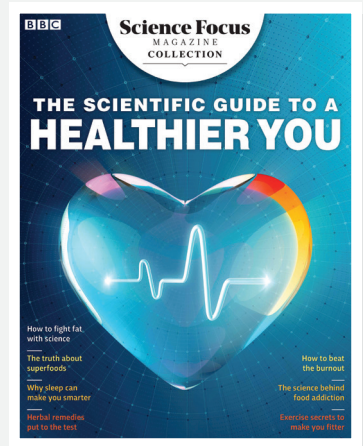
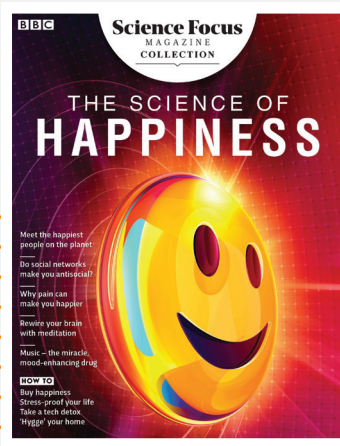
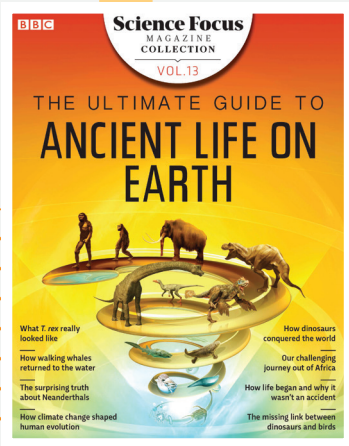
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النقد العلمي

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KFAS's First Woman Director-General

As this Issue goes to print, Dr. Ameenah Rajab Farhan was appointed as the Director General of the Kuwait Foundation for the Advancement of Science (KFAS), becoming the first woman to hold this prestigious position. Her appointment was officially announced on Kuwaiti Women's Day, a day dedicated to celebrating the granting of full political rights to women in Kuwait. It is groundbreaking milestone that signifies progress towards gender equality in the scientific community.

She has had a notable career within Kuwait University's Faculty of Science, serving as the Head of the Physics Department and Vice Dean for Research and Laboratories Affairs.

Within KFAS, Dr. Farhan has held various roles, including Acting Director for Research Directorate, Senior Advisor to the Director General, and a member of the KFAS Board of Directors.

Her research interests include Nuclear Structure and Astrophysics, Nuclear Data Evaluation, and Environmental Radioactivity. She is also a member of the American Physical Society, and the American Academy for the Advancement of Science. Since 2015, she has served as a Jury member of "L'Oreal-UNESCO For Women in Science-Middle East.

Beyond her research, Dr. Farhan is a passionate advocate for science education, particularly at the undergraduate and graduate levels. Her commitment to promoting and enhancing science education aligns with the mission of KFAS, fostering a nurturing environment for aspiring scientists.



Executive Editor
Dr. Layla Al-Musawi

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لمراقبة السماء



BBC
Sky at Night
بالعربية

دليل السماء

نوفمبر 2022

استعدّ لرصد المريخ

عالياً فوق كوكبة الجبار المهيبة،
يزداد حجم المريخ وسطوعه مع
اقترابه كل يوم من موعد تقابله

حوادث عبور بالجملة لأقمار المشتري

هل يمكنك أن ترصد حوادث عبور أقمار
المشتري الغاليلية في هذا الشهر؟

تعرف على أكثر

ضوء الثريا الأمامي ونجمنا لهذا الشهر

PETE LAWRENCE

الضوء الأحمر لمفاهدة أفضل



للمحافظة على جودة رصدك
اليلي، يمكنك قراءة هذا الدليل
السموي باستخدام مصباح أحمر
تحت سماء معتمة.

سنشاهد أيضاً في هذا الشهر

* قنيسان القمر: رؤية البحر الشرقي

* أورانوس في موقع تقابله..
كيف ترصده؟

* هل تستطيع رصد أقمار المريخ
الخافتة؟

ستيفن تونكين

Stephen Tonkin

خبير مراقبة

بالنظار المزوَّج.

تابع جولته على أفضل

الناشر لكتا العيين على



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Pete Lawrence

خبير ومصور

فلكي محترف

ومقدم حلقات برامج

The Sky at Night

شهرياً

على قناة BBC Four



مجلة الفلكيين!

حب الاستكشاف ليس له حدود!

إذا كنت تنظر ليلاً وأعجبك منظر السماء المليئة بالنجوم وأطوار القمر وحركة الكواكب النجمية
فإن مجلة **Sky at Night** ستأخذك من مجرد المشاهدة إلى متابعة علمية دقيقة لحركة
السماء وأجرامها واطلاع على تفاصيل الأحداث الفلكية من خلال **دليل السماء** الشهري.



Wildlife Photographer of the Year 2021

Advancement of Sciences Publishing and The Scientific Center Kuwait Host the World-Renowned Wildlife Photographer of the Year Exhibition



Under the patronage of H. E. Dr. Khaled A. Al-Fadhel, Previous Director General of the Kuwait Foundation for the Advancement of Sciences (KFAS), the Advancement of Sciences Publishing (ASPD) and the Scientific Center of Kuwait (TSCK), hosted the world-renowned Wild Photographer of

the Year Exhibition - on loan from the Natural History Museum in London - at the Scientific Center in Salmiya in December 2022 .Featuring exceptional images that capture fascinating animal behavior, spectacular species, and the breathtaking diversity of the natural world. The exhibition

harnessed the power of photography to advance scientific knowledge. Using photography's unique emotive power to engage and inspire audiences, the images shine a light on stories and species around the world and encourage a future of advocating for the planet.

The Exhibition harnessed the power of photography to advance scientific knowledge

originality, and technical excellence by an international panel of industry experts.

The winning images, including the prestigious Grand Title Award winners, were announced on 12 October 2021 in an online awards show. Broadcast live from the Natural History Museum in London, the event was hosted by BBC presenters, wildlife experts Chris Packham and Megan McCubbin, feature photographers, museum scientists, and special guests.

“These extraordinary images showcase the rich diversity of life on Earth and spark curiosity and wonder,” said Doug Gurr, Director of the Natural History Museum. “Telling the story of a planet under pressure, the Wildlife Photographer of the Year exhibition illuminates the urgent challenges we face and the collective action we need to take. This year’s inspiring exhibition will move and empower audiences to advocate for the natural world.”

The exhibition, which opened its doors to the public free of charge in the Scientific Center building in Salmiya, continued until the end of December 2022, and attracted more than sixty thousand visitors.



PHOTO: MOUNTAU GORILLA BY MAJED ALZAABI

Wildlife Photographer of the Year is the most prestigious photography event of its kind, providing a global platform that showcases the natural world’s most astonishing and challenging sights for over 55 years. Launching in 1965 and attracting 361 entries, today the competition receives

over 50,000 entries from all over the world, highlighting its enduring appeal.

With a record-breaking number of entries from 95 countries, the judges of the fifty-seventh Wildlife Photographer of the Year had the toughest job yet. Every entry was judged anonymously on its creativity,

Addressing the Skills-Gap Shortage in Artificial Intelligence: Introducing the “Kuwait Academy for Artificial Intelligence Program”



Jasem Al Mutawa

The era of Artificial Intelligence (AI) is here, and 2022 has been declared the year of AI in Kuwait. With businesses both in Kuwait and worldwide starting to realize, and harness, the power of this tool, there is a growing need for data scientists with a deep understanding of AI. But as a relatively new technology, there's already a shortage of individuals with the skills to create, train, and monitor these intelligent applications that we increasingly rely on.

In response to this talent gap, the Kuwait Academy for Artificial Intelligence Program has been launched. Funded by the Kuwait Foundation for the Advancement of Sciences (KFAS), this program has been developed by Program Director Jasem Al Mutawa.

Al Mutawa's passion for the internet was ignited at a young age, when his father showed him dial-up internet at a time when very few people knew of its existence, let alone had the opportunity to experience it first-hand. This moment set the course for his professional career, part of which involves educating others on the power of AI technology, and the other involves helping governments and businesses adapt to the digital transformation of the world in which we live.

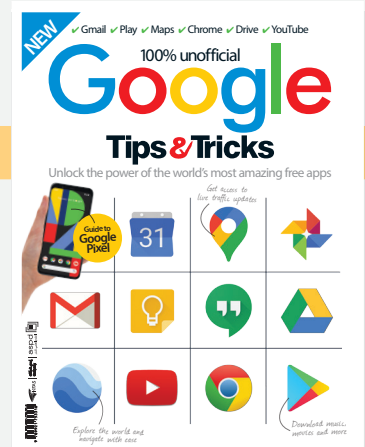
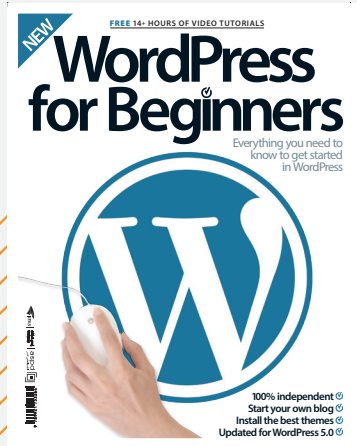
“I felt a responsibility to bring AI to Kuwait, but with a practical approach rather than simply teaching the theory,” said Al Mutawa. The result of his expertise and passion is the Kuwait Academy for Artificial Intelligence Program. “We spent a long time developing the course, pulling together the content and creating a strong foundation so that anyone can build their knowledge and uplift their skills in this area,” he said.

To achieve this goal, Al Mutawa created a self-paced course that takes advantage of the power of community-based learning. As the number of students increases, there will be opportunities for additional training based on specific topics of interest. “The world of AI is so vast,” said Al Mutawa, “That makes it necessary to focus on specific areas so we can build knowledge,

uplift skills, and help each other learn through practical, targeted activities.”

“Many universities already offer AI modules, and while these courses can be a good theoretical foundation, they don't necessarily offer enough practical skills for students to step into practice,” said Al Mutawa. “The driving force behind the creation of this new course is to address the new, AI-driven economy and to ignite a community of AI-specialists within Kuwait.”

Along with this goal, they wanted to generate a marketplace for qualified people to assist and support each other. In doing so, the creation of a new industry within Kuwait is born – one with limitless possibilities and the power to change the future.



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First Ever Annual Science Month Organized by ASPD

The Advancement of Sciences Publishing (ASPD) teamed up with The Scientific Center Kuwait to organize a month filled with interactive science activities of the Year Exhibition



After attending her first ever Young Astronomers workshop during Science Month at The Scientific Center Kuwait (TSCK), Jumana Alothman told her parents she always wants to join in any event or activity that involves science from now on. She also proceeded to attend almost every single Science Month workshop after that, spreading enthusiasm and joy among the

children and organizers.

Science Month, held in December 2022, was the first annual celebration of STEM, and art held by the centers of the Kuwait Foundation for the Advancement of Sciences (KFAS). It was organized to celebrate the scientific landscape in the State of Kuwait, while fulfilling KFAS' vision of promoting



and disseminating Science, Technology, and Innovation for a prosperous future. The month of December was selected to commemorate the anniversary of the establishment of KFAS through the Amiri Decree on December 12th, 1976.

It was a month-long curation of science related events and workshops mostly held at TSCK in collaboration with Sabah Al-Ahmad Center for Giftedness and Creativity (SACGC) and several relevant civil society organizations.

Its aim is to raise awareness about science and technology - making it accessible, fun, and interactive for an audience of both children and adults alike, according to Naser Burahmah, one of the coordinators of Science Month and a scientific culture consultant at KFAS.

"We didn't just target children, or a specific age group; we tried to target everyone," Burahmah said. "It was going on during end-of-year school exams and the World Cup – yet people still came and participated in the activities."

The notable activities included Meet the Scientist - a public discussion with Kuwaiti researchers whose research was funded

by KFAS, where the audience and youth met with scientists and researchers from different disciplines with a view of providing career awareness about the available career paths for them in the future.

Under the Environment Theme, the month kicked off with the opening of the "Wildlife Photographer of the Year exhibition - Natural History Museum London," which continued at the TSCK until the end of December 2022. One of the most enjoyable activities was the educational and entertaining workshop held by the Kuwait Dive Team to teach children about the dangers of marine waste and ghost nets.

Additionally, the Kuwaiti Environmental Lens team launched a new season of Nature Ambassadors to train university students in nature photography. In close partnership with the Environment Public Authority, the Kuwaiti Environmental Lens volunteer team, and DJI Falcon Kuwait, an event was held to monitor the Greater Flamingos in the Free Trade Zone using drones, to highlight the importance of habitat conservation and to raise awareness about the significance of



preserving biodiversity and the ecological habitat. A wildlife photography workshop was also organized by the wildlife photographer Omar Al-Sayed Omar, who accompanied the attendees to the Aquarium after the workshop so that they could practice what they learned.

The Health Awareness Department at the Ministry of Health's "How to Maintain my Dental Health" workshop under the Health Theme, drew the interest of parents. Children were given the opportunity to learn by role-playing as a dentist in the mobile dental unit. One parent pointed out that this brief experience clearly helped to remove their children's fear of the dentist. The Kuwaiti Medical Association held an event titled "Our Children Are Sugar Pieces" as part of their efforts to raise awareness about World Children's Day for Diabetes. The activities of the event included six interactive stations where doctors met with children to raise awareness about public health and how to change their eating habits for better health.

Under the Space and Astronomy Theme, the Asteroid Hunters team -funded by KFAS- presented a training workshop on how to identify asteroids through the classification of astronomical data in collaboration with global observatories; with a view of creating a wider base of the public participating in scientific endeavors through participation in the Citizen Science projects and activities, where citizens analyze data for the benefit of scientific institutions. This concept is a new one that has emerged to invest in the passion, benign curiosity, and hobbies of science enthusiasts to bridge the gap between amateur scientists on the one hand and specialized scientists

on the other, to jointly discover and conduct research in different fields.

The Astrolab Team arranged a range of engaging events for astronomy fans. These included how to use an astrolabe, stargazing and meteor shower observation trips, workshops on the topic of light pollution and its impact on observing celestial bodies, and activities tailored to young astronomers. The latter aimed to educate children on topics such as asteroids and monitoring them using astrolabes.

The Science Month celebrated International Arabic Language Day on December 18 by highlighting the applications of technology and teaching skills for the twenty-first century in teaching Arabic reading and writing. An interactive workshop was held in cooperation with Alef B, which took children and parents through a fun educational journey to master Arabic reading and writing. The latest publication of ASPD, "Butterflies," was launched in collaboration with the SACGC in an interactive workshop aimed at promoting reading and science using virtual reality technology. The event explained the life cycle, types, and habitats of butterflies.

In addition to the workshops and lectures, there were also opportunities for people to engage with a firetruck from the Kuwait Fire Force, a hybrid car from Mohamed Naser Al Sayer and Sons as well as a representative who was explaining the features and benefits of hybrid technology, and an electric car from Chery Alghanim. Hybrid cars and electric vehicles are "green" because they have both an electric motor and an internal combustion engine, and often rely on electricity, which means they burn less fuel than the average conventional vehicle. Therefore, it helps to reduce emissions of gases and chemicals that harm the environment and human health. Conventional vehicles account for more than half of the emissions from the transport sector.

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توصيل الاشتراكات في الكويت
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والشحن حسب الدولة

اشترك سنوي 3 مجلات





Hamad Yaseen: Continuous Efforts to Diagnose and Treat Polycystic Kidney

A normal kidney is about the size of a human fist. A pair of these bean-shaped organs sit at the left and right of the back underneath the ribcage. But with Autosomal Dominant Polycystic Kidney Disease (ADPKD) they can grow as large as honeydew melons and weigh over 13 kilograms each.

This is because the disease causes cysts to grow on the organs. Sometimes, thousands of these fluid-filled, blister-like sacs cluster on the kidneys, ranging from pencil-point size to bigger than a pomegranate. Over time, “they affect the healthy tissue in the kidney and its filtration capability,” said Hamad

Ute Eberle

Ali Yaseen, an associate professor of genomic medicine at Kuwait University and a research associate at Dasman Diabetes Institute.

Estimates vary, but this painful condition seems to affect one in every 800 to 1000 people. “ADPKD is the most common genetic kidney disease,” said Yaseen, whose close relatives and friends are affected by this hereditary condition. “Some have to undergo kidney transplants.”

This has motivated Yaseen to research the disease to fight it. Recently, he helped to bring the field a big step forward. With funding from the Kuwait Foundation for the Advancement of Sciences (KFAS), he participated in a global scientific collaboration that uncovered the third most common genetic cause behind ADPKD, potentially saving more people in Kuwait and worldwide from its threat of renal failure.

Yaseen, who is also the secretary general of the Kuwait Society for Organ Transplantation, studied molecular genetics at Ohio State University in the United States and earned his master’s degree and doctorate at the University of Newcastle, UK. To untangle the molecular mysteries of chronic kidney disease, he collaborates with researchers and clinicians in Europe and the U.S.

Polycystic Kidney Disease has two forms; a dominant common type and a recessive less common type. With the dominant form, if a mother or father carries the malfunctioning mutation, “the child has a 50 percent chance of getting the disease,” said Yaseen. Rarely, a child might also develop ADPKD through a

spontaneous genetic mutation, with neither parent being a carrier.

But many of the estimated four to seven million sufferers worldwide might not realize that they have the condition, particularly in their younger years. “The disease course is highly variable, ranging from early renal insufficiency in [their] 20s, to the maintenance of normal renal function into the 7th decade of life,” said Yaseen. Often, symptoms only develop in a patient’s 20s to 30s.

The first indication is generally hypertension. Many patients also complain about chronic pain in their flank and other health complications might also show up. ADPKD sufferers have about five times the normal risk to get aneurysms in the brain – balloon-like bulges in blood vessels that can rupture, often fatally. They might develop less severe cysts on their liver or floppy heart valves in a condition called mitral valve prolapse, where the valve that separates the chambers of the heart doesn’t close properly, causing a fluttering or pounding in the chest.

Once the cysts start interfering with the kidneys’ ability to filter waste products from the body via the urine, toxic levels of them can build up causing a condition called uremia. When that happens, a patient enters end-stage renal disease or kidney failure. To stay alive, they must undergo regular dialysis or get a transplant – “if there’s one available,” said Yaseen. On average, patients with ADPKD develop kidney failure in their 50s, some might get there earlier.

Doctors had been aware of two major genes, called PKD1 and PKD2, that

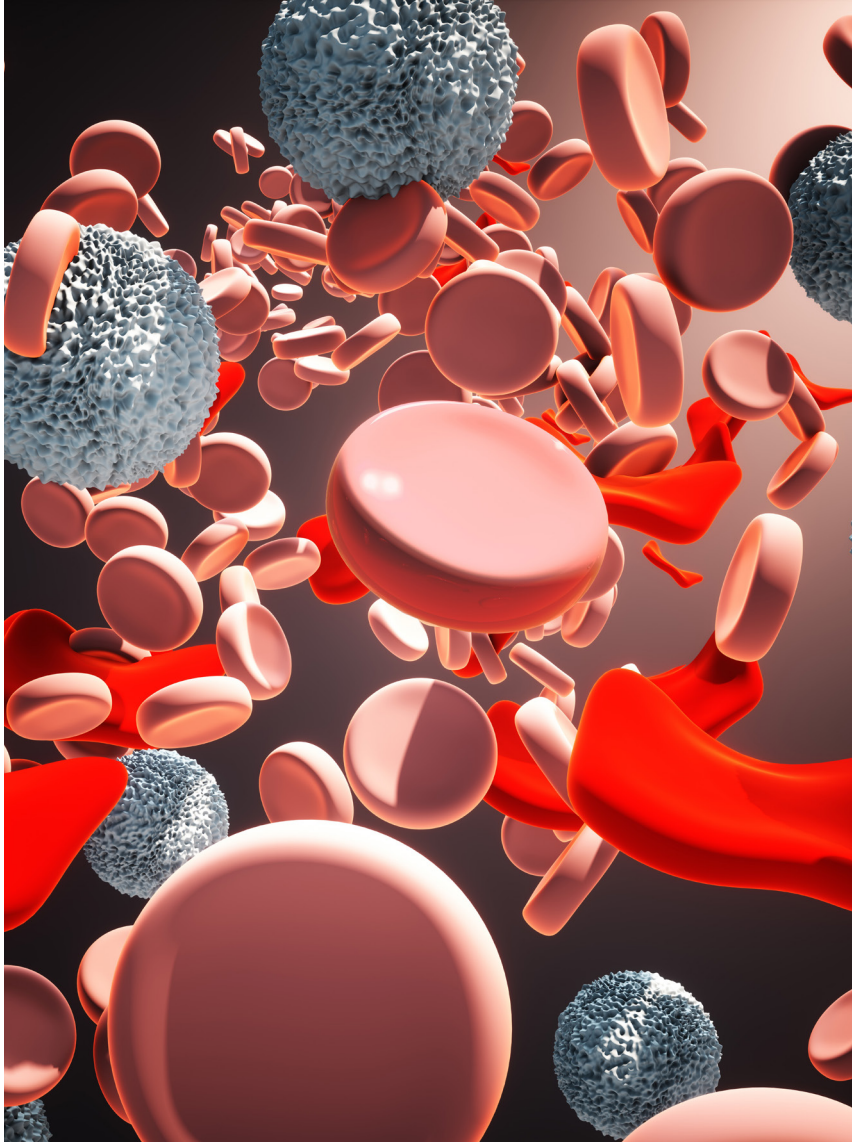
cause a vast majority of ADPKD cases. They also knew of some other but rare genetic anomalies.

But for about one fifth of patients, it wasn’t known what caused the disease. “They are genetically unresolved,” said Yaseen. “It meant that we couldn’t offer them any information about their prognosis or severity.” Or give them the option to ensure that any children of theirs would be spared, by conceiving through in-vitro fertilization and screening the embryos before implantation.

“They can select an embryo that doesn’t carry the mutation,” Yaseen said. “But if you don’t know the mutation, you can’t offer this.”

Yaseen and collaborators in eight countries screened hundreds of unresolved cases and discovered a causative link between mutations in the IFT140 gene and ADPKD making it its third-leading genetic cause. The team, led by researcher Peter Harris from the Mayo Clinic provided extensive clinical analysis of this subset of patients. Luckily, the newly discovered genetic cause seems to cause smaller cysts, making it one of ADPKD’s less severe forms.

Collaboration was one of Yaseen’s strengths, according to Fahd Al-Mulla, Chief Scientific Officer at the Dasman Diabetes Institute. “You need humility to be a successful scientist like he is,” Al-Mulla said. “Polycystic kidney disease is very heterogeneous. Some people have few cysts, others hundreds. There was a need to understand it on a global level, and this is where Yaseen is taking things.”



Thalassemia

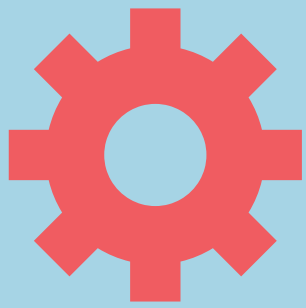
The genetic mutations behind ADPKD seem to corrupt proteins that help regulate the cells that form blood vessels and the one million filters and tubules in each kidney. The disease is usually diagnosed by ultrasound and other imaging techniques but, so far, there is no cure. All doctors can do is treat the hypertension that

accompanies ADPKD and advise patients to keep a healthy weight, exercise, avoid smoking, and eat a low-salt diet with plenty of fluids, which might slow the growth of the cysts. A new medication, called tolvaptan, was recently approved in some countries and seems to somewhat delay the kidneys' decline.

With funding from KFAS, Yaseen produced a genetic map of polycystic kidney disease in Kuwait to see which mutations are most prevalent in the Kuwaiti population and how that relates to the severity of the disease. The researcher also explored if substances in the urine can serve as “biomarkers” – early warning signs that a patient’s kidneys are starting to decline. This work, too, has been supported by KFAS. The genetic landscape of ADPKD in Kuwait has not been explored previously. As a small country with an average household size of seven people, Kuwait could provide valuable genetic insight about ADPKD including intrafamilial phenotypic variation. A report, published by Yaseen, comprehensively described the genetic landscape of ADPKD in Kuwait in the *Clinical Kidney Journal*, the official journal of the European renal association.

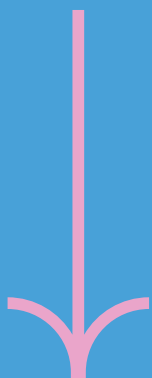
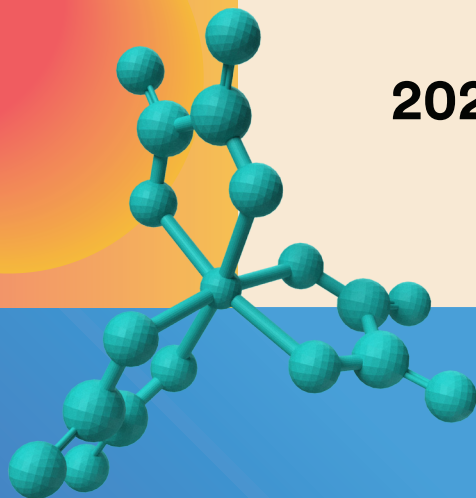
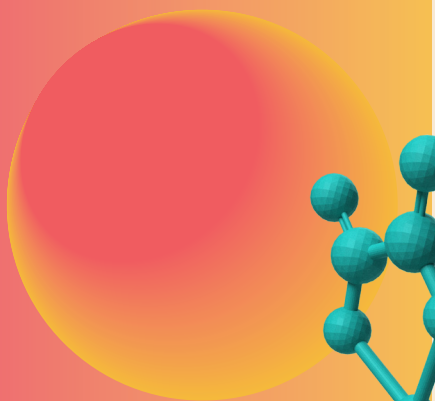
The observed genetic heterogeneity of ADPKD along with the wide phenotypic spectrum reveal the level of complexity in disease pathophysiology, according to Yaseen. ADPKD genetic testing could improve care of patients through improving disease prognostication, guide treatment, support clinical trials, and aid genetic counselling.

Eventually, gene editing might provide a cure for the millions of ADPKD sufferers. “It could be a good candidate since it’s affected by a single gene,” said Yaseen. And partly thanks to his work, the genetic engineers of the future will know exactly which genes to target.

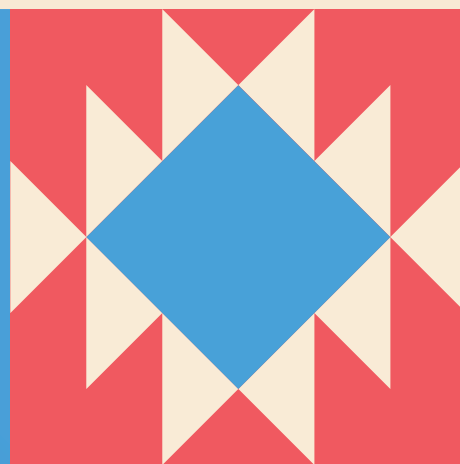


شبكة العلوم

2023.12.15 — 11.15



استدامة بالمعرفة



و



Kuwait Commute: A community initiative to spread awareness of the benefits of public transportation



Ghadeer Al- Aradi



The typical life of a Kuwaiti involves being stuck in traffic - whether heading to work, school, or driving home during rush hour. It has become a part of the driving experience in Kuwait. However, there can be a potential solution to this predicament, public transportation. How acceptable is it to use public transportation in Kuwait and how can citizens and residents take advantage of the options they have available to ease congestion and reduce pollution? "Kuwait Commute", a community initiative, aims to solve this problem.

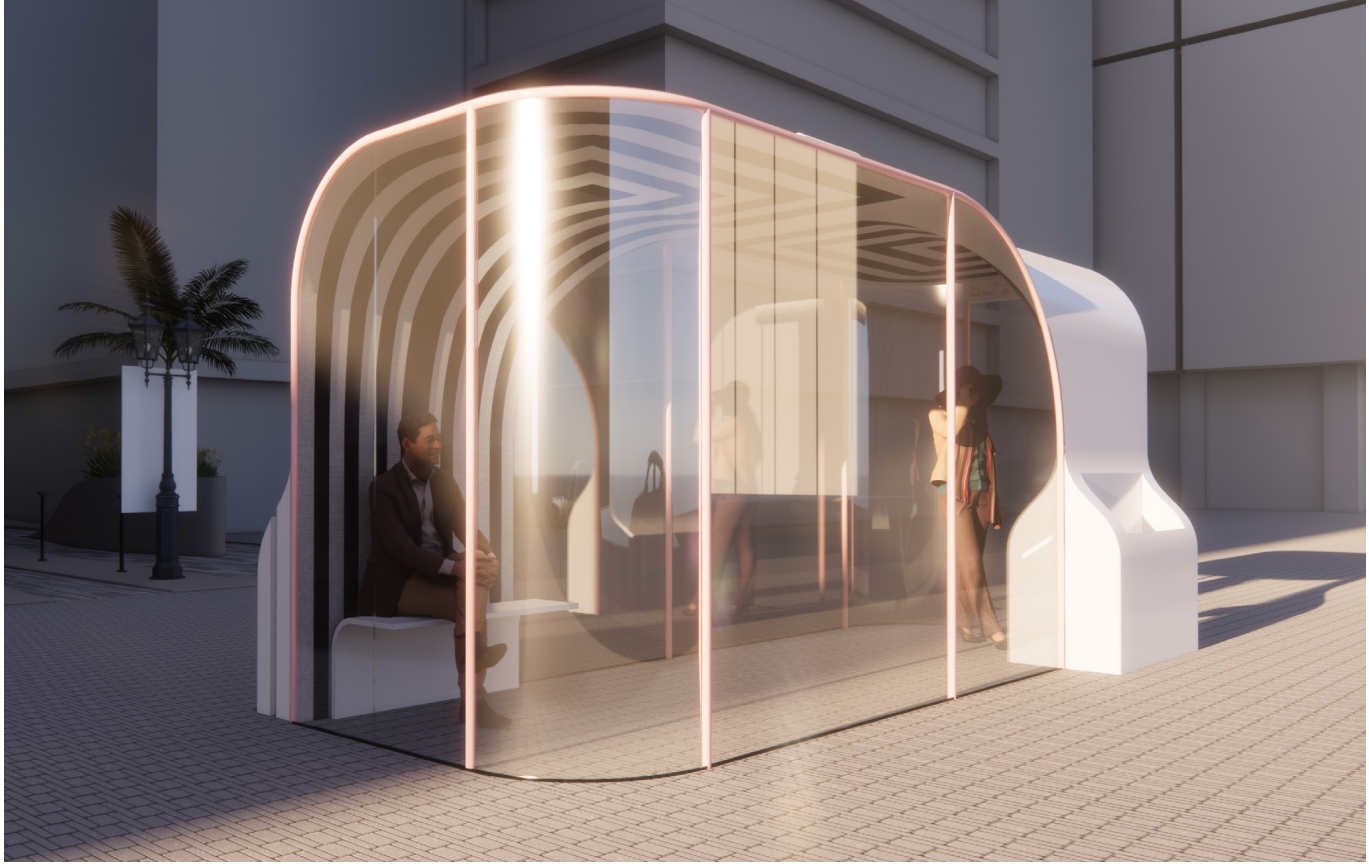
Kuwait Commute has one objective, to spread awareness of the benefits of using public transport and it has been on the frontline of advocating

for a better, more sustainable way to use transportation. Jassim Al-Awadhi, founder of Kuwait Commute drew inspiration from his own personal experience to launch the initiative.

Al-Awadhi had a hectic day in Kuwait City, where he needed to attend a meeting that was at the end of the street from his job. He did not want to walk in the summer heat during Ramadan, so he decided to take the bus, and he did not regret it. He was the first to arrive to the meeting and realized that public transport can be convenient, simple, and ease traffic in the city. He began to share his experience on social media and the concept grew into a public initiative.

In 2018, he gathered some friends and created Kuwait Commute, a community project that quickly grew on social media as a means to improve the public transportation system in Kuwait and encourage others to take the bus. Part of the reason why Kuwaitis don't use public transportation, according to Al-Awadhi, is because of a social stigma, and that the current system primarily caters to the blue-collar workers that live in dense areas. There needs to be a shift in the mindset, and the existence of public transportation is not enough - it must be efficient, effective, and attractive to have a greater impact, said Al-Awadhi.

Kuwait Commute is based on four values: safety, convenience,



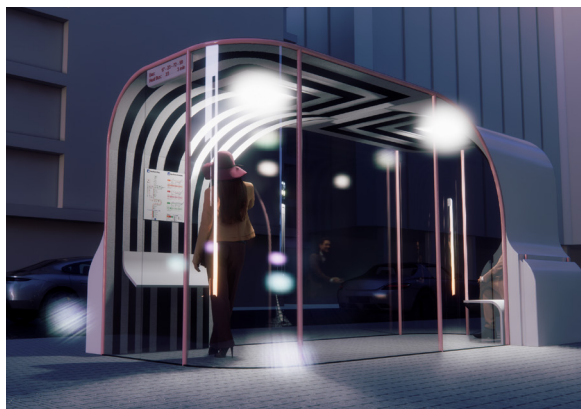
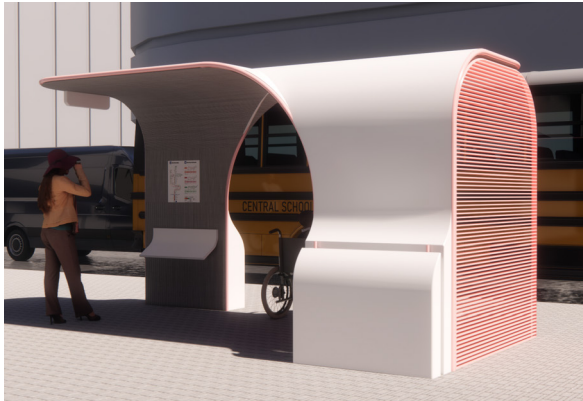
**Research shows
that cities with low
mobility efficiency have
low productivity.**

environmental sustainability, and inclusivity. These four values shape the way the organization runs its campaigns in Kuwait, by raising awareness and building a movement amongst the community to encourage citizens to consider the impacts of using their cars on a daily basis and consider environmentally friendly options.

Using public transport can have many benefits, including decreased emissions due to less car dependency, more available land for economic benefits rather than parking lots and roads, an increased habit of walking to improve health conditions and quality of life, creating a sense of community, and decreased death rates in Kuwait due to car accidents.

“The Kuwaiti youth have been very supportive, as the majority of our followers on social media have been youth, and they’ve done an amazing job in not only supporting us, but also spreading the word about the need to develop public transport,” Al-Awadhi said.

The Kuwait Foundation for the Advancement of Sciences (KFAS) is supporting and sponsoring Kuwait Commute to help develop bus stops across Kuwait City with a unified design, that are inexpensive to design, and incorporate a sustainable and 3D printed design. The initiative is also working with Manmade Studio and AlSager Wertel Architects to create the culturally inclusive bus stops.



Jassim AlNashmi

AlSager Wertel Architects aims to create bus stops with an iconic structure and unique identity, but still responsive to the climate, site, and urban fabric. The bus stops will also be designed with sustainability as a major factor, using recycled and reusable materials to keep the carbon footprint at a minimum.

One of the unique aspects to be integrated into the design is a 3D-printed bus stop. Both companies are working with technology partners in Germany, Poland, and New Zealand to create a system that designs the bus stops automatically depending on each location. Using the latest technology, the solar-powered bus stop would automatically determine the number

of seats, the direction of the sun, and offer attractive amenities such as lighting, phone charging, and mist cooling. The ambitious goal of the design is to push boundaries and re-define what a modern-day bus stop looks like in Kuwait.

Jassim AlNashmi, founder of Manmade Studio, believes that individuals from diverse socio-economic classes need alternatives to buying cars, maintaining them, and constantly fueling them with inflating gas prices. "From an urban planning perspective, the suburban decoupage of new cities in Kuwait City's hinterland is only adding to the existing bottle-necked roads, making a traffic congested city more congested," AlNashmi

said. "Research shows that cities with low mobility efficiency have low productivity. Public transportation can be the long-needed cure."

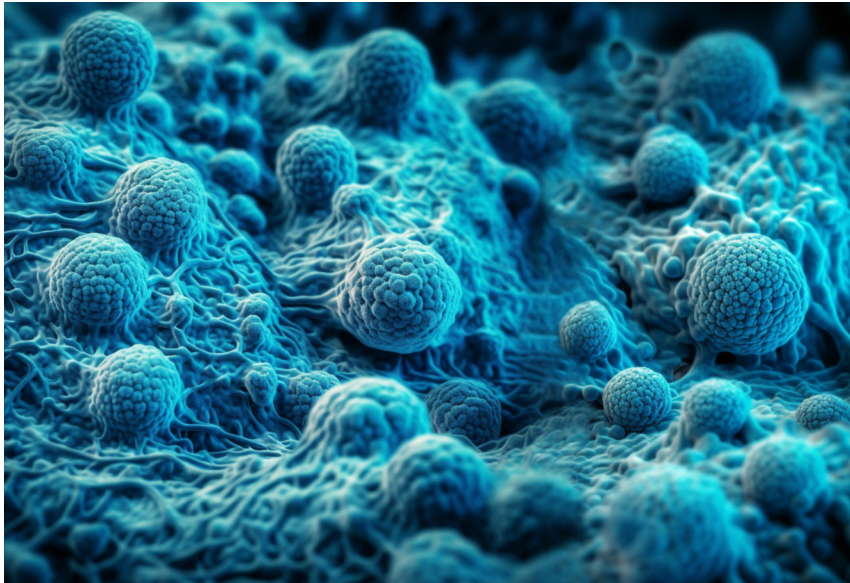


Reem Ameen

Helping to save more lives
using advanced matching
techniques at the Kuwait
National Stem Cell Registry

By Emma Stenhouse

PHOTOS: BANDELE ZUBERI



Multipotent Stem Cells

Each year, many Kuwaitis are diagnosed with life-threatening blood disorders including cancers such as leukemia. The most effective way to save the lives of those suffering from these diseases is to offer them stem cell transplants. To achieve this goal, the Kuwait National Stem Cell Registry was launched in 2012. This facility was initially funded by the Kuwait Foundation for the Advancement of Sciences (KFAS) and established by the Health Sciences Center of Kuwait University.

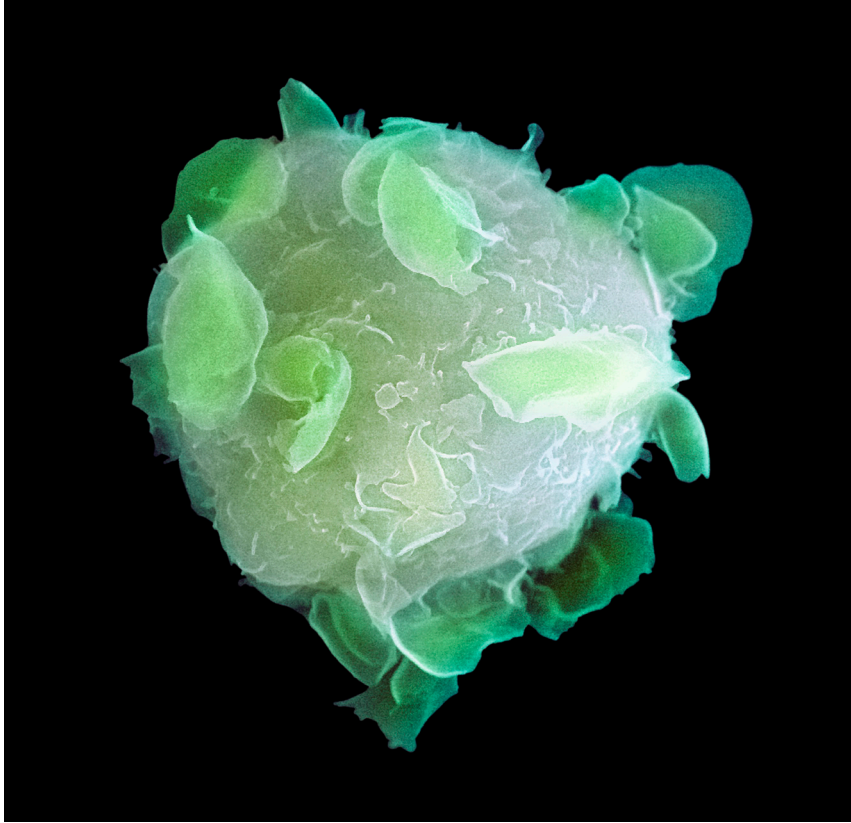
The goal of the Kuwait National Stem Cell Registry is to serve the unmet needs of Kuwaitis by helping match patients with a bone marrow donor using extensive testing. Once a match is found, the clinical team supports each patient throughout both the transplant process, and any therapy that's required afterwards.

But the first challenge is to find a suitable donor. This comes down to the genetic profile of the patient and donor, plus the diversity of the population. Currently, the compatibility of patient and donor is determined using their human leukocyte antigen (HLA) type. HLA are protein molecules — sometimes called markers — found within most of our cells. These are a key part of each person's genetic profile, and everyone has thousands of HLA markers that can occur in millions of combinations. Around a quarter of patients who need a stem cell transplant will find a match from a blood relative. For the remaining patients, a match from an unrelated donor will be sought. These matches can come from both within Kuwait, and other worldwide stem cell donor registries.

For a successful match between an unrelated donor and patient, the goal of the Kuwait National Stem Cell registry is to achieve a full match of HLA markers. HLA typing and the subsequent matching is complex, made even more so by the fact that some types are more common than others, which can affect the chances of a successful match.

That means even with modern science, it's still a challenge to find a match for many patients of Middle Eastern descent. This is because of the unique genetic profiles which don't necessarily match well with other registries around the world where the Middle Eastern population is historically underrepresented.

This is where Dr. Reem Ameen's latest research comes in. Titled 'The Use of Killer-Cell Immunoglobulin-Like Receptor (KIR) Genotyping in Related Stem Cell Transplantation,' the goal is to further define each donor and patients' genetic profile. This will allow scientists to gain a deeper insight than the information currently provided by matching through HLA types alone. After each patient and donor's HLA type is first determined, this additional test will also be carried out in certain situations. This will identify the genetic profile of the killer-cell immunoglobulin-like receptors among Kuwaiti donors and patients. Insights like these will help to increase the level of matching success, while also helping to further define the population genetically. "We may find four or five fully matched donors using HLA type. These additional tests will help us discover the best match from those," said Ameen.



Bone marrow stem cell, SEM

Ameen is Assistant Professor within the Department of Medical Laboratory Sciences, at the Health Sciences Center of Kuwait University. She received her doctorate in Immunopathology from the University of London and her master's in Immunohematology from the University of Florida and has now been based at Kuwait University for almost 20 years. Her deep knowledge of immunohematology and immunogenetics has led to an impressive body of published work, and her latest research is just one further example of her dedication to this field.

At the Registry currently, all patient and donor samples are run through a preliminary test to determine their

HLA type. This test is then repeated as a confirmation. Then each sample is run through the new test to identify the killer immunoglobulin receptors. This helps to establish a comprehensive database for the Registry and increase the chances of finding a successful match between patient and donor.

After a rigorous approval process, the Registry was accredited by The European Foundation of Immunogenetics in 2016 and is also now a member of the World Marrow Donor Association. "The supporting laboratory, which works for the Registry, participates in extended proficiency testing as part of an international scheme," Ameen

said. "This is to make sure that each test we perform is meeting the compliance required for international standards."

The Registry also partakes in international workshops, giving it global visibility that can help drive collaboration between different stem cell registries around the world. "Another of our goals is building capacity, so that we can help more Kuwaitis and those of Middle Eastern descent," she said. "To meet this goal, we built an individual workforce and are also a training and education site. At an organizational level, we help to support the Ministry of Health, both in terms of completing further testing, and if we need to search international registries to find a match."

Without the generous support from KFAS, the Registry would be unable to operate at the level it is today, according to Ameen. "As we look towards the future, our goal is to become a more established part of the international stem cell network," said Ameen. "This will help both Kuwaiti and those of Middle Eastern descent who need to travel abroad, and other patients globally, who may find a match within our registry."