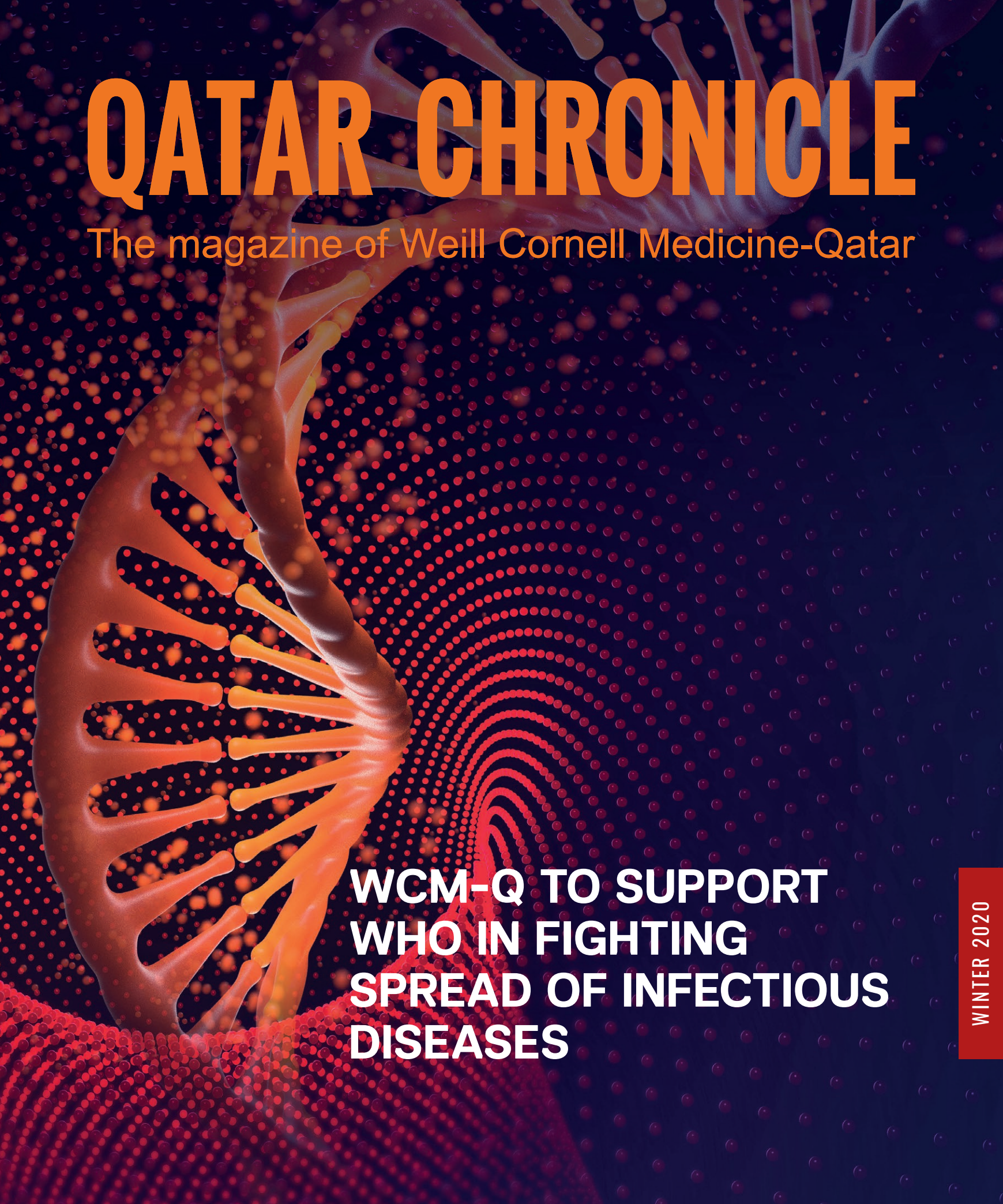
QATAR CHRONICLE

The magazine of Weill Cornell Medicine-Qatar



WCM-Q TO SUPPORT WHO IN FIGHTING SPREAD OF INFECTIOUS DISEASES

WINTER 2020

The magazine of Weill Cornell Medicine-Qatar

Published by the Office of Communications

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The heritage of the Arabian horse

Research helps shed light on the genetic origin of a horse that is prized the world over.

Researchers at WCM-Q have helped probe the genetic diversity and origins of the Arabian horse, prized all over the world for its beauty, grace and athletic endurance.

Renowned for its ability to thrive in extremely hot, arid environments, the Arabian is the oldest recorded breed of horse, with credible documentation stretching back more than 2,000 years placing its development in the Middle East.

Working in collaboration with an international team of fellow researchers, scientists at WCM-Q helped conduct a comprehensive global sampling and analysis of the genomes of 378 individual Arabian horses in Qatar, Iran, UAE, Poland, USA, Egypt, Jordan, Kuwait, the United Kingdom, Australia, Denmark and Canada. Blood and hair samples were painstakingly collected from the horses over an eight-year period.

The international team of scientists was led by the University of Florida's Samantha Brooks, a UF/IFAS assistant professor of animal sciences formerly based at Cornell University in Ithaca, New York; Doug Antczak, the Dorothy Havemeyer McConville professor of equine medicine at the Baker Institute for Animal Health of Cornell University; and Andy Clark, the Jacob Gould Schurman professor in Cornell's department of molecular biology and genetics.

Researchers at WCM-Q, led by Dr. Joel Malek, associate professor of genetic medicine, used the college's state-of-the-art equipment and expertise to assist with the sequencing of the horse DNA. The study was made possible by National Priorities Research Program (NPRP) grant 6-1303-4-023 from the Qatar National Research Fund, a member of Qatar Foundation. The paper, entitled 'Genome Diversity and the Origin of the Arabian Horse' has now been published in *Scientific Reports*, a journal of the *Nature* series of publications.

Dr. Brooks said: "The Arabian horse has a special mystique due to the long-recorded history of the breed. Arabian horse breeders, in particular, know their horse's bloodlines many generations back. What we found was that in the area where this breed originates –likely the near East region, but we don't know exactly – there's a healthy level of diversity. This is particularly evident in populations from Bahrain and Syria, which suggests these are some pretty old populations."

The horse is prized for characteristics like heat tolerance and endurance, as well as its unique appearance, with a dish-shaped facial profile, wide-set eyes, an arched neck and a high tail carriage. It has been exported from its ancestral homeland for centuries, with some modern lineages drawn strictly from these smaller genetic pools, giving the breed a reputation for inbred disorders.

While this was true for some groups they tested, Brooks noted, they also found remarkable diversity when considering the breed as a whole. Brooks contrasted the discovery of more diverse populations with the samples they received from racing Arabians. Another longstanding myth says that the Arabian contributed genetically to the modern thoroughbred, but the racing Arabians' DNA told a different story .

"What we found in these samples was not that much Arabian ancestry was part of the thoroughbred line, but the opposite: that thoroughbred DNA exists in most of the modern racing Arabian lines, indicating a more recent interbreeding within this group, "Brooks said." I can't speculate on the how or why, but this is clearly the story the DNA is telling us."

Another implication of this study, Brooks said, is the potential to identify the genetic regions that determine some of the Arabian's unique traits, like their facial profile.

"We are also very grateful for the support this project received from Qatar Foundation through Qatar National Research Fund, which made the research possible."

This could be expanded to identify the marker for other horse breeds' head shapes, for example."

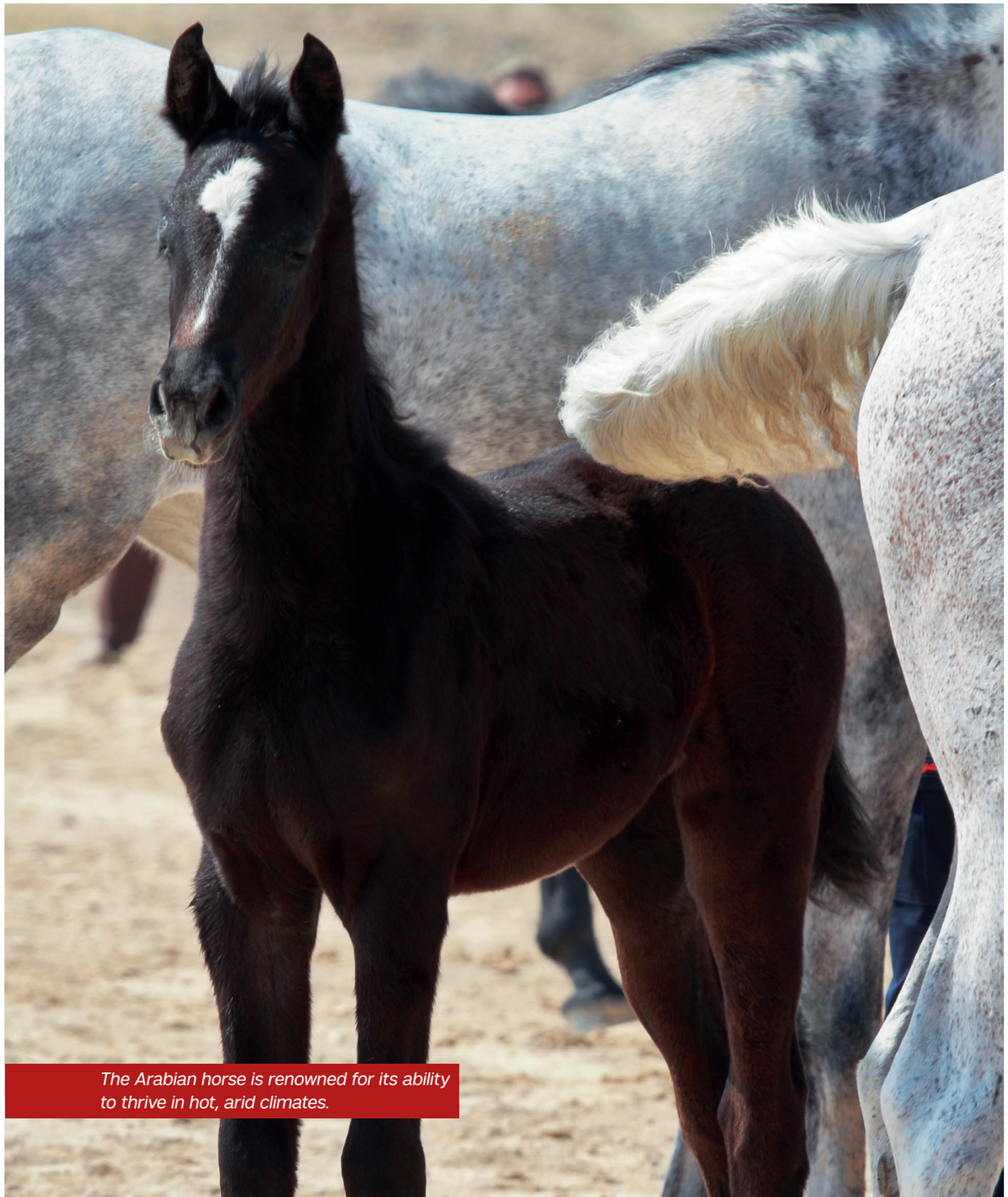
Dr. Joel Malek of WCM-Q said: "It was extremely gratifying to be part of this fascinating and interesting research about the iconic Arabian horse, which is so important to this region. We are very proud to have been able to work with so many talented and dedicated researchers all over the world on this project, which underlines WCM-Q's commitment to pursuing projects at the cutting edge of science that have great local significance, in line with the goals set out in Qatar National Vision 2020.

"We are also very grateful for the support this project received from Qatar Foundation through Qatar National Research Fund, which made the research possible."

The study has a long list of co-authors, with contributors from the University of Tehran, Iran; the University of Kentucky; the University of Agriculture in Kraków, Poland; the Hong Kong Jockey Club; the Equine Veterinary Medical Center at Al Shaqab (a Qatar Foundation member) in Doha, Qatar; and the University of Veterinary Medicine Vienna, Austria. Elissa Cosgrove from the Clark lab and Raheleh Sadeghi, a visiting scientist from Iran in the Antczak lab, shared first co-authorship of the study.

Dr. Khaled Machaca, professor of physiology and biophysics and senior associate dean for research, innovations, and commercialization at WCM-Q said: "It is extremely pleasing that the advanced capabilities in genomic analysis that we have developed in the Biomedical Research Program at WCM-Q allow us to contribute to ground-breaking international projects such as this one. The Arabian horse is truly a majestic creature and it is wonderful to be able to shed light on its genetic heritage in this way."

The study also had contributors from the University of Tehran, Iran; the University of Kentucky; the University of Agriculture in Kraków, Poland; the Hong Kong Jockey Club; the Equine Veterinary Medical Center (a Qatar Foundation member) in Doha, Qatar; and the University of Veterinary Medicine Vienna, Austria. The study can be read in full at: *https://www.nature.com/articles/s41598-020-66232-1*



The Arabian horse is renowned for its ability to thrive in hot, arid climates.

A new cohort of future doctors

WCM-Q's orientation program goes virtual to welcome the Class of 2026.

With highly qualified doctors needed now more than ever, WCM-Q welcomed its new cohort of incoming students with a comprehensive three-day orientation program –delivered fully online this year for the first time in the institution's history.

With measures to control the spread of the coronavirus still in place, new students logged in remotely to meet one another, interact with faculty and staff, and learn study and ITS skills designed to help them excel academically and thrive in their new environment.

Dr. Javaid Sheikh, dean of WCM-Q, said: "We are absolutely delighted to welcome our new cohort of students to WCM-Q to begin learning the art and science of medicine at a time when such skills are needed more than ever. These talented young women and men are excited to learn and to make strong contributions to the health of people in Qatar and beyond."

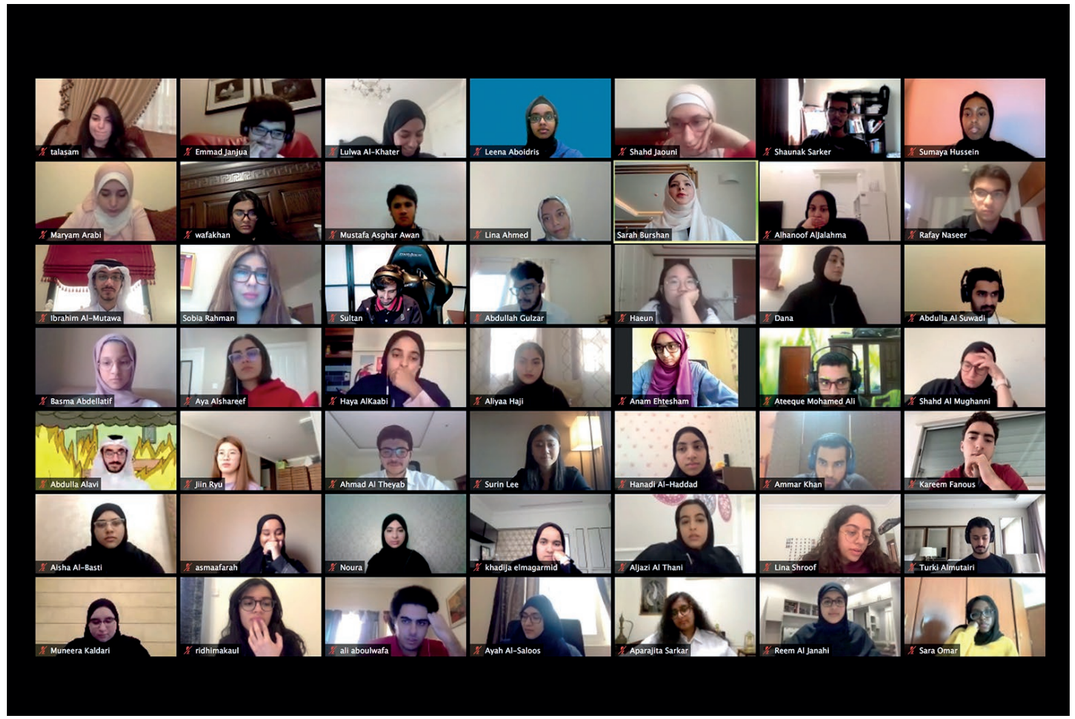
The incoming cohort is truly global, comprising citizens of 19 different countries: Qatar, Australia, Bangladesh, Canada, Egypt, India, Iran, Jordan, Korea, Kuwait, Pakistan, Russia, Sudan, Sweden, Syria, Taiwan, Tunisia, the UK and the USA.

This year's intake brings 22 new students to the college's foundation program, all of whom are Qatari nationals. There are 51 new pre-medical students, 23 of whom have been promoted from last year's foundation program, while 28 are new arrivals. Of the 48 new medical students, 47 were promoted after completing the two-year pre-medical curriculum at WCM-Q, with one new arrival. Combined, the two-year premedical curriculum and four-year medical curriculum form the WCM-Q integrated six-year medical program.

The foundation program provides intensive instruction in the basic sciences, English and mathematics to prepare students for the rigors of the six-year medical program. The orientation programs began with welcome addresses, followed by introductions to the curricula. Other sessions included information about academic integrity, student health and wellness services, legal issues in the practice of medicine, study skills and technology tools.

Dr. Rachid Bendriss, assistant dean for student recruitment, outreach and foundation programs, said: "Orientation is always a great experience as it marks the beginning of our academic year, with all of the energy, hope and excitement that brings. I thank all of our new students and my colleagues at WCM-Q for working hard to make this year's orientation not only a great event, but also one that protected the health, safety and wellness of everyone who participated."

To help the new arrivals get to know one another there were also peer discussion sessions and a chance to interact with existing students to ask about their experiences at the college. Student Maryam Al-Quradaghi is beginning the four-year medical curriculum this semester,



having previously completed both the foundation program and the two-year pre-medical curriculum at WCM-Q.

She said: "Despite viewing the world through a screen, the excitement that we felt about the upcoming year was still there. Meeting new professors, learning more about the profession and seeing our classmates after so long made the event so enjoyable. This year's orientation was definitely something that I will remember as it heavily reflects every aspect of my future career as a doctor."

The orientation programs, coordinated by WCM-Q's Division of Student Affairs, are carefully designed to familiarize students with the people, curriculum and procedures at the college so they can quickly feel at home and succeed in their studies.

Dr. Thurayya Arayssi, senior associate dean for medical education and continuing professional development, said: "Helping students orient themselves to their new lives at college has never been so important. I am very pleased that our first ever fully online orientation program proved to be extremely effective, allowing our students to begin their new lives at college with confidence and positivity. I am certain they will thrive here at WCM-Q."

Dr. Ravinder Mamtani, vice dean for student affairs-admissions, population health, and lifestyle medicine, said: "Orientation this year was a fantastic success, thanks to the excellent can-do spirit of the participating students and the professionalism of our staff and faculty. I am most grateful to all involved for their hard work and dedication."

Students research breast reconstructions

Study looked at a minimally invasive surgical technique that can be conducted on out-patients.

Gabriala Andrews

Dr. Jeremie Arash Tabrizi

Danyal Ahsan

Student researchers at WCM-Q have contributed to better understanding of a minimally invasive breast reconstruction surgery for recovering breast cancer patients.

The highly innovative new surgical technique involves taking fat tissue from the hip or abdominal area and injecting it into the breast over the course of a series of short operations, each lasting less than one hour. While it has been used now for several years for many patients, it is not yet considered a gold standard protocol.

Dr. Jeremie Arash Tabrizi, WCM-Q's professor of genetic medicine, obstetrics and gynecology, and Dr. Kaïs Razzouk, gynecologist/ oncological surgeon at the Santa Maria Breast Institute in Nice, France, have set-up a specific research program with the goal of demonstrating the efficiency of the technique, called autologous fat graft. Fourth-year medical students Gabriala Andrews and Danyal Ahsan analyzed thousands of data points to provide valuable information to Drs. Tabrizi and Razzouk, allowing them to adjust the procedure to maximize its effectiveness, minimize the risk of complications and safeguard the mental health of patients.

Dr. Tabrizi said: "The students did fantastic work in analyzing a very large amount of data to give Dr. Razzouk and myself extremely valuable guidance. Their input has been remarkably useful to our work to refine and optimize this new procedure."

Reconstruction of the breast or breasts after a mastectomy and radiotherapy treatment is an important part of the recovery process for many women who have had breast cancer, helping to provide psychological 'closure' on a distressing experience. The new approach is far less invasive than the two most common surgical breast reconstruction procedures, in which a flap of tissue and muscle is taken from either the back or the abdomen and grafted into the breast. These operations can take up to five hours or more, inflict significant scarring, have a long recovery time, and usually require a stay of several nights in hospital.

In contrast, the new approach causes minimal scarring and can be performed on an outpatient basis, allowing patients to have the surgery and go home the same day. The process also helps repair tissue damaged by radiation treatment, making insertion of a prosthesis more likely to succeed, should the patient wish to pursue that option.

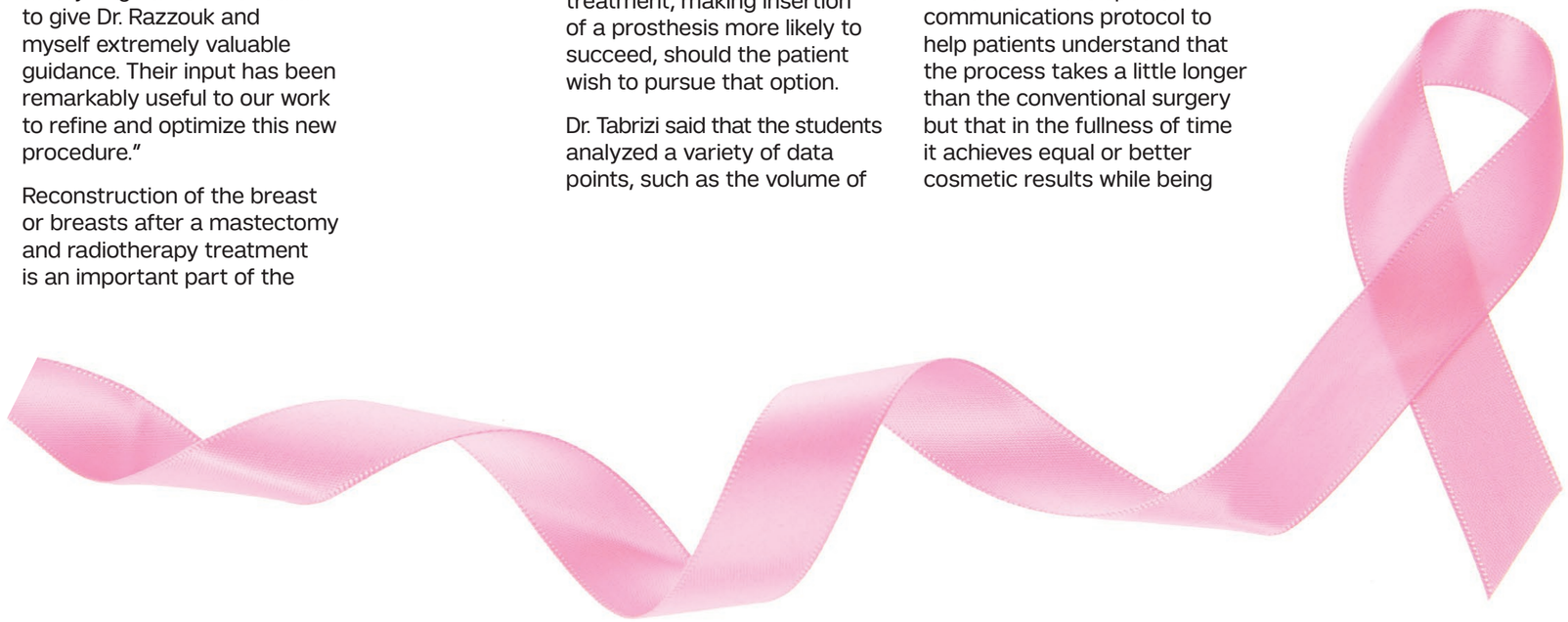
Dr. Tabrizi said that the students analyzed a variety of data points, such as the volume of fat that was transferred from the hips to the breast in each procedure and compared this with the outcomes of the procedure, based on factors such as patient satisfaction, cosmetic appearance and incidence of complications such as bleeding or infection. This analysis allowed the surgeons to fine-tune the volume of fat they transferred to achieve the best overall results.

Another key finding of the students' research related to the communication with the patient. Because the process is based on a gradual reconstruction, patients sometimes felt disappointed or underwhelmed by the results of the first procedure, the students found.

To counter this, Dr. Tabrizi and Dr. Razzouk developed a new communications protocol to help patients understand that the process takes a little longer than the conventional surgery but that in the fullness of time it achieves equal or better cosmetic results while being far less invasive and carrying less risk of complications. This small innovation in the communications strategy significantly improved levels of patient satisfaction.

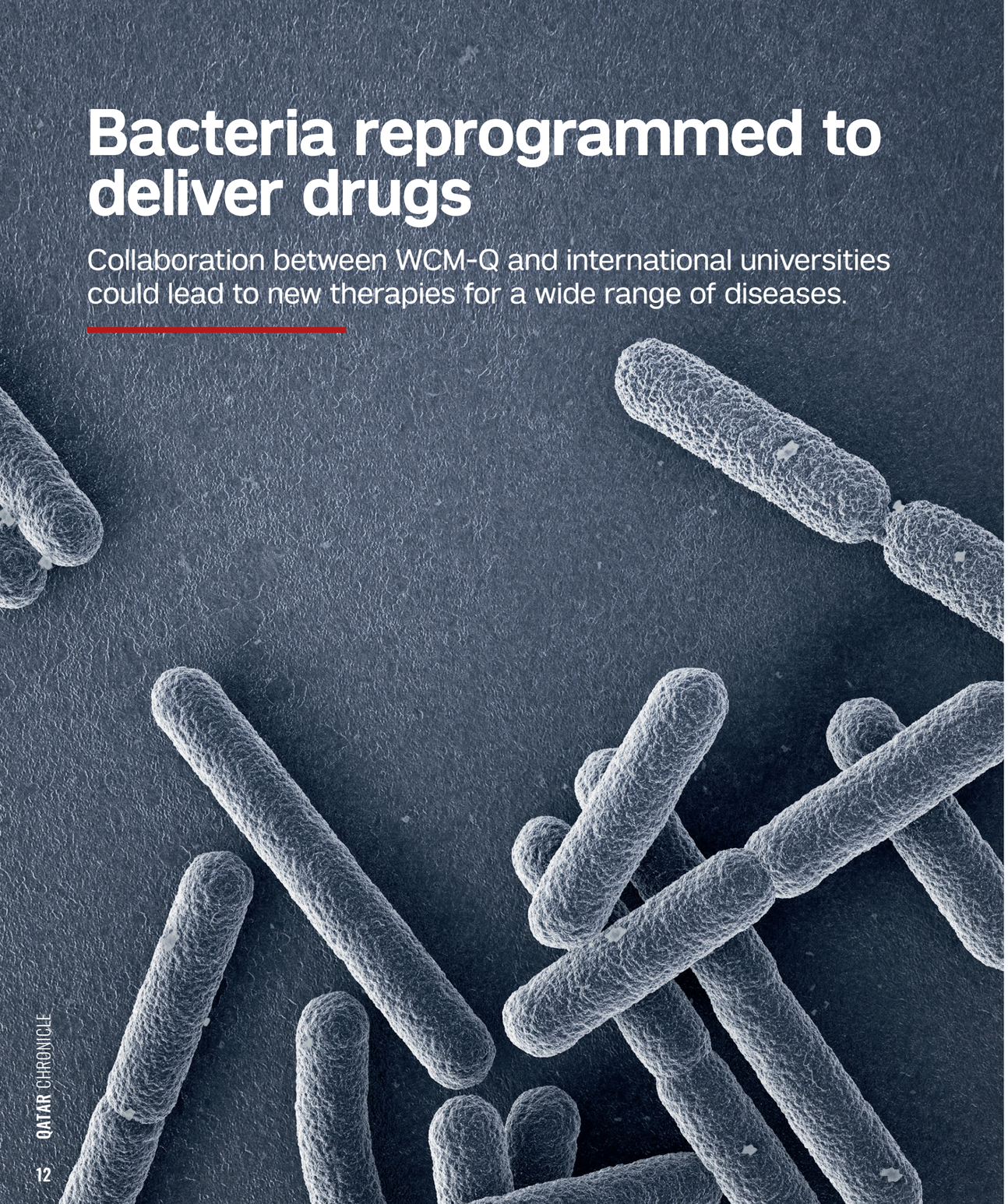
Dr. Tabrizi and Dr. Razzouk have now performed the new procedure approximately 300 times between them at two facilities in France, one in Nice and one in Paris.

Student Gabriala said: "It was extremely rewarding to be able to contribute to such an exciting and worthwhile innovation in reconstructive surgery for recovering breast cancer patients."



Bacteria reprogrammed to deliver drugs

Collaboration between WCM-Q and international universities could lead to new therapies for a wide range of diseases.



Researchers at Weill Cornell Medicine-Qatar have taken part in a landmark international study in which bacteria cells were reprogrammed to synthesize and deliver a potent anti-cancer drug.

The WCM-Q researchers worked with scientists at the University of Oxford and the University of Sheffield in the UK and the University of Greifswald in Germany to help construct reprogrammable cells from three species of bacteria, *Escherichia coli, Pseudomonas putida,* and *Ralstonia eutropha*.

The researchers achieved this by destroying and removing the genetic material from the bacteria cells using a special type of enzyme which causes breaks in both strands of the DNA double helix carried within the chromosomes, but leaves the other cellular structures intact and able to function. The resultant 'SimCells' (short for simple cells) can be reprogrammed by inserting other genetic material, allowing them to be used for a variety of functions, including the synthesis and delivery of therapeutic drugs. Engineering existing organisms to perform researcher-designed functions in this way is known as synthetic biology and is an extremely promising area of research for the development of new treatments for a wide variety of different diseases.

In the study, titled 'Chromosome-free bacterial cells are safe and programmable platforms for synthetic biology', the research team used reprogrammed SimCells to synthesize catechol (a potent anticancer drug) from salicylic acid to inhibit lung, brain, and soft-tissue cancer cells in the lab. They also demonstrated that SimCells can be used as a 'safe agent' to manufacture and deliver therapeutic drugs because they cannot replicate and do not interfere with the host genome as they do not have chromosomal DNA.

Dr. Frank Schmidt, director of the Proteomics Core at WCM-Q, is one of the authors of the paper, which has been published in the *Proceedings of the National Academy of Sciences of the United States of America* (PNAS), a high-profile journal.

Dr. Schmidt said that the project had been led by researchers at the Department of Engineering Science at the University of Oxford, particularly Professor Wei E. Huang, associate professor of synthetic biology, and Catherine Fan, graduate researcher, while WCM-Q contributed its advanced capabilities in protein analysis.

Dr. Schmidt said: "This is a really exciting study because it not only demonstrated that bacteria cells can be manipulated to serve as platforms for delivering drugs that are potentially life-saving, but also that they cannot reproduce themselves and cause dangerous infections or interfere with the DNA of the patient.

"It is wonderful for us at WCM-Q to be able to take part in cutting-edge research projects like this with elite institutions like Oxford, Sheffield and Greifswald and it shows the level of ambition and capability we have here, both at the college and in Qatar in general."

The paper states that it is known that several species of bacteria preferentially associate with cancer tumors, meaning there is great potential to engineer bacteria to sense, target and deliver anticancer compounds directly to tumors within a patient's body. Additionally, the paper asserts that 'genetic circuits' (artificial assemblies of genes created in the lab) had been inserted into the SimCells and were found to be able to utilize the cellular machinery therein to synthesize proteins and carry out important metabolic functions such as the glycolysis pathway, which is essential for cell survival. Some of the SimCells generated by the researchers were able to survive for as long as 10 days.

WCM-Q's contribution to the study was supported by the Biomedical Research Program at WCM-Q, a program funded by Qatar Foundation.

Youngsters help to teach medicine

WCM-Q's Cornell Stars event goes online as trainee doctors learn how to examine children.

Working online, the students were able to interact with the children and take medical histories.

Examining and diagnosing children is not always easy but trainee doctors from WCM-Q had it harder than usual – they had to do it online.

The Cornell Stars program is one of the highlights of the academic year for students in the third year of the medical program; faculty and staff at the college usually bring their young children into the college and the students are able to practice dealing with small children under the supervision of an experienced and qualified doctor.

But this year the COVID-19 pandemic meant that social distancing rules made this impossible, so the decision was made to take Cornell Stars online via video conferencing apps.

Dr. Amal Khidir, associate professor of pediatrics at WCM-Q, said the Cornell Stars event is a valuable learning activity that allows students to become familiar, and hopefully comfortable, interacting with children and their families. Another goal is to highlight to the students that the field of pediatrics is not always disease-based and healthy children are the majority of patients cared for by pediatricians.

Dr. Khidir said: "Cancelling Cornell Stars because of COVID was never really an option as the event is so useful for students heading into the full clinical experience in their third year of the medical program. Instead, we adapted it using online conferencing apps. Students were able to talk to the children and their parents to gather histories and interact with the young 'patients' by asking them to perform various tasks. Although they were not able to listen to their hearts or touch them, they were able to practice and refine their observation skills which are important when they take care of children during their clinical rotations.

"They learn how to approach and engage children supported by our experienced doctors, who can pass on hints and tips in the context of virtual sessions."

Dr. Khidir added that the event would not have been possible without the support of WCM-Q's ITS department and Office of Curriculum Support, and particularly the doctors from Hamad Medical Corporation, Sidra Medicine and WCM-Q who gave their time and experience to the students; Drs. Madeeha Kamal, Magda Wagdy Yousef, Sohair Elsiddig, Manasik Hassan, Shabina Khan, Samar Magboul, Suzan Gameel, Stella Major and Mohamud Verjee.

She added: "We are also very grateful to the 16 families who volunteered their time over the weekend and particularly the 21 children who were our Cornell Stars."

Nour Al Masri was one of the WCM-Q staff members to volunteer for Cornell Stars and said it had all gone very smoothly, possibly because both students and children had become very used to communicating via apps since the coronavirus struck.

Class of 2022 student Jamal Al Ani, one of the 51 students who participated in this event, said it was a really useful learning experience.

He said: "In the midst of everything taking place across the world right now, the children's strength and smiles were really refreshing and exciting to be a part of. Seeing them go from shy and timid to confident and interactive was extremely eye opening. It was a really fun and engaging way to practice some of our interviewing skills, whilst also having fun with the kids.

"I've always wanted to work with kids and advocate for them, and this event really reaffirmed that belief. One of the patients even decided to draw me when we asked him to draw one of us, so how could I say no after that. Children are delicate and the conditions and environment in which they grow up ultimately shape the people they become, and it would be an honor to help ensure they become the best versions of themselves."

Online Covid lectures attract thousands of healthcare practitioners

Healthcare practitioners across the country log on to WCM-Q's lecture series detailing the latest information about the pandemic.

Thousands of healthcare professionals across Qatar have taken advantage of Weill Cornell Medicine – Qatar's COVID-19 Live Webinar Series to learn of the latest advancements in Covid therapies, helping them to treat patients and save lives.

The hugely beneficial webinars were developed at the beginning of the March lockdown to meet the clinical needs of the local healthcare community, who were battling to treat patients afflicted by the virus. WCM-Q's Division of Continuing Professional Development (CPD) realised that to aid recovery, Qatar's physicians and healthcare workers needed a trusted online source for the latest news about treatments and therapies.

With new facts, theories and discoveries about the virus being made daily across the world, it was vital for the health of patients in Qatar that doctors had the latest information. With this as their mission, the CPD team urgently assembled a huge variety of leading clinical experts and topics to keep the medical profession abreast of the latest, cutting-edge updates.

When launched, healthcare workers across Qatar rushed to register for the accredited webinar series and thousands have since attended the online lectures.

Dr. Salman Al Jerdi, assistant professor of neurology at WCM-Q and one of the series'

There have so far been a total of 36 speakers at the series.

co-directors, said: "As countries across the world entered lockdown in March, doctors fought to keep patients alive, researchers studied the novel coronavirus in laboratories, and new information was discovered on an almost daily basis.
In some instances, this information was vital for improved patient outcomes but because it was coming from discrete sources, it was a challenge for the medical community to avail itself of all the updates. So, the COVID-19 Live Webinar Series was conceived out of an idea to help keep Qatar's medical community abreast of the rapidly changing clinical situation."

So far there have been 33 presentations and a total of 36 speakers, including presentations by WCM-Q faculty, WCM-Q alumni, physicians from Sidra and Hamad Medical Corporation, and experts from foreign institutions. Each online lecture attracts more than a thousand virtual attendees and since the lectures began, 22,000 healthcare professionals have participated, the majority from Qatar but some from across the world.

The series has been tailored to information that has been specifically needed during the pandemic. Whether it related to pulmonary care or pediatrics, different aspects of the crisis have been covered to support the entire healthcare community.

Dr. Javaid Sheikh, dean of WCM-Q, delivered a valuable lecture on the vital importance of maintaining close social relationships while keeping to physical distancing guidelines, and Dr. Abdullatif Al-Khal, deputy chief medical officer, director of the Department of Medical Education and senior consultant in infectious diseases at Hamad Medical Corporation, discussed the national response the COVID-19 pandemic.

"The COVID-19 pandemic has been an incredibly fluid and fast-moving crisis, both literally and in terms of our clinical knowledge, and the CPD team had to work incredibly fast to develop and deliver this webinar series." Dr. Thurayya Arayssi

The WCM-Q alumni who were invited to deliver a lecture were Drs. Mahrukh Rizvi, Karima Becetti, Ghaith Abu-Zeinah, Mohamed Elshazly and Salman Al-Jerdi. They discussed subjects including therapeutics for COVID-19 pneumonia and the pandemic's impact on cardiovascular diseases, to how COVID-19 affects the brain. Other speakers and topics include Dr. Randi R. Diamond, assistant professor of clinical medicine at Weill Cornell Medicine in New York, who discussed 'Palliative Care and COVID-19, The Weill Cornell Medicine Experience', and Dr Evelyn C. Granieri, professor of medicine at Columbia University's Vagelos College of Physicians and Surgeons in the US, who spoke about the effects of COVID-19 on older patients.

A particularly high-profile recent lecturer was Dr. Howard Markel, the George E. Wantz distinguished professor of the history of medicine, director of the Center for the History of Medicine at the University of Michigan and member of the National Academy of Medicine. Dr. Markel's webinar looked at previous pandemics to affect the world in a lecture entitled 'When Germs Travel: Coronavirus, and the Long History of Contagious Crises.'

Dr. Thurayya Arayssi, professor of clinical medicine and senior associate dean for medical education and continuing professional development at WCM-Q, was the second co-director of the webinar series.

Dr. Arayssi said the series' mission was to inform and empower the healthcare community.

She said: "The COVID-19 pandemic has been an incredibly fluid and fast-moving crisis, both literally and in terms of our clinical knowledge, and the CPD team had to work incredibly fast to develop and deliver this webinar series. Our aim has always been to provide high-quality presentations from highly credible experts discussing relevant and timely topics. Given the popularity of the series among healthcare professionals, I hope we have done that and played a small part in improving healthcare and clinical outcomes for COVID-19 patients in Qatar and the wider region."

The COVID-19 Live Webinar Series continues until the spring of 2021 and past presentations can be viewed online at CPD's online archive.

Dr. Sallie Permar spoke about COVID-19 and children and was recently appointed chair of the Department of Pediatrics at Weill Cornell Medicine and pediatrician-in-chief at NewYork-Presbyterian/Weill Cornell Medical Center and NewYork-Presbyterian Komansky Children's Hospital.

Lack of exercise causing premature death

Research highlights physical inactivity and sedentary lifestyles in MENA region.

Researchers at WCM-Q have published a comprehensive study on the status of sedentary behaviour and physical activity in the Middle East and North Africa.

The research discovered that almost 50 percent of adults and 75 percent of young people in MENA countries did not meet the World Health Organization's (WHO) recommended levels of physical activity. WHO recommends 150 minutes of moderate physical activity or 75 minutes of vigorous physical activity per week for adults and 60 minutes of moderate to vigorous-intensity physical activity daily for children and youth. Lack of physical activity is a key risk factor for obesity and other non-communicable diseases (NCDs), such as type 2 diabetes and cardiovascular disease, which frequently lead to severe life-limiting complications and premature death.

Dr. Ravinder Mamtani, WCM-Q's professor of healthcare policy and research, professor of medicine and vice dean for student affairs, population health, and lifestyle medicine, is one of the authors of the study. He said: "Non-communicable diseases now account for around 41 million deaths worldwide each year, which works out at 71 percent of all deaths. Lack of physical activity, particularly among young people, should therefore be viewed as nothing less than a global public health emergency, as this research makes very clear."

The MENA region has some of the highest rates of NCDs in the world, and the second-highest prevalence of diabetes (10.8 percent) of any world region. The study, entitled, 'Physical activity and sedentary behaviour in the Middle East and North Africa: An overview of systematic reviews and meta-analysis', has been published in *Scientific Reports*, an open access journal belonging to the prestigious *Nature* group of publications.

The paper is based on detailed analysis of seven scientific systematic reviews and 229 primary studies on physical activity and sedentary behaviour in the MENA region published since the year 2000. The 20 MENA countries included in the study are Algeria, Bahrain, Djibouti, Egypt, Iraq, Jordan, Kuwait, Lebanon, Libya, Morocco, Oman, Pakistan, Palestine, Qatar, Saudi Arabia, Sudan, Syria, Tunisia, the United Arab Emirates, and Yemen. The research team then used sophisticated statistical meta-analysis techniques to interpret the data collected from the published reviews.

The first author of the study, Dr. Sonia Chaabane, projects specialist in WCM-Q's Institute for Population Health (IPH), said: "It is important to further understand the personal, social and environmental barriers to physical activity, which will aid and facilitate effective, locally informed interventions."

WCM-Q researchers who worked on the study with Dr. Mamtani and Dr. Chaabane are Dr. Sohaila Cheema, assistant dean of IPH and assistant professor of healthcare policy and research; Dr. Karima Chaabna, population health and communication specialist and instructor in healthcare policy and research; and Dr. Amit Abraham, instructor in healthcare policy and research and projects specialist.

Dr. Ravinder Mamtani, Dr. Sohaila Cheema, Dr. Karima Chaabna, Dr. Sonia Chaabane and Dr. Amit Abraham.

Dr. Cheema, said: "The study demonstrates a critical need for urgent public health interventions across the entire MENA region, especially among young people, to allow for higher levels of physical activity and to discourage sedentary lifestyles. The study also highlights a need for systematic data collection across the MENA region regarding levels of physical activity and sedentary behaviour, as well as rates of associated non-communicable diseases, so that we can better understand the situation and determine which interventions are most effective, specific to our context."

WCM-Q's IPH has been at the forefront of lending full support to the State of Qatar's overall goal of promoting healthy lifestyles.

Research mentors go virtual

Mentorship goes online as college works to preserve the experience for students.

Biomedical research experience is fundamental to the curriculum at WCM-Q and even during lockdown, students have continued this work and continued to publish high-quality research data.

During a typical year, trainee doctors at WCM-Q would often be flying to Weill Cornell Medicine in New York for the summer to pursue their study interests there. But with borders closed, laboratories shut and many students returning to their home countries, the leadership at WCM-Q had to act swiftly to ensure that research opportunities were still available. So, faculty based at the college were invited to propose research projects and mentor students remotely, allowing them to gain the necessary research experience but also make valuable contributions to scientific knowledge.

For the faculty members this was a step into the unknown; mentoring would normally be done face-to-face where reports and studies could be examined as a group, allowing several different ideas to be shared at the same time. Online mentoring meant this would have to change to one-on-one interviews using video-conferencing technology, making the sharing of written reports and diagrams more difficult. In addition, students were often spread across different time zones.

Dr. Chris Triggle, professor of pharmacology at WCM-Q, said: "Meetings between ourselves and the students would normally be done in-house and often all at the same time so that ideas, criticisms and ways forward could be discussed among everyone, but we had one student in Australia, one in Korea and three in Qatar. So, we had Zoom meetings once a day, spending about an hour with each student and it probably worked out as well as if we were all sitting in the same room.

"Prior organisation was key to ensuring each meeting was productive but because we have been using this online conferencing technology for several months, it all went extremely smoothly and actually allowed for greater flexibility."

Dr. Salman Al-Jerdi, assistant professor of neurology at WCM-Q, also acted as a mentor, guiding Rozaleen Aleyadeh through the research project 'Management of Cognitive Impairment after Stroke', which was also written with Dr. Yahia Imam, assistant professor of clinical neurology at Hamad Medical Corporation.

Dr. Al-Jerdi's research and mentorship began before the COVID-19 pandemic but file-sharing software and conferencing apps that have become familiar to WCM-Q faculty allowed it to continue through lockdown, providing him and Dr. Imam with the tools to guide Rozaleen through the literature review.

He said: "We talked about the content of the topic, we talked about cognitive impairment, how it happens and what we can do about it. Much of it involved Rozaleen looking things up, discussing the findings with me and checking the information was up to date. The second part was how to write the review itself, both from a general perspective and the specific requirements that individual journals demand."

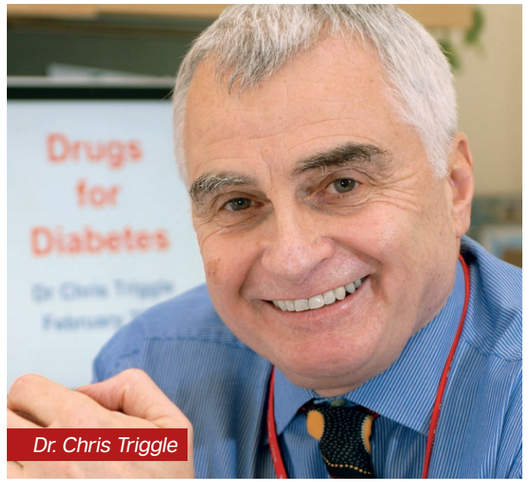
He added: "Her interest in the topic made it easy to discuss the paper and she was easy to mentor. It was very rewarding as she has used this to start another research project."

The mentorships have proved to be particularly successful academically as well.

Both Omna Sharma, who was mentored by Dr. Triggle, and Rozaleen had their papers accepted in peer-reviewed medical journals. For Omna, her manuscript 'A Review of the Progress and Challenges of Developing a Vaccine for COVID-19' was published in the journal *Frontiers in Immunology*, while Rozaleen's can be found in *Current Treatment Options in Neurology.*

Omna said it had been a very positive experience. She said: "Dr. Triggle was very organised and very clear with what I had to do and how I should approach the task.

"Because the student is supposed to be at the centre of the project, I did the bulk of the writing and the figures and data and my mentors helped me by finding some of the articles and research papers and by providing guidance and feedback. But the acceptance of the publication - my first - would not have been possible without the support of Dr. Triggle, Dr. Sultan and Dr. Ding as they really helped guide me in multiple ways."



Dr. Chris Triggle

For Rozaleen, too, who is a member of the Class of 2021, the mentorship was a rewarding experience, allowing her to be actively involved in the literature review, investigating pharmacological and non-pharmacological treatments for cognitive impairment, writing the introduction to the paper and also preparing figures and data – much of it online.

"She said: "We regularly exchanged emails and we used an online bibliography and library, so we were able to follow the thought processes of each other. It felt great to be published and I was really thankful to Dr. Al-Jerdi and Dr. Imam."

Dr. Thurayya Arayssi, senior associate dean for medical education and continuing professional development at WCM-Q, thanked all the faculty who had made such a valuable contribution to the research mentorship program.

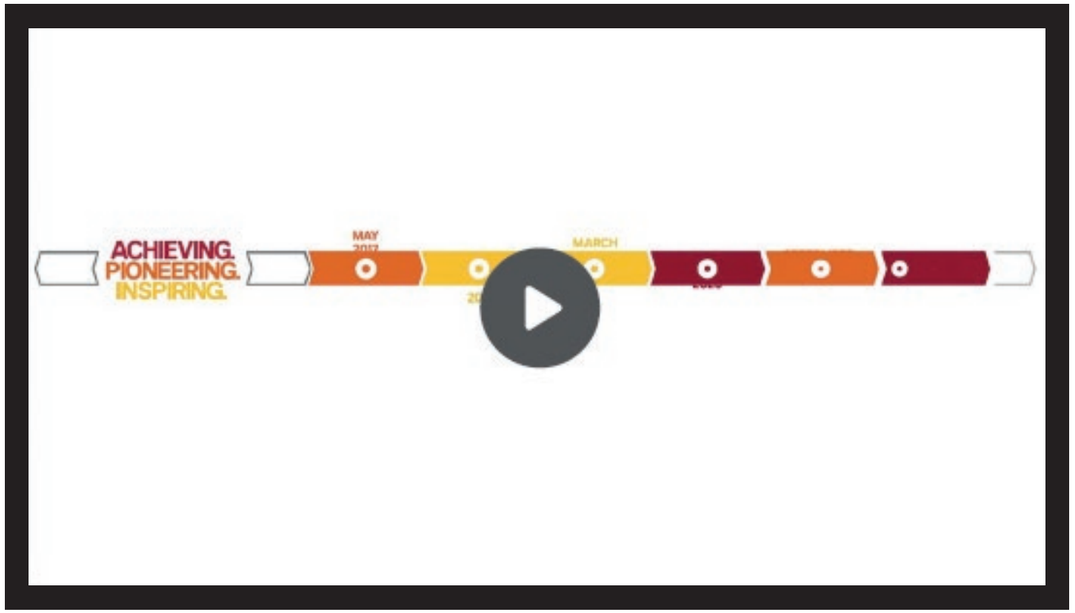
Dr. Arayssi said: "Biomedical research is vital to the advancement of medicine and healthcare and at WCM-Q we strongly encourage students to take an active participation in research so that they become the physician-scientists of the future. Doctors should always be intellectually curious, and by providing them with the tools to conduct their own research, we can help contribute to the discovery of new medical therapies and innovations.

"Obviously research mentorships like these would usually be conducted face-to-face but faculty at WCM-Q have always utilized the latest technology and over the last few months they have become particularly proficient in using new and innovative virtual tools to get the job done.

"I would like to once again thank all of our faculty, and those from affiliated institutions, who shared their own knowledge and time so generously with WCM-Q students, and who provided mentorship and guidance throughout this particularly difficult year."

WISH and WISE

WCM-Q's achievements in education, research and community development are showcased at two of the country's most prestigious and high-profile events.



Weill Cornell Medicine – Qatar took a prominent role in both WISE and WISH, showcasing the success of the college and encouraging the community to lead healthier lifestyles.

The WISE (The World Innovation Summit for Education) events came first and saw WCM-Q's Office of Communications take its award-winning Sahtak Awalan campaign to Qatar Academy Al Wakra. During online sessions, third year students learned about the environment, Sahtak Awalan's Khayr Qatarna greenhouses and how they are contributing to Qatar's self-sufficiency and sustainability, and the agricultural cycle.

The event also supported the municipality of Al Wakra in their efforts to achieve sustainable development goals as set out by the UNESCO Learning Cities' Network.

The World Innovation Summit for Health began with Doha Healthcare Week and Sahtak Awalan once again balanced the need for education with fun by launching its healthy lunchbox competition. Families were encouraged to use fresh fruit, vegetables, yogurts and wholegrains to create the most colorful, tastiest and healthiest lunch in Qatar. Photographs were then posted on social media. Hundreds of entries were received from families across Qatar with the best winning prizes.

During the week, WCM-Q's Dr. Ravinder Mamtani, vice dean for student affairs-admissions, population health and lifestyle medicine, also led an online session discussing nutrition and lifestyle. With lifestyle-related diseases like diabetes and heart disease among the biggest causes of premature death in the world, Dr. Mamtani discussed strategies to improve the community's health.

For the WISH summit itself, which took place online from 15-19 November, WCM-Q hosted a virtual booth showcasing the college's research successes, its faculty, students and its alumni. Office of Communications also demonstrated the college's commitment to community health with the Your Health First campaign and the Khayr Qatarna program.

Nesreen Al-Rifai, chief communications officer at WCM-Q, said it had once again been an honour to participate in both the WISH and WISE conferences.

Mrs Al-Rifai said: "In a short space of time, the WISH and WISE conferences have become two of the most prestigious and influential events in their respective fields. It is a source of great pride to WCM-Q that we are able to participate in both and bring our expertise to the discussions.

"This year's events were, of course, particularly challenging due to the coronavirus pandemic, but with the latest technology we were still able to deliver our message about healthy lifestyles while at the same time showcasing the remarkable research conducted in the WCM-Q labs, and the achievements of our students and alumni."

Students join the fight against COVID-19

Initiative is designed by the Ministry of Public Health to contain the risks of the virus.

Medical students at WCM-Q answered a call from the Ministry of Public Health (MOPH) for volunteers to help tackle the COVID-19 pandemic.

Eighteen WCM-Q students and one recent graduate signed up to help the MOPH in its work to contain the effects of the coronavirus in four key areas: risk communication; guidelines and standard operating procedures (SOP); investigation; and contact tracing.

The students, who were rallied to the cause by Qatar Medical Students' Association (QMSA), worked as volunteers for two to four days per week, depending on the MOPH's needs and their own personal and study commitments. The volunteering program was established in collaboration with the MOPH, which is providing specialist training to all volunteers to allow them to assist in the important work of tackling the virus.

Abdallah Tom was one of the students to volunteer to help the MoPH.

The students who signed up to assist the MOPH were Abdallah Tom, Dana Al-Ali, Hissa AlHail, Shahryar Tariq Rana, Krishnadev Pillai, Noora Alhail, Nada Mobayed, Aldana Shahbik, Gabriala Andrews, Jassim Taimour, Nasser Al-Khawaga, Aya Youssef, Mahmood Al-Orphaly, Fatma Al-Binali, Toqa Afifi, Dhabia Al-Merekhi, Salma Al-Mohannadi and Kholoud Abu-Holayqah.

Dr. Grigory Ostrovskiy, assistant professor of emergency medicine in medicine at WCM-Q, coordinated the collaboration with the MOPH. Recent WCM-Q graduate Dr. Hamad Almuhannadi also volunteered.

Volunteers in the risk communication section worked on the national 16000 coronavirus hotline service, answering questions from callers, taking histories from them and referring them to testing facilities where needed.

In the guidelines and SOP section, volunteers helped develop national guidelines and healthcare policy documents, while those in the investigation section used the MOPH database of COVID-19 patients to take histories and discover who those patients have been in contact with. They then passed that information to the volunteers in the contact tracing team, who reached out to individuals who have been in contact with COVID-19 patients and helped them access a testing facility.

WCM-Q student volunteers are also working with qualified doctors who are members of Qatar Medical Association (QMA) to provide psychosocial support via phone to patients who have been diagnosed with COVID-19. The student volunteers are trained by QMA's doctors, who also monitor the calls for quality control.

WCM-Q fourth-year medical student Abdallah Tom, president of QMSA, said: "As medical students, we felt that we had an obligation to help Qatar fight the COVID-19 pandemic so we were very keen and grateful for the opportunity to volunteer with the Ministry of Public Health. We are all extremely committed to using the skills and knowledge we have learned in our studies so far to help efforts to protect the health of everyone in Qatar."

Dr. Thurayya Arayssi

Dr. Thurayya Arayssi, senior associate dean for medical education and continuing professional development at WCM-Q, said: "We are very proud of our student volunteers for showing great enthusiasm for helping the MOPH with this vital work. As doctors in training, they already have a strong instinct to help safeguard the health of anyone in need and they are very thankful to the MOPH for giving them this chance to help."

WCM-Q to support WHO

HH Sheikha Moza attends inauguration of WHO Collaborating Center in WCM-Q

Her Highness Sheikha Moza bint Nasser, chairperson of Qatar, attended an event marking the official designation of a research group at WCM-Q as a World Health Organization (WHO) Collaborating Centre for combating COVID-19 and other selected infectious diseases in the region.

Under the new designation, the Infectious Disease Epidemiology Group (IDEG) at WCM-Q will support WHO's regional and global efforts to promote health and wellbeing by providing scientific research and advice to inform policy decisions and public health programs in the Eastern Mediterranean Region (EMR). Led by Dr. Laith Abu-Raddad, WCM-Q professor of infectious disease epidemiology, IDEG has a special focus on viral hepatitis, which is especially prevalent in EMR countries and is one of the leading causes of deaths globally. The group contributed to efforts in combatting the spread of HIV/AIDS, reproductive tract infections, and, more recently, COVID-19.

Since the start of the COVID-19 pandemic, IDEG has spearheaded WCM-Q's efforts to work closely with the Ministry of Public Health (MOPH) in Qatar and Hamad Medical Corporation (HMC) as they confront the infection's spread, working with healthcare and policy experts to provide scientific technical analyses that has supported the COVID-19 national response.

Her Excellency Dr. Hanan Mohamed Al Kuwari, minister of public health and managing director of HMC said: "The members of the IDEG are doing fantastic work with senior experts and officials in the Ministry of Public Health and at HMC to ensure we minimize the spread of the coronavirus in the State of Qatar. Being awarded World Health Organization Collaborating Centre status at WCM-Q is a huge achievement, and further strengthens Qatar's ability to fight infectious diseases that affect communities all over the EMR region and beyond."

She added: "This official designation demonstrates the success of Qatar's investment in the healthcare and research sectors and reinforces Qatar's contribution to public health on a global level. On behalf of the health sector, I would like to thank Her Highness Sheikha Moza bint Nasser, chairperson of Qatar Foundation for her vision and leadership in creating a culture of research excellence in Qatar Foundation and in WCM-Q".

Dr. Ahmed Al-Mandhari, WHO regional director for the Eastern Mediterranean, said: "The designation of the Infectious Disease Epidemiology Group of Weill Cornell Medicine-Qatar as a WHO Collaborating Centre recognizes a history of more than a decade of collaboration in the field of infectious diseases and provides a formal framework for future joint activities. Collaborating centers such as IDEG are our critical partners in our endeavor to achieve our vision for the region, 'Vision 2023', with its goal of 'Health for All, by All'.

"The collaborating center could also play an important role in support of another important joint initiative between WHO and the Qatar Fund For Development in addressing emergencies, including infectious diseases such as COVID-19, and the provision of essential health services in selected countries of the region. I would therefore like to commend the high-level political support by the State of Qatar and the farsighted leadership of the Qatar Foundation and the Ministry of Public Health, which have made these strategic partnerships and investments for global health possible."

IDEG lead Dr. Abu-Raddad, who also holds the position of assistant dean for extramural research funding and director of the biostatistics, epidemiology, and biomathematics research core at WCM-Q, is one of the region's leading epidemiologists. He said: "It is very gratifying for our research team to receive this honorable designation from the WHO. We are very pleased and proud to be able to support the work of the WHO in combating infectious diseases and their impact on people in Qatar, the EMR region, and beyond. We also feel very privileged to have been in a position to provide scientific technical support to the Ministry of Public Health and the State of Qatar during the coronavirus epidemic."

Dr. Javaid Sheikh, dean of WCM-Q said: "All of us at WCM-Q are extremely proud of the excellent work of the Infectious Disease Epidemiology Group. Its members' dedication to promoting public health, for more than a decade, has led to this distinguished designation of the group as a WHO Collaborating Centre. This honor demonstrates the global impact of the scientific capacity and infrastructure that has been built in Qatar with the support of Qatar Foundation. I offer my warmest thanks to Her Excellency Dr. Hanan Al Kuwari and other esteemed colleagues at the Ministry of Public Health and the World Health Organization for giving us the opportunity to work with them to tackle the COVID-19 pandemic and other infectious diseases."

The designation of the IDEG comes after a decade of high-profile studies on the epidemiology of infectious diseases on the national, regional, and international levels, which has helped inform public health policy and programs. The group will carry out activities in support of key WHO programs aimed at combating the spread of infectious diseases, specifically HIV/AIDS and hepatitis, that have a severe negative impact on the health and wellbeing of communities all over the EMR and beyond. This means that Qatar, thanks to its investment in biomedical research infrastructure and scientific human capital in recent years, will be host to a valuable resource working to promote the health and wellbeing of people right across the region and globally. This official designation of the IDEG as a WHO Collaborating Centre has been made possible by the support provided to WMC-Q by Qatar Foundation, the Ministry of Public Health and the visionary leadership of the State of Qatar.

HH Sheikha Moza bint Nasser with HE Dr. Hanan Al Kuwari (left), and Dr. Javaid Sheikh (right).

The end of hepatitis C?

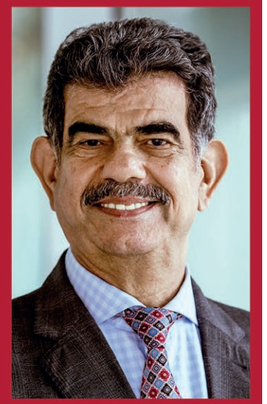
Researchers publish their first report after being designated a WHO collaborating center.

Researchers at Weill Cornell Medicine-Qatar, in partnership with the World Health Organization (WHO), have produced a comprehensive report on the hepatitis C virus epidemic in the Eastern Mediterranean region, offering guidance on how to eliminate the disease by the WHO's 2030 target date.

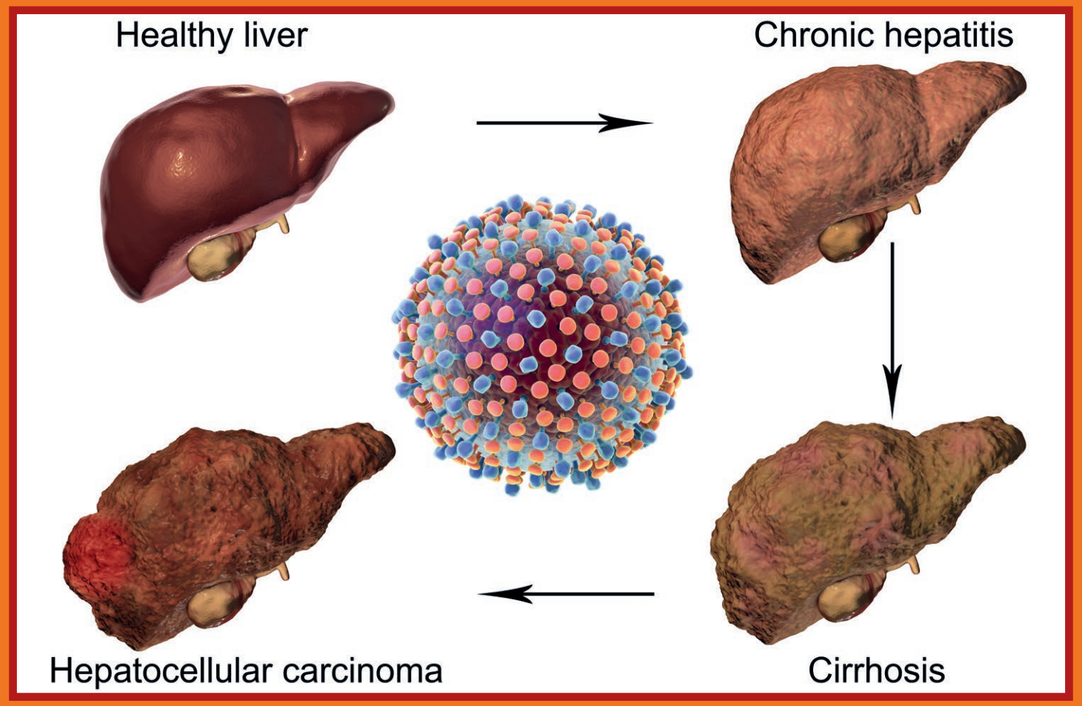
The WHO report, entitled 'Epidemiology of hepatitis C virus in the WHO Eastern Mediterranean Region: Implications for strategic action', is the product of close collaboration between the WHO Regional Office for the Eastern Mediterranean (WHO-EMRO) and WCM-Q's Infectious Disease Epidemiology Group (IDEG). The report is one of the first outcomes of the WHO Collaborating Centre and synthesizes the findings of a series of scientific studies on viral hepatitis in the Eastern Mediterranean region that were conducted over a decade by IDEG. These studies were funded by Qatar National Research Fund, a member of Qatar Foundation, through the National Priorities Research Program grant 4-924-3-251, 9-040-3-008, and more recently 12S-0216-190094.

Hepatitis C is a blood-borne pathogen and one of the leading causes of liver diseases and liver cancer. The virus is mostly transmitted through sharing of unsterile needles and syringes, use of contaminated medical equipment, and transfusion of infected blood. It is only in the last few years that novel treatment regimens have produced cures for this infection, thus reducing the toll of liver complications such as liver fibrosis, cirrhosis, and cancer in infected persons.



Hiam Chemaitelly, Dr. Laith Abu Raddad, Joumana Hermez and Dr. Abdul Sattar Al-Taie.



In the Eastern Mediterranean region, hepatitis C accounts for about two-thirds of morbidity and mortality due to viral hepatitis, the fifth leading cause of death in this part of the world. The report provides comprehensive mapping for hepatitis C infection spread across all 22 countries comprising the region as well as a roadmap and priority actions for the achievement of national, regional, and global targets for the elimination of hepatitis C infection as a public health threat by 2030.

"By comprehensively mapping the spread of the infection across populations and countries, we identified the priority populations for scaling up coverage of hepatitis C testing and treatment services and the kind of interventions that are needed to control this epidemic," said Hiam Chemaitelly, senior epidemiologist at WCM-Q and lead author of the report.

"Programs focused on testing and treating the general population are unlikely to be cost-effective as infection levels are low in the wider population in most countries in the eastern Mediterranean region and most often in the range of about one percent. The only two main exceptions are Egypt and Pakistan, where infection levels in the general population are higher by at least five-fold and where elimination of the infection will require mass scale-up of testing and treatment services," she added.

Dr. Laith Abu-Raddad, principal investigator of this project and professor of population health sciences at WCM-Q said: "We aimed through this work to provide countries in the region with the foundation necessary to develop an evidence-informed national response and to justify the establishment of programs and allocation of resources for hepatitis C elimination, now that highly effective treatments for this infection have become available and at affordable prices. Without an appropriate public health response, the healthcare system in the region will continue to endure serious and costly health complications of hepatitis C infection in terms of liver diseases and cancer, and the region will not be able to achieve the WHO goal of eliminating this infection by 2030."

Ms. Joumana Hermez, the regional advisor for HIV, hepatitis and sexually transmitted infections at the WHO's Eastern Mediterranean region office, said: "We are at a very important juncture today where we have the tools to fully eliminate this infection in our region. The report provides strategic epidemiologic evidence to accomplish this through cost-effective programs for testing and treatment. The WHO is fully committed to work with countries to accomplish the elimination goal before the end of the next decade."

Dr. Abdul Sattar Al-Taie, executive director at Qatar National Research Fund, said: "This accomplishment is a testimony of the impact of Qatar's investment in scientific research on public health in our region, and the fruit of years of collective efforts and of hard and dedicated work at Qatar National Research Fund and Qatar Foundation to establish Qatar as a hub of research excellence and scientific innovation. I am excited to see, after a decade of capacity building, Qatar has now positioned itself as a leader in infectious disease epidemiology research in our region."

The report can be read in full at *http://www.emro.who.int/asd/asd-infocus/epidemiology-of-hepatitis-c-virus-in-the-who-eastern-mediterranean-region.html*

Key findings of the report

- The report provided a comprehensive mapping for hepatitis C infection spread across all 22 countries constituting the Eastern Mediterranean region as well as a roadmap and priority actions for achieving the goal of hepatitis C elimination by 2030.
- The report established the scientific foundation necessary to develop an evidence-informed national response and to justify the establishment of programs and allocation of resources for hepatitis C elimination now that highly efficacious treatments for this infection have become available and at affordable prices.
- Populations with liver conditions, clinical populations frequently attending healthcare facilities, and people with a history of repeated and shared injections have the highest infection levels and should be at the core of every testing and treatment strategy.

COVID 19: The global public health reality

Doctors and scientists examine the data of the pandemic and make recommendations for the future.

Researchers at Weill Cornell Medicine – Qatar (WCM-Q) have explored questions about the epidemiology of the novel coronavirus and placed it in context with past pandemics and some of the ongoing global public health crises that are in dire need of attention.

In sharing the death rates from various pandemics, the researchers acknowledge that COVID-19 poses a significant risk of death to the elderly, the immuno-suppressed and those with chronic conditions. They express that while COVID-19 has thus far caused 0.115 deaths per thousand (as of Sep 8) worldwide, the Spanish flu of 1918 is estimated to have caused between 9.44 and 55.56 deaths per thousand people, and even the Hong Kong flu of 1968-69 was responsible for 1.13 deaths per thousand. The death rate in Qatar is among the lowest in the world. The research postulates that many people, especially in low-and middle-income nations, may actually face a far greater risk from several communicable and non-communicable diseases than they do from the novel coronavirus.

Using data from the Institute for Health Metrics and Evaluation, the researchers show that non-communicable – but preventable - diseases like heart disease and diabetes account for 41 million deaths globally each year, while communicable diseases like AIDS, tuberculosis and measles account for 10 million deaths. For instance, in 2017 alone, there were 219 million cases of malaria, causing approximately 435,000 deaths.

The paper was written by Drs. Sohaila Cheema, Marco Ameduri, Amit Abraham, Sathyanarayanan Doraiswamy and Ravinder Mamtani.

Dr. Cheema, assistant dean of the institute for population health at WCM-Q, said: "We are not at all suggesting that COVID-19 should not be taken extremely seriously, rather we are pointing out that there are other concurrent problems causing distressingly high fatality rates as we continue to battle the COVID-19 pandemic."

Dr. Ameduri, senior associate dean for premedical education and Education City collaborative curricular affairs at WCM-Q added: "The social and economic impact resulting from the COVID-19 may be far greater and longer lasting than the actual disease burden. Hence, it is critical to be mindful of the short and long-term effects of the pandemic on the well-being of the people around the world."

The paper, which is entitled 'The COVID-19 pandemic: The public health reality' has been published in the Cambridge University Press journal *Epidemiology and Infection*. It highlights the disruption in healthcare services in some nations and points its attention to the potential anxiety, mental illness and depression caused by social isolation and loss of income. For people in low to middle-income nations, the report suggests that these may pose a greater risk to long-term well-being than COVID-19. The research also examines the role of media sensationalism and the spread of misinformation.

Dr. Mamtani, vice dean for student affairs-admissions, population health and lifestyle medicine at WCM-Q, said: "Our report seeks to neither downplay or overstate the risk to personal health from the pandemic and those at high risk should obviously take great care to avoid catching the virus. With pandemics likely to recur, we call for global health decisions to be coordinated internationally on the basis of science and public health evidence. Imparting public health education in schools and community settings to inform children and adults about health and disease risks is vital."

The full paper can be read at *https://pubmed.ncbi.nlm.nih.gov/32958089/.*

Qatar's green-fingered youngsters

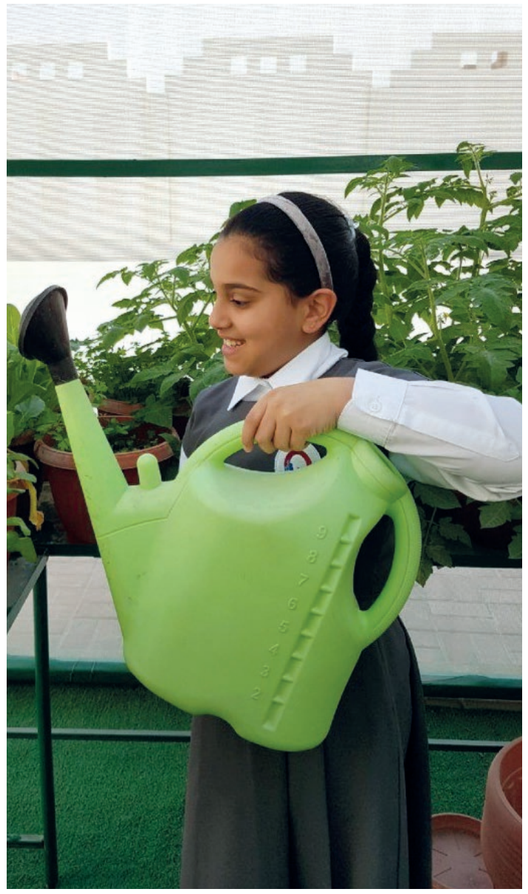
Your Health First announces winners of Project Greenhouse schools contest.

The winning schools of the Sahtak Awalan - Your Health First Project Greenhouse competition have been announced, with ten schools honored for their outstanding efforts growing a wide variety of fruit, vegetables and herbs.

This year's winning schools are: Ahmad Mansour Primary School for Boys, Umm Salal Mohammed Primary School for Girls, Al Dhakira Primary School for Girls, Mariam Bint Omran Primary School for Girls, AlBayan Two Primary School for Girls, AlKhor Primary School for Girls, Khadeejah Bint Khuwaylid Primary School for Girls, Al Ta'awon Primary School for Girls, Qatar Leadership Academy and Dukhan School for Girls.

Under the Project Greenhouse program, the Your Health First – Sahtak Awalan campaign installed greenhouses at elementary schools across Qatar to teach children key lessons about healthy eating, sustainability and horticulture. Students planted the seeds, watered and nurtured the plants as they grew, and then harvested their crops at the end of the growing season. This year, students cultivated a variety of crops including tomatoes, cucumbers, onions, eggplants and parsley.

Nesreen Al-Rifai, chief communications officer at Weill Cornell Medicine – Qatar, which launched the Sahtak Awalan campaign, said: "Students at schools across Qatar have done a wonderful job of cultivating fresh and healthy produce and learnt a great deal about horticulture, sustainability and healthy lifestyles while doing so."



Children at participating schools learn about the environment, sustainability and healthy eating.

Although this year's growing seasons was curtailed by school closures arising from the coronavirus crisis, Sahtak Awalan decided to hold the competition as in previous years.

Mrs Al-Rifai added: "The students worked extremely hard and we wanted to honor their commitment and dedication by running the contest based on the work they did before the closures – they did a really fantastic job. I would also like to thank Sahtak Awalan's strategic partners: Qatar Foundation, the Ministry of Public Health, the Ministry of Education and Higher Education, the Ministry of Municipality and Environment, and ExxonMobil for their continued support for this important project."

Project Greenhouse has also been expanded into secondary schools under the Khayr Qatarna initiative. This has seen a variety of crops grown in large scale greenhouses which have been given the 'Premium Produce' designation by the Ministry of Municipality and Environment. The crops are then distributed to the community through local supermarkets, with all profits being reinvested in the scheme.

The aim of the scheme is to support national sustainability and food security, while teaching older students valuable lessons about economics, agriculture and logistics.

Tomatoes, peppers and herbs are all popular greenhouse plants.

Research links proteins to diabetes

Study could lead to the development of new therapies to target or prevent type 2 diabetes.

Researchers at WCM-Q and the University of Iceland have identified a group of proteins that are involved in causing type 2 diabetes in humans.

Using advanced analysis techniques, the researchers measured over 4,000 different proteins in blood samples from more than 5,000 Icelandic individuals and identified 536 proteins that were associated with type 2 diabetes. They confirmed their findings with the results of the Qatar Metabolomics Study of Diabetes, a 2012 study of 374 human subjects conducted in Qatar by Hamad Medical Corporation and WCM-Q.

Following further analysis, the researchers determined that 15 proteins appear to have a causal role in the development of type 2 diabetes, while a further 23 proteins are markedly more prevalent in blood after the development of the condition. To support these findings, the study investigated how genetic predisposition for type 2 diabetes affects blood serum protein levels in the study participants.

Proteins that are shown to be causal for the disease provide targets for future research to develop new therapeutic drugs to treat or possibly prevent the onset of type 2 diabetes in at-risk groups. Furthermore, the discoveries of proteins that are changed by the disease open the potential for the development of new diagnostic tests to determine whether an individual is likely to develop type 2 diabetes or already has the condition.

WCM-Q research associate Dr. Shaza Zaghlool, a joint first author on the study, said: "This research has allowed us to identify a number of proteins that have very strong associations with type 2 diabetes, which is exciting because it helps us understand with greater clarity how the disease develops. It also means we have identified targets for further research that could eventually lead to new drug therapies for type 2 diabetes, which is highly prevalent in the Gulf region."

Type 2 diabetes is a complex disorder that typically develops over a sustained period of time, with many normal metabolic processes becoming disrupted well before more conspicuous symptoms like excessive thirst and hunger, fatigue, frequent urination and blurred vision become apparent. As such, any test that can identify the disease in its early stages when interventions will have the most benefit are extremely important.

The research was based on samples of elderly Icelandic individuals and was conducted in collaboration with scientists at the University of Iceland in Reykjavik, the Icelandic Heart Association, GNF Novartis in San Diego, California, and the Novartis Institutes for Biomedical Research in Cambridge, Massachusetts. The study – "Circulating protein signatures and causal candidates for type 2 diabetes" – has been published in *Diabetes*, the journal of the American Diabetes Association.

Dr. Shaza Zaghlool and Dr. Karsten Suhre.

WCM-Q has very significant capabilities in protein analysis, having established a core facility dedicated to proteomics (the study of proteins and their interactions) equipped with some of the world's most advanced protein biomarker discovery tools, which can measure thousands of human proteins in a single blood sample. The researchers believe the primary data used in the study to be the largest protein dataset to be described to date in any diabetes research in terms of the number of proteins measured and human samples screened.

WCM-Q's Dr. Karsten Suhre, one of the senior authors in the study, said: "The highly sophisticated protein analysis platforms WCM-Q has established here in Qatar gives it a huge capacity for analyzing proteins in large population and clinical studies to discover protein associations, not only with diabetes, but also many other diseases relevant to the country. This gives us the ability to take part in ground-breaking international studies such as this one, furthering our understanding of how type 2 diabetes develops and providing targets for future research into new medications."

Dr. Khaled Machaca, senior associate dean for research, innovations, and commercialization at WCM-Q said: "For Qatar and the wider region, type 2 diabetes is perhaps the most pressing health concern that we face, with more people being diagnosed and at much earlier ages than previously. It is therefore great news that this international collaboration has found common protein markers between cohorts in Iceland and Qatar to help better understand the progression of this complex disease, especially in the context of the local Qatari population."

The research was supported by the Biomedical Research Program at WCM-Q, a Qatar Foundation partner university. Dr. Suhre's work is also supported by Qatar National Research Fund grant NPRP11C-0115-180010 to the Qatar Diabetes Prevention Program (QDPP), a cluster of research projects aiming to understand the disease in greater detail and pave the way for new treatments.

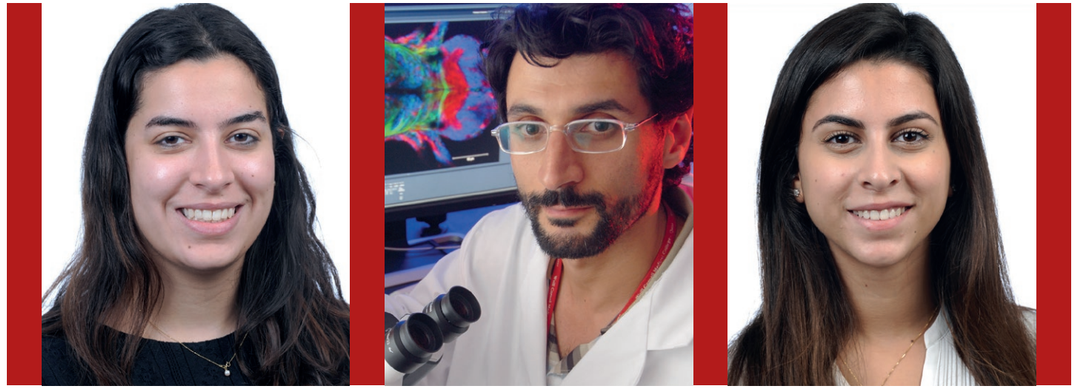
COVID-19 and pregnancy

Student researchers examine how the novel coronavirus affects birth and newborns.

Two medical students at Weill Cornell Medicine-Qatar (WCM-Q) have conducted a systematic review of the latest medical literature to provide a clearer understanding of how the novel coronavirus affects pregnant women, new mothers and newborn babies.

Second-year students Reem Chamseddine and Farah Wahbeh reviewed 245 pregnancies that were complicated by maternal SARS-CoV-2 infection across 48 scientific studies published between the emergence of the pandemic in December 2019 and July 30, 2020. They found that 55.9 percent of the pregnant women with SARS-CoV-2 infection presented with fever and 36.3 percent with a cough. A total of 12.7 percent presented with shortness of breath, but only 4.1 percent developed respiratory distress.

The vast majority (89 percent) of the pregnant women with SARS-CoV-2 delivered their babies via cesarean section, compared with 15 percent in the general population, the study noted. Out of 201 newborns reported in the literature, 35.3 percent of babies born to mothers with SARS-CoV-2 were delivered pre-term (before 36 weeks), compared with 13 percent in the general population. There was a concerning 2.5 percent rate of stillbirth delivery or neonatal death, compared with less than one percent in the general population. However, the study indicated that the risk of death for pregnant women with SARS-CoV-2 is low, and that it does not appear that the infection is vertically transmitted from mother to fetus during pregnancy, although 6.45 percent of newborns tested positive for the disease. It is possible these newborns acquired SARS-CoV-2 infection in the hospital or at home after birth, according to the literature.



WCM-Q medical students Reem Chamseddine (left) and Farah Wahbeh published a research paper on the effects of COVID-19 on pregnancy, aided by their mentor Dr. Arash Rafii Tabrizi.

The study also found that SARS-CoV-2 does not appear to be passed from mother to baby in breast milk, but that there is still a risk the infection can be passed on via respiratory droplets during breastfeeding. As such, SARS-CoV-2-positive mothers are advised to take reasonable precautions during breastfeeding.

The study, titled Pregnancy and Neonatal Outcomes in SARS-CoV-2 Infection: A Systematic Review, has been published in the *Journal of Pregnancy*, a leading peer-reviewed open-access journal.

Student Reem Chamseddine, a member of WCM-Q's Class of 2023, said: "In the early days of the pandemic, not much was known regarding pregnancy complications in the setting of SARS-CoV-2 infection. Naturally, it was important to understand the emerging data about this topic as the virus would affect thousands of pregnant women. As medical students, we are encouraged to be curious and to engage in the healthcare issues around us. Getting to work on this project is an example of the academic values instilled in us here at WCM-Q."

Farah Wahbeh, also a member of the Class of 2023, said: "The role of a medical student does not stop at learning how to diagnose and treat medical conditions; it is also our responsibility to take action during such uncertain times and to contribute in every way we can. This experience has been unique given the urgency and time sensitivity associated with the project. It taught us valuable skills and embodied our role as active contributors to the scientific community."

Reem and Farah were mentored during the research process by Dr. Arash Rafii Tabrizi, professor of genetic medicine in obstetrics and gynecology at WCM-Q, who is also a named author of the research paper.

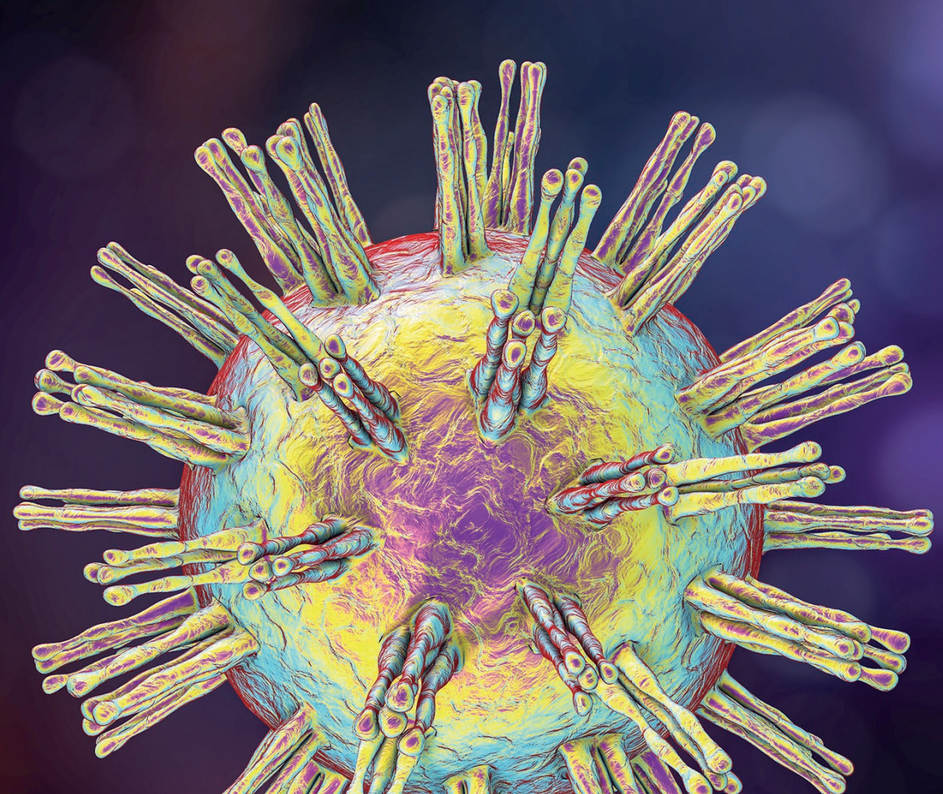
Dr. Tabrizi, who is also director of the Clinical Research Support Core at WCM-Q, said: "I was really impressed by the desire of our students to be part of the fight against COVID-19. In the early stages of the emergence of a new virus and a new disease there is a tremendous fear of the unknown and therefore an urgent need for evidence-based information. As such, the work of Reem and Farah perfectly illustrates one of the most important elements of our mission as doctors: we have to provide accurate information to allow people to adopt the correct attitude and actions to protect themselves and others.

He added: "The work was difficult as new information was coming in almost every day and Reem and Farah had to filter and organize it correctly. The final result is a great review that really illustrates the impact of COVID-19 on the pregnant women as well as their newborn babies."

The review can be read in full at *https://www.hindawi.com/journals/jp/2020/4592450/*

Students' research published in BMJ

Study finds that the prevalence of herpes among young people is falling



Two WCM-Q students are named as joint first co-authors on a research study into the changing pattern of herpes infection which has been published in the prestigious UK medical journal *BMJ Global Health*.

Fourth-year medical students Wajiha Yousuf and Hania Ibrahim conducted the study at the Infectious Disease Epidemiology Group over a two-year period, guided by their supervisors Manale Harfouche, WCM-Q research specialist, who is also named as a joint first co-author, and Dr. Laith Abu-Raddad, professor of population health sciences, the senior author of this study.

The study suggests that fewer young people are being exposed to herpes simplex type 1 (HSV1) – also known as oral herpes – and that the prevalence amongst the population in Europe is falling by one percent per year.

The prevalence of the virus, which often manifests itself with cold sores, appears to be declining in younger people but it could be increasingly likely to be transmitted sexually.

HSV-1 is mainly transmitted by oral-to-oral contact, causing oral herpes, but it can also cause genital herpes. The other form of the virus (HSV-2) is sexually transmitted and causes genital herpes.

Both forms of the virus are lifelong and the World Health Organization estimates there are 3.7 billion people under the age of 50 (67 percent) who have HSV-1 infection globally and 491 million people aged 15-49 (13 percent) worldwide with the HSV-2 infection.

Previous research data which focused on North America and Europe suggests that there is a decrease in pre-adulthood acquisition of HSV-1, a decline in its population prevalence in youth, and an increase in genital herpes cases that are caused by HSV-1.

The team of researchers from WCM-Q set out to examine the epidemiology of HSV-1 in Europe. They systematically reviewed HSV-1 related publications, conducted various meta-analyses, assessed pooled prevalence rates in populations, and estimated pooled proportions of HSV-1 viral detection in clinically diagnosed genital ulcer disease and in genital herpes.

Their analysis gathered information from 142 previous publications. From these publications, they extracted 179 overall population prevalence measures, four overall proportions of HSV-1 in genital ulcer disease, and 64 overall proportions of HSV-1 in genital herpes.

The results showed that more than two-thirds (67.4 percent) of the population in Europe tested positive for HSV-1, which is far lower than the historical level of pre-adulthood universal infection in other parts of the world, such as Africa. Around 32.5 percent of children and 74.4 percent of adults were infected in Europe.

Prevalence in the population increased steadily with age, being lowest in those aged below 20 years and highest in those aged over 50 years. Population prevalence in Europe was found to be declining by one percent per year, and the contribution of HSV-1 to genital herpes was rising, also by one percent per year.

The researchers speculated that reasons for falling prevalence rates of HSV-1 could include a general decrease in both family size and school crowding, as well as improved hygiene and living conditions. The results also showed that half of first-episode genital herpes cases in Europe were due to HSV-1, as opposed to HSV-2 infection.

The authors acknowledged that their systematic review had some limitations, primarily the unavailability of data for 25 of the 53 European countries, and had comparatively less data for genital ulcer disease and genital herpes than population prevalence. Nevertheless, they said that these limitations did not appear to have posed a barrier to the interpretation of the results of the study.

Hania Ibrahim

Dr. Laith Abu-Raddad

Wajiha Yousuf

The study concluded: "HSV-1 transition in Europe is leading to more heterogeneous and variable transmission by age and geography, and an increasing role for HSV-1 in genital herpes and as a sexually transmitted disease.

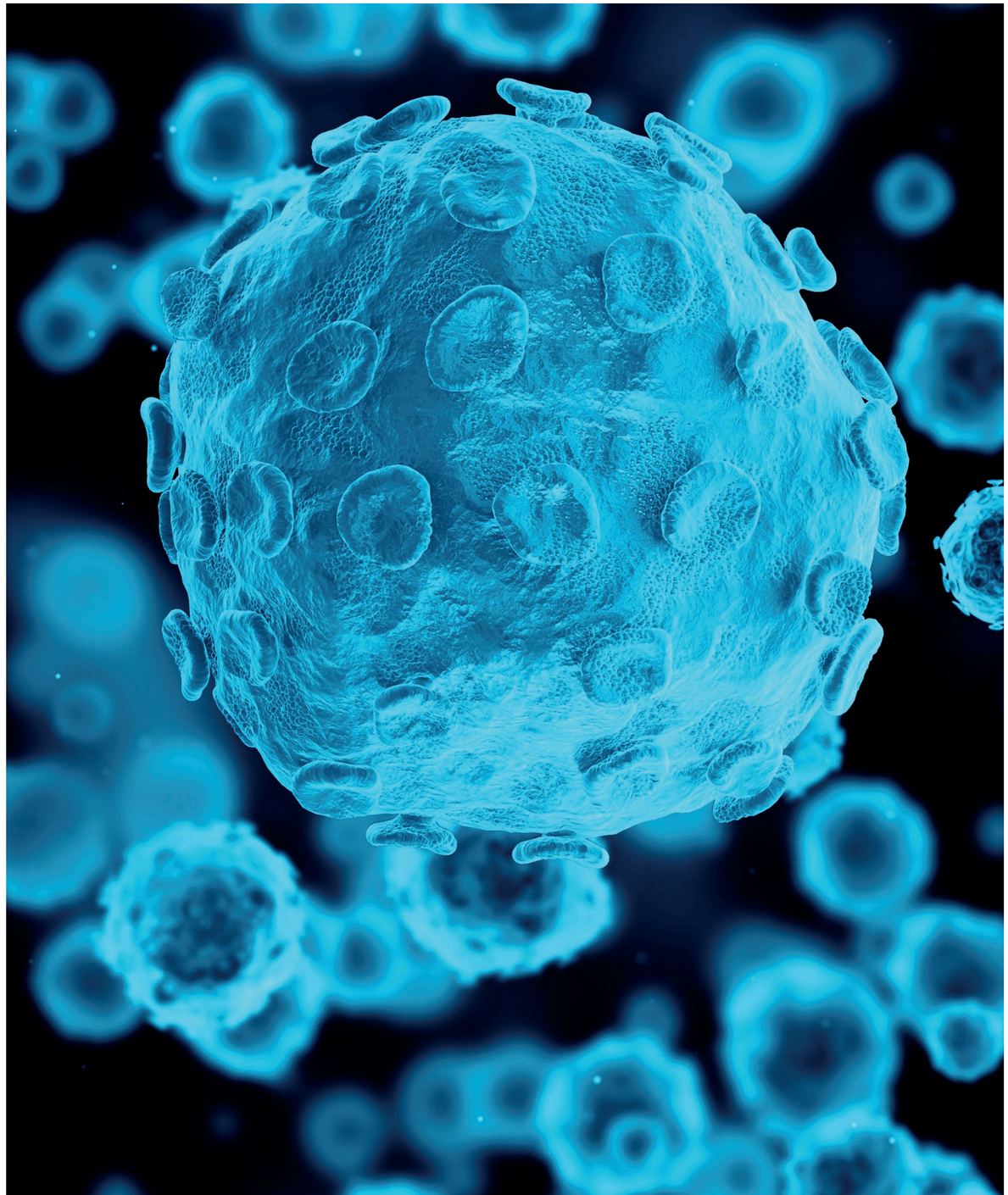
"The findings highlight the importance of disease surveillance and monitoring of HSV-1 seroprevalence and genital herpes aetiology, and strengthen the case for an HSV-1 vaccine to limit transmission."

Wajiha said: "As a medical student, working with Dr. Laith Abu-Raddad, Manale Harfouche and their team was an exceptionally valuable learning experience. Through their continuous support we were able to acquire the skills needed to conduct thorough and meaningful research that will surely shape us into future physician-scientists. We could not be more delighted to have our work contribute to the scientific community."

Hania added: "Dr. Abu-Raddad and Ms. Harfouche helped us establish our foundation in research and guided us over several years of our project. We're very pleased that our publication was accepted to *BMJ Global Health*, and grateful for the invaluable lessons and skills we were able to gain through this experience."

Dr. Thurayya Arayssi, senior associate dean for medical education and continuing professional development at WCM-Q, said: "This is an excellent piece of research and I am delighted that Wajiha and Hania's hard work has been justly rewarded with publication in such a high-profile journal. A key aim of the curriculum at WCM-Q is to produce physician-scientists who are dedicated not only to healing but also to scientific discovery, and it is therefore extremely gratifying to see our students making the most of the opportunities to engage in research offered by the college."

The research, titled 'Herpes simplex virus type 1 in Europe: systematic review, meta-analyses and meta-regressions' was possible thanks to funding by the Qatar National Research Fund [NPRP 9-040-3-008], and through pilot funding by the Biomedical Research Program at Weill Cornell Medicine-Qatar.



The need for better data on perinatal mental illness

Literature review finds a lack of information about mental illness among pregnant women in the MENA region.

Research by Weill Cornell Medicine-Qatar has revealed there is a chronic lack of good data about the prevalence of mental illness among pregnant women and new mothers in the Middle East and North Africa (MENA) region.

Researchers in the Institute for Population Health (IPH) at WCM-Q conducted an exhaustive review of existing research on the prevalence of mental illness among new and expectant mothers in the MENA region. They found that studies were generally of poor quality, used a confusing variety of non-standardized screening tools and definitions of mental illness, relied too heavily on self-assessments, and did not clearly define the risk factors associated with mental illness during and after pregnancy, among other deficiencies.

The research focused on the perinatal period, which begins at the start of pregnancy and ends a year after the birth of the baby. Perinatal mental illness (PMI) can take the form of depression, anxiety and bipolar disorder and is associated with increased risk of self-harm and suicide in mothers. PMI is also associated with higher rates of infant malnutrition and stunted growth, poor adherence to immunization schedules, increased susceptibility to infectious diseases, and poor cognitive, emotional, behavioral and social development of children.

Dr. Sohaila Cheema, assistant dean of the Institute for Population Health, said: "We know from global studies that perinatal mental illness is a major public health issue in the MENA region, but the existing research does not give us a detailed view of the true prevalence or nature of the problem. Our study shows there is an urgent need for high-quality research into this subject to improve our ability to prevent and treat perinatal mental illness in order to safeguard the health of mothers and their children in the long-term."

Along with Dr. Cheema, the WCM-Q research team comprised Dr. Sathya Doraiswamy, assistant director of the Institute for Population Health; Anupama Jithesh, projects specialist; Dr. Sonia Chaabane, projects specialist; Dr. Amit Abraham, instructor of population sciences and projects specialist; and Dr. Karima Chaabna, instructor of population health sciences/ population health and communication specialist. The study has been published in the *International Journal of Environmental Research and Public Health* and is titled 'Perinatal Mental Illness in the Middle East and North Africa Region-A Systematic Overview'.

The WCM-Q researchers examined 79 primary studies and 15 systematic reviews published between 2008 and 2019. The research focused on pregnant and postpartum women up to one year after delivery living in any of the 20 MENA countries of Algeria, Bahrain, Djibouti, Egypt, Iraq, Jordan, Kuwait, Lebanon, Libya, Morocco, Oman, Pakistan, Palestine, Qatar, Saudi Arabia, Sudan, Syria, Tunisia, the United Arab Emirates, and Yemen. The studies that were examined fell into two broad categories: those which gathered data via validated diagnostic tools utilized by highly trained psychiatrists and clinical psychologists, and those which used less rigorous screening tools, which often relied upon subjects self-reporting their mental health status. Studies which utilized validated diagnostic tools reported a prevalence of PMI ranging from 5.6 percent in Morocco to 28 percent in Pakistan, while those which used screening tools reported a far wider variance, ranging from 9.2 percent in Sudan to 85.6 percent in the UAE.

The WCM-Q study also examined the risk factors that are associated with perinatal mental illness, such as education level, wealth and social support from spouses, in-laws and other family members.

The study found that the body of research they examined was very heterogenous, with a wide variety of approaches to the study of perinatal mental illness taken by different researchers. The period of time before and after the birth that was studied varied widely, the diagnostic and reporting tools differed in design and quality a great deal, and the way mental illness was defined varied hugely. Furthermore, the risk factors of education, marital and social support, and wealth were quantified in very different ways from study to study and the tools used to capture this information were generally poorly designed.

Dr. Doraiswamy said: "We found very little consistency in the way the data was collected from study to study, making it very hard to draw useful conclusions of the overall prevalence and character of perinatal mental illness across the MENA region.

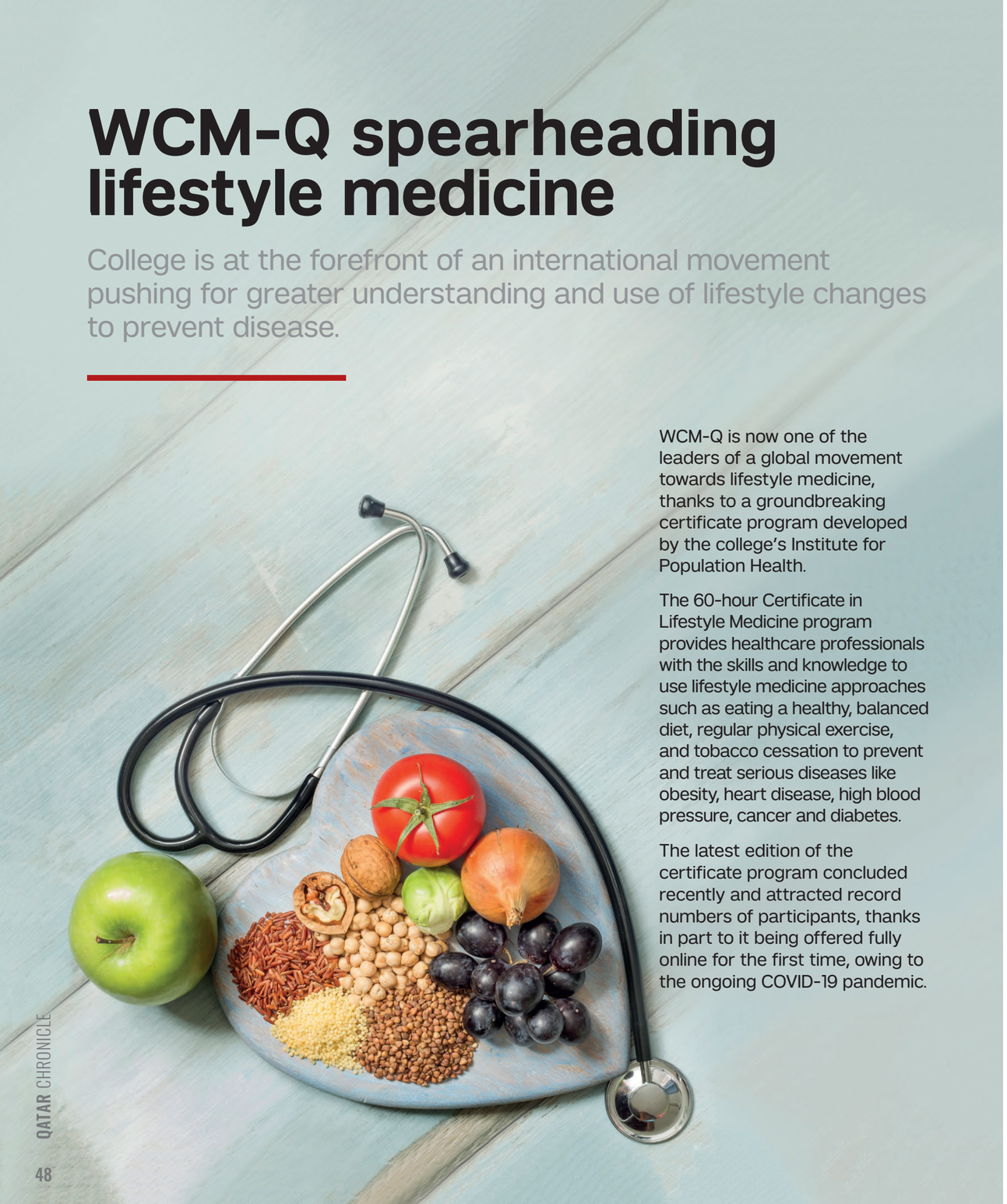
Qatar has taken huge steps in recent years to invest in high-quality mental health services for pregnant women and new mothers. Better quality academic research on the subject would allow Qatar and countries across the region to design, target and deliver mental health services for women with maximum effectiveness."

Dr. Cheema and Dr. Doraiswamy said that population health campaigns to raise awareness about perinatal mental illness could help prevent the condition by showing spouses and family members how valuable their support can be for new and expectant mothers. They also believe that the establishment of a standardized set of research methodologies for collecting data on perinatal mental illness is required.

Dr. Cheema added: "Having a baby is a unique and special time in a woman's life but it can be very stressful and challenging. We feel there is a need for better research in the MENA region to help us understand how to provide the best possible care so all women have the maximum chance of having a safe pregnancy and birth and can then enjoy the time they have with their new baby."

WCM-Q spearheading lifestyle medicine

College is at the forefront of an international movement pushing for greater understanding and use of lifestyle changes to prevent disease.



WCM-Q is now one of the leaders of a global movement towards lifestyle medicine, thanks to a groundbreaking certificate program developed by the college's Institute for Population Health.

The 60-hour Certificate in Lifestyle Medicine program provides healthcare professionals with the skills and knowledge to use lifestyle medicine approaches such as eating a healthy, balanced diet, regular physical exercise, and tobacco cessation to prevent and treat serious diseases like obesity, heart disease, high blood pressure, cancer and diabetes.

The latest edition of the certificate program concluded recently and attracted record numbers of participants, thanks in part to it being offered fully online for the first time, owing to the ongoing COVID-19 pandemic.

In addition to providing guidance on nutrition, exercise and substance misuse, the program also explains the benefits of healthy sleeping habits, social connectedness and stress management.

The program is part of a wider drive by the Institute for Population Health at WCM-Q to help promote a global trend towards the integration of lifestyle medicine approaches into conventional healthcare, which has typically emphasized treatment of disease by means of drug therapies and surgery.

Dr. Ravinder Mamtani, vice dean for student affairs-admissions, population health, and lifestyle medicine, said: "Despite the devastating impact of COVID-19, the leading causes of long-term illness and premature death remain noncommunicable diseases like heart disease, diabetes and cancer. A wealth of scientific evidence shows us that these diseases can be very effectively treated, prevented and sometimes even reversed using lifestyle medicine approaches. Healthcare systems across the world are beginning to embrace lifestyle medicine approaches and we at the IPH are working hard to support this global movement.

Commenting on its relevance, Dr. Sohaila Cheema, assistant dean for the institute for population health, said: "Lifestyle medicine is a powerful tool for preventing and treating disease and we feel strongly that we have a moral obligation to help lead its promotion locally, regionally and globally. And we at Cornell are at the forefront of this movement."

The certificate program has also been designed to support the public health goals set out in Qatar National Vision 2030 and Qatar's National Health Strategy 2018-2022, put forward by the Ministry of Public Health (MOPH).

IPH have recently launched the Population Health and Well-being series, the inaugural speaker for which was Dr. Javaid Sheikh, dean of WCM-Q.

Dr. Ahmad Al-Mulla, advisor to HE Minister of Public Health, and senior consultant for public health and disease control, who delivered a lecture about tobacco cessation at the latest edition of the Certificate in Lifestyle Medicine, said: "The State of Qatar is dedicated to empowering both healthcare professionals and the general population here in Qatar and across the MENA region to use lifestyle medicine approaches to improve human health. The Certificate in Lifestyle Medicine of WCM-Q has been extremely successful as a means of supporting local healthcare professionals to follow the best evidence-based practices to make lifestyle medicine interventions as effective as possible."

Dr. Al-Mulla said that there was growing public appetite in Qatar for lifestyle medicine approaches.

"We now have record numbers of people voluntarily attending our tobacco cessation clinics," he said. "It is extremely encouraging to see so many people embracing healthy lifestyles to protect their own health and that of their families."

Virtual Summer Program reaches out globally

Initiative aims to inspire students to follow a career in medicine and to give them an overview of the college experience.

Talented high school students in eight countries were welcomed to the new Virtual Summer Program (VSP) of WCM-Q, a week-long online initiative that offers a glimpse of life as a medical student at an elite university.

A total of 76 high school students in Qatar, Morocco, Kuwait, Canada, Jordan, Lebanon, Oman and UAE logged in for the five-day program, which featured online learning classes in biology, chemistry, anatomy and disease investigation led by WCM-Q's world-class teaching faculty.

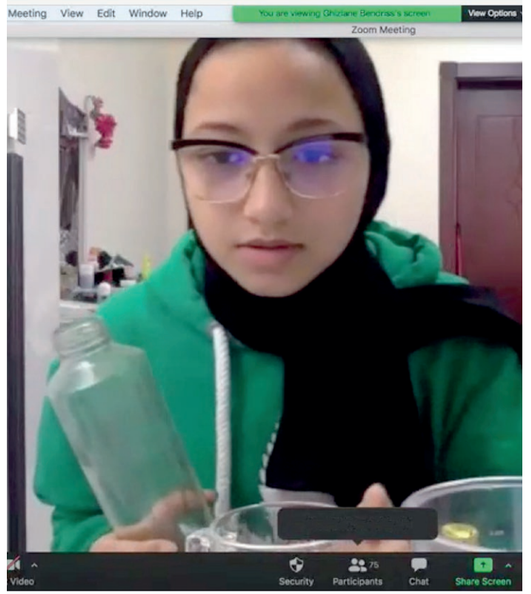
The VSP, which was offered by WCM-Q's Office of Student Outreach & Educational Development, also included sessions delivering information on careers in medicine, advice on how to write a personal statement for college applications, a meeting with admissions professionals and an introduction to the WCM-Q Student Research Association. There were also free-form live chat sessions at the end of each day to allow the students to get to know one another and ask questions.

The event began with an online welcome and introduction by Ms. Noha Saleh, director of premedical administration, student outreach, and educational development. Speaking after the event, Ms. Saleh said: "Our newly launched VSP, which is part of our Enrichment Program series, gives us an extremely effective tool for reaching out to the very brightest minds from schools all over Qatar, the MENA region and beyond to show them just how exciting and rewarding studying and pursuing careers in medicine through WCM-Q can be. The students and faculty engaged with great enthusiasm and energy and created a real buzz online, which made the inaugural VSP a remarkable success - we are looking forward to receiving many high-quality applications to study at WCM-Q as a result."

WCM-Q offers a unique fully integrated six-year medical program, which comprises a two-year pre-medical curriculum and a four-year medical curriculum. Students who successfully complete the program receive the same Cornell University MD degree awarded to graduates of Weill Cornell Medicine in New York.

Student Lujin Al Mesri of the Swiss International School in Qatar said that the VSP provided useful advice about the application process and pursuing a career in medicine and had also been very inspiring. "The professors were amazing and they kept giving us advice which made me feel that if I were to join WCM-Q I would be in very good hands," she said.

"What I liked most about this program was the enthusiasm of the professors and the patient case we worked on, which was like a big puzzle in which you had to use your critical thinking and problem solving skills to solve the patient's case – for a second I really felt like a doctor."



The students worked on a patient case with each other and WCM-Q faculty.

She added: "This program will turn anyone's slight interest in medicine into complete love and passion for the profession – I highly advise anyone to join it."

Dr. Rachid Bendriss, assistant dean for student recruitment, outreach and foundation programs, said: "It is very pleasing to see how we at WCM-Q were able to leverage technology to offer prospective students a Virtual Summer Program that excites them and helps promote their interest in science and medicine in an engaging and stimulating manner. I am tremendously impressed with the creativity of our faculty and staff in creating such a highly successful program and turning the challenges of the current situation into opportunities. I wish all of the students who participated in this exciting new version of our Summer Enrichment Program great success as they seek to realize their potential by pursuing careers in medicine and science."

Why do some cancers resist chemotherapy?

WCM-Q research sheds new light on treatment-resistant cancers offering new hope for the future.

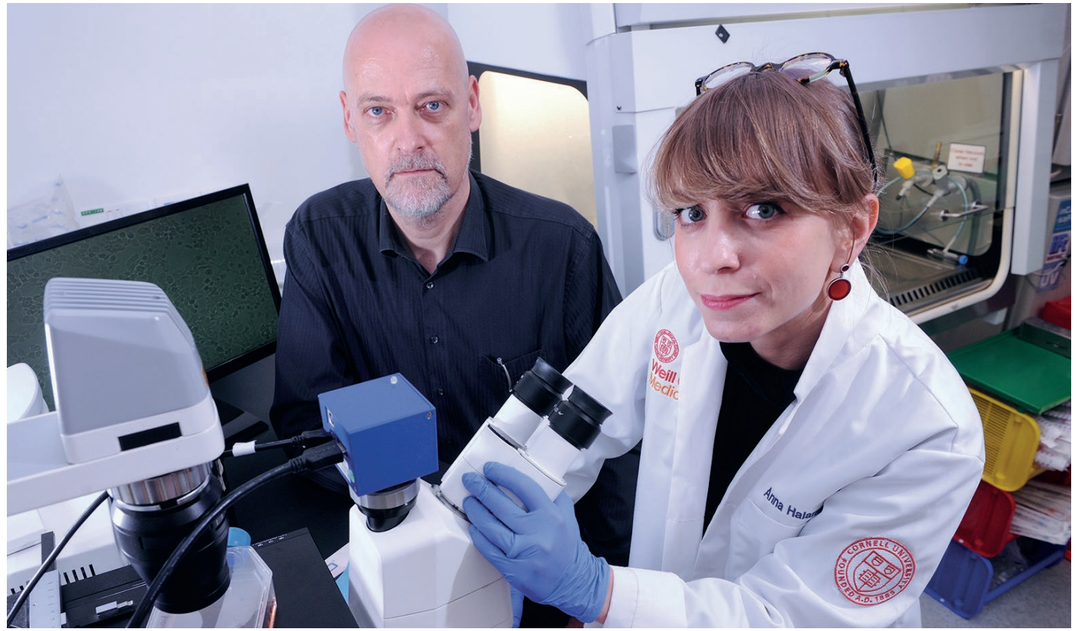
Researchers at WCM-Q have devised a new way of testing cancer treatments to reveal how some tumors are able to resist chemotherapy drugs and continue to spread.

Led by Dr. Anna Halama, assistant professor of research in physiology & biophysics, the WCM-Q team combined two innovative research techniques to create a new testing platform that not only gives deeper insights into the ways in which certain types of cancers resist chemotherapy drugs and proliferate, but also delivers significant cost and time savings over existing research methods.

Dr. Halama said: "The resistance of tumors to chemotherapy is a major obstacle in fighting cancer, and the underling mechanisms are not fully understood. In some cases, cancer cells switch the way they generate the energy and building blocks they need to grow to evade drug treatment and to further proliferate. To understand and counter these processes, experimental models that accurately reflect the tumor as an entity are needed, but their availability can be a major challenge. For example, cancer cells simply cultured in a petri dish lack a realistic tumor microenvironment, whereas human tumors grown in mice have severe time and cost constraints".

Dr. Halama's team combined the already established laboratory technique of implanting cancerous cells into chicken embryos (called *in ovo* research) with a powerful biochemical analysis method called metabolomics. After implanting treatment-resistant breast cancer cells into the embryos, the researchers then treated them with doxorubicin, a potent anti-cancer chemotherapy drug. As predicted, tumor growth was reduced, but a portion of the cells continued to proliferate further. By analysing these tumors using metabolomics techniques, the researchers were able to draw a detailed map of the biochemical processes that allowed the cancer cells to evade the chemotherapy.

The research is considered such a significant breakthrough that it was featured on the front



Dr. Karsten Suhre and Dr. Anna Halama.

cover of *Metabolites*, one of the industry's leading scientific journals. The *in ovo* technique also has the advantage of costing less and being faster than using mice, while at the same time being much more reliable than simpler cell culture techniques.

Dr. Halama said: "We are very pleased with the results of the research as the new testing platform we proposed allows us to analyze in great detail the alternative metabolic pathways that the cancer cells use to escape treatment. It is cost-effective and relatively fast, so we can do more testing in a shorter space of time. It is important to note that these techniques are still at the research stage and are being used for testing both existing and novel cancer therapies in general, but long-term they also have the potential to help conceive personalized treatment options to adapt chemotherapy to individual patients."

The study, titled Metabolic Signatures of Tumor Responses to Doxorubicin Elucidated by Metabolic Profiling in Ovo, drew upon WCM-Q's advanced capacity for metabolomic analysis established within the WCM-Q Biomedical Research Program in recent years by Dr. Karsten Suhre, professor of physiology & biophysics and director of the WCM-Q Bioinformatics Core.

The research was conducted in collaboration Hamad Medical Corporation, the Max Planck Institute for Heart and Lung Research in Bad Nauheim, Germany, and Inovotion, a biomedical research institute in France. The team at WCM-Q now aims to team up with peers at Hamad Medical Corporation once again, this time to conduct clinical research projects to enable the new testing strategy to benefit cancer patients.

The research was supported by the Biomedical Research Program at WCM-Q, a Qatar Foundation partner university. The study was also supported by Qatar National Research Fund grants NPRP12S-0205-190042 and NPRP8-061-3-011.

Lessons for humanity

Faculty at WCM-Q have developed a list of goals for humanity following the COVID-19 pandemic.

Faculty at WCM-Q have collated information about the novel coronavirus – and suggested lessons that humanity could learn from the current crisis.

Led by Dr. Ali Sultan professor of microbiology and immunology at WCM-Q, the team worked with colleagues at Qatar's Ministry of Public Health to gather known facts about the virus' epidemiology, individual countries' responses to the outbreak and their success, as well as treatments and potential vaccines. From this the researchers compiled a list of actions that could help prevent or mitigate future pandemics.

Dr. Sultan said: "If we are to combat the novel coronavirus, we have to understand it in its totality. This means understanding its transmission rates, whether they can be reduced with measures like face masks, the benefits, if any, of the currently available drugs, and the effectiveness of the social distancing measures that we have seen implemented across the world.

"In conjunction, of course, we must understand the pathology of the virus and how this can be treated and, if possible, prevented using a vaccine. Often this kind of information is fragmented but in this research paper we have tried to collate the pertinent facts so that they are all in one place. Our publication came about as a result of ongoing scientific collaborations with our colleagues at Qatar's Ministry of Public Health."

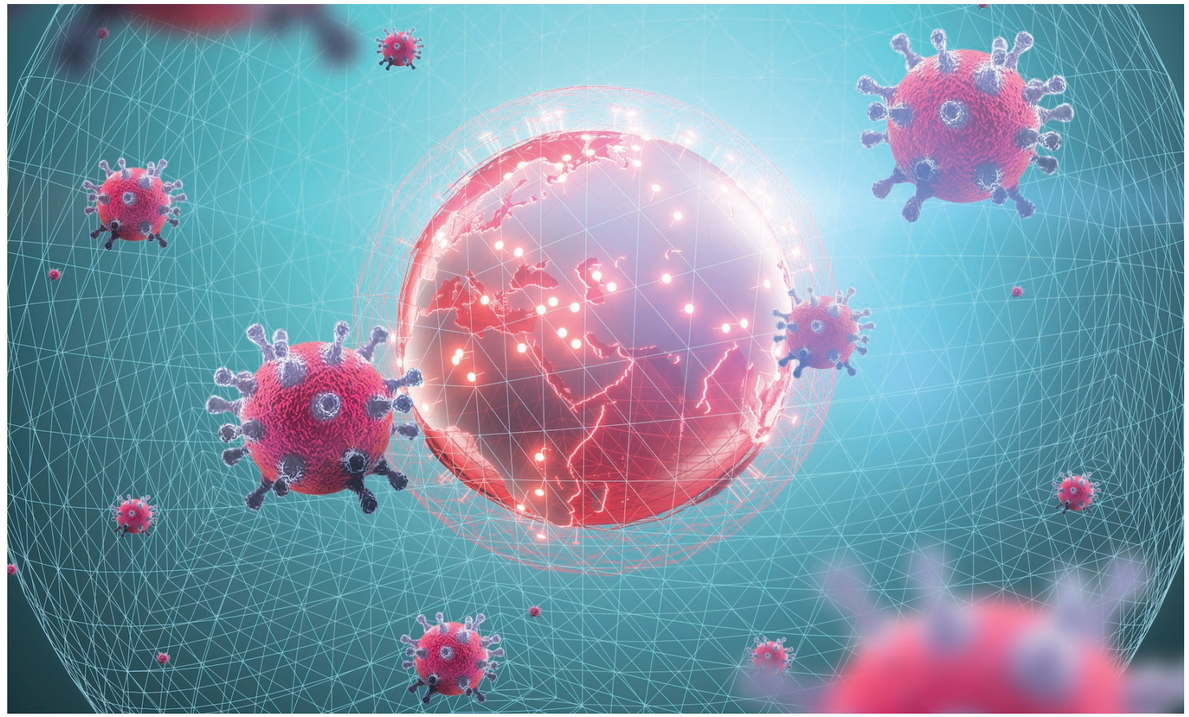
Another member of the team at WCM-Q, Dr. Triggle, professor of pharmacology, said: "Challenges in writing our paper included the speed in which the news of the pandemic was changing daily combined with the need to separate the science-based data from potentially misleading information that was appearing in the media as a result of the rush to publish and report."

The research team has documented the virus's incubation period, its symptoms, its transmission rates and how the very strict social distancing measures imposed by countries like China, Vietnam and South Korea have been effective in curbing the virus' spread, unlike the slower and more relaxed measures introduced by Western nations, particularly the UK and the United States.

But perhaps the most important section of the research paper deals with the lessons that must be learned across the world if we are to manage potential future pandemics.

These are:

- Establishing a rapid reporting system for any unusual infectious outbreak, and notification of the WHO should be a high priority.
- Immediately isolating the infected person(s) and identifying and quarantining individuals who have been in contact with them.
- When a viral spread has occurred, testing should be introduced and immediate lockdown considered.
- If the spread of the infection is wide, social distancing and travel restrictions imposed along with restrictions on public gatherings. This needs public support alongside enforcement.



- The early genomic identification of the pathogen is important and can help to determine and develop the best treatment options.
- Vaccine development could be enhanced by pursuing any progress and clinical trials made with previously developed vaccines.
- Drug development programs should be enhanced and serve to identify and test compounds effective against coronaviruses and other zoonotic viruses.
- A global network should be established to ensure there is sufficient personal protective equipment and hospital equipment available to countries to deal with a pandemic.

Dr. Triggle said: "The response to COVID-19 has been varied across the world and this has resulted in wildly different infection and mortality rates. Asian countries have dealt with the virus much more effectively than the West, but only with the implementation of strict social measures, which could be interpreted as a curtailment of basic freedoms. However, far fewer people have died so this may be something that the public must accept.

"The most important, though, thing is that we understand what measures have worked, what have failed and why, and that we have a united, global response to potential epidemics and pandemics in the future."

The work has now been published on open access as a mini-review in the journal of the American Society for Microbiology, *mSphere* and can be read in full at *https://msphere.asm.org/content/5/3/e00317-20.abstract*

The fight against breast cancer

Research sheds light on why certain types of breast cancer are resistant to treatment.

Researchers at WCM-Q have unveiled the key role played by a specific protein in the growth of the most aggressive, treatment-resistant forms of breast cancer.

A multi-institutional international study led by WCM-Q's Dr. Lotfi Chouchane, professor of genetic medicine, microbiology and immunology, found that the effects of a protein named STXBP6 are profoundly suppressed in triple-negative breast cancers (TNBCs), which are known to relapse early and tend to spread to other organs despite intensive treatments with surgery, chemotherapy and radiotherapy.

TNBCs account for around 15-20 percent of all breast cancers and are associated with the poorest patient outcomes. While many other forms of breast cancer can now be treated relatively successfully, there is currently no effective therapy that specifically targets TNBCs.

The study showed that the STXBP6 protein helps regulate and promote a natural cellular process called autophagy in which old and damaged cells are metabolized or 'killed off' in order to allow newer, healthier ones to grow. In cancer cells, autophagy suppresses tumor growth by inhibiting cancer cell survival and inducing cell death. When autophagy is suppressed in certain circumstances, cancer cells are more able to grow and proliferate.

Dr. Chouchane said: "There is a real need to develop new therapies that specifically target triple-negative breast cancers because they do not respond well to existing treatments. In this study, we were able to significantly enhance our understanding of the mechanisms that make TNBCs so aggressive and treatment-resistant, which we hope will provide targets for the development of effective new therapies for TNBCs to significantly improve patient outcomes."

Triple-negative breast cancers are so called because the cancer cells do not have estrogen or progesterone receptors (which are targets for hormone-based therapies) and because they do not make a protein called HER2 (which is a target for antibody-based therapies) like some other forms of breast cancer.

The study, titled 'STXBP6, reciprocally regulated with autophagy, reduces triple negative breast cancer aggressiveness', also involved researchers at Weill Cornell Medicine in New York, Sidra Medicine and Hamad Medical Corporation in Doha, and the University of Groningen in the Netherlands. The research has been published in *Clinical and Translational Medicine*, a prestigious medical journal.

Dr. Chouchane explained that laboratory analysis showed the STXBP6 protein interacting with another protein, named SNX27, which is known to play a key role in autophagy. Furthermore, the researchers found that increased function of the STXBP6 protein significantly reduced TNBC cells' migratory ability in cell-based in vitro experiments and also reduced tumor metastasis in mouse model-based in vivo testing. However, while autophagy appears to be heavily involved in maintaining cellular health and preventing tumor initiation, the process has a paradoxical dual role and in other circumstances can actually facilitate tumor survival, depending on a variety of factors such as cancer type and stage.

Dr. Chouchane added: "This multi-institutional study represents a new paradigm in our understanding of the role of autophagy in breast cancers, but it is an extremely complex and multifaceted process. We believe much more research is needed to understand in detail the role of autophagy throughout the many different development stages of cancer in order to create a new class of therapeutic strategies that are truly effective and safe."

The study was supported by funding from the Biomedical Research Program of WCM-Q and by a grant from the Qatar National Research Fund (NPRP9-459-3-090).

Dr. Khaled Machaca, WCM-Q professor of physiology and biophysics and senior associate dean for research, innovations, and commercialization, said: "This cutting-edge research paves the way for further investigations into the cellular processes that allow triple-negative breast cancers to resist current therapeutic strategies. Furthermore, the study provides extremely useful targets to aid the design of new, more effective cancer drugs in the future. These are very positive developments toward applying our research findings to improve healthcare delivery in Qatar in the long term."

Dr. Lotfi Chouchane.

Lifelong learning goes on despite pandemic

WCM-Q faculty continue to share their research and knowledge with the world.

Lifelong learning is at the heart of what it means to have a career in medicine or education and even during a pandemic, faculty and staff at Weill Cornell Medicine – Qatar ensure they are staying abreast of the latest advances in their field.

Conferences are just one of the ways in which information can be shared but are vital for clinicians and researchers, allowing them to discuss their findings and hear firsthand about the work of others, providing opportunities for questions, answers and collaborations.

With the coronavirus pandemic causing lockdowns across the world, conference venues have been closed, but many of the conferences themselves have migrated online and WCM-Q faculty and staff have been keen to embrace virtual learning.

Dr. Ameed Raoof, associate professor of anatomy in radiology, and Dr. Mange Manyama, assistant professor of anatomy in radiology, were both scheduled to present their research to the American Association of Clinical Anatomists on June 15.

Dr. Manyama presented two posters about – ironically – online learning; 'Teaching Functional Neuroanatomy Using Computer-Aided Learning at Weill Cornell Medicine - Qatar' and 'Origin of the Deep Femoral and Circumflex Femoral Arteries: A Case Report'. For him the biggest challenge was recording an audio narrative of the poster, that was capped at just five minutes.

He said: "It was a challenge to include all the important information and the fact that we're limited to recording our narratives on our posters in a limited time, it eliminated the 'live' interaction with conference attendees that usually occurs as the interaction is an opportunity to provide more description of the work.

"The positive aspect, though, was the decision by the organizers to proceed with the virtual conference instead of cancelling it altogether. This provided the opportunity for more people to attend, since no traveling was required."

Dr. Raoof also submitted two research posters about e-learning - and said the main problem with the experience was the lack of interaction with other delegates, but that otherwise it was an excellent event.

Deema Al-Sheikhly, director of medical education and continuing professional development, was invited to deliver an online presentation to the Accreditation Council for Continuing Medical Education's annual conference. Presenting as part of a panel discussion, Ms Al-Sheikhly spoke on the subject 'Achieving Accreditation with Commendation: Embracing Life-long Learning Together'.

Addressing an online global audience that is sitting at home in front of a computer screen, she had to adapt her presentation skills, ensuring the presentation was short and concise, and providing targeted, relevant information that held the online delegates' attention.

But the presentation was very well-received, as she discussed how WCM-Q had received accreditation with commendation as a provider of continuing medical education and answered questions on the subject through an online moderator.

Ms Al-Sheikhly said: "The main limitation of an on-line conference is the need to reduce the number and the length of sessions to ensure engagement of the audience and reduce the level of fatigue from sitting in front of the screen for too long. Furthermore, the opportunity to network as per the normal practice in conferences is limited.

"However, going online created opportunities for innovation in medical education and alternative strategies for engagement with the participants."

Dr. Amal Khidir, associate professor of pediatrics at WCM-Q, was due to deliver two workshops at the Ottawa 2020 conference in Malaysia: 'Cultural Challenges in Clinical Teaching, Learning and Assessment' and 'Motivational Design To Discuss and Assess Professionalism Dilemmas for Pre-Clerkships Students: An Innovative Approach', but instead had to deliver them virtually. This is a collaborative effort and presentation with Drs. Mai Mahmoud, Aicha Hind Rifai, Magda Wagdy, Ahmed Alhammadi, Marcellina Mian, and Mr. Sa'ad Laws.

She said the greatest challenges were technological ones, ensuring that the audio/visual equipment was correctly installed and working, but that the presentation and post-event discussion were actually easier to moderate online and the workshops, too, were a great success.

Dr. Khidir said: "The participants were really pleased and gave the workshops high marks in their evaluation and the organisers were very pleased that we were able to deliver our workshops at short notice.

"The main limitation was that you don't get the same one-to-one interactions as you do when you are physically at the venue but the whole event triggered a great discussion and we were thankful that we were able to disseminate our scholarly work."

With large gatherings prohibited in most countries around the world, online conferences are likely to continue into 2021. While having some disadvantages, they are proving to be a viable and successful alternative, offering opportunities for innovation, and ensuring that professionals from all fields can continue embracing the concept of life-long learning.

Dr. Thurayya Arayssi, senior associate dean for medical education and continuing professional development, said: "School, college and university are only the first stages of our education and if we are to grow as professionals and as individuals it is imperative that we remain inquisitive and take responsibility for self-improvement. It is therefore heartening to see faculty and staff at WCM-Q continue to strive for knowledge acquisition and dissemination, even during the coronavirus pandemic."

Faculty at WCM-Q have continued to present at conferences, albeit online.

The implications of consanguineous marriage

Scientists at WCM-Q examined genetic variations in more than 1.4million individuals.

Researchers at WCM-Q have helped to shine a light on traits that are associated with various degrees of consanguineous marriage.

With funding from the Biomedical Research Program at WCM-Q, Dr. Steven C. Hunt, professor of genetic medicine, and Dr. Noha A. Yousri, adjunct assistant professor of research in genetic medicine, participated in a large meta-analysis with hundreds of scientists from across the globe, studying genetic variations in more than 1.4 million individuals.

Dr. Yousri said: "Very large numbers of samples are required to study the impact of marriage between men and women from the same extended families. This study conducted a meta-analysis of results from 119 independent cohorts to quantify the effect of consanguineous marriages on 45 commonly measured complex traits of biomedical or evolutionary importance, and an additional 55 more rarely measured traits included in the UK Biobank. Complex traits were arranged into 16 groups covering major organ systems and disease risk factors were analyzed."

Genetic associations with 32 of 100 studied traits and conditions in humans were identified by using runs of homozygosity (ROH). ROH refers to long continuous segments of identical alleles (homozygosity) along both inherited chromosomes. ROH arise through consanguineous marriages, i.e., when both parents are related through a common ancestor. The net directional effect of all recessive variants on traits is quantified and related to the 100 traits and conditions.

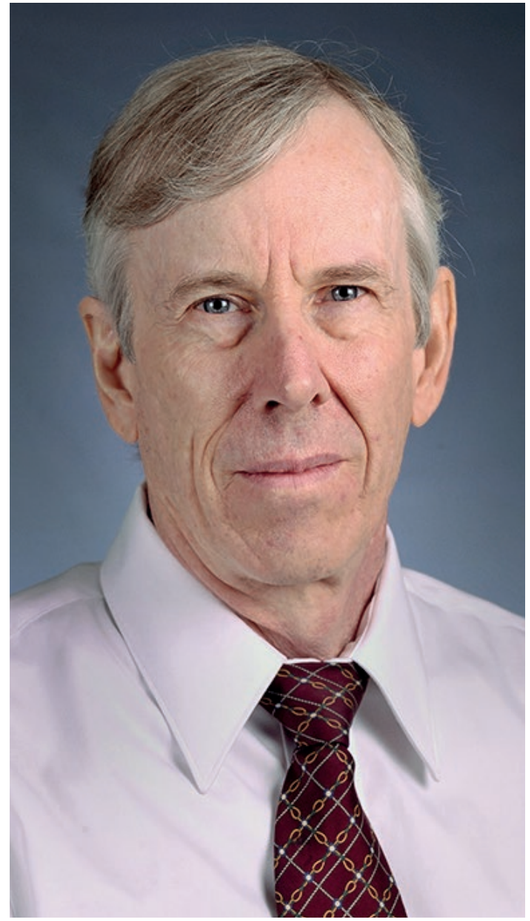
Dr. Noha Yousri.

Dr. Hunt said: "Runs of rare recessive variants inherited through these types of unions were shown to reduce reproductive fitness or fertility, with a 55% reduction in the odds of having children. ROH were also associated with decreased height, increased waist to hip ratio, decreased lung function, and reduced educational attainment."

Dr. Yousri said: "The most important aspect of this study is finding the traits affected by consanguineous marriages. Given that this type of marriage is relatively common in Qatar, it would be beneficial to investigate whether those results might apply to Qatar, as it might help us better understand the implications."

The full study, which was led by Professor James F. Wilson and his group from the University of Edinburgh, has been published in the high impact journal *Nature Communications*, and can be read at *https://www.nature.com/articles/s41467-019-12283-6*.

Dr. Yousri is also collaborating on a related study with Sidra Medicine called 'The PMED-Qatar Study: Personalized Molecular Evaluation and Diagnosis for Rare Diseases in Qatar', which is being funded by Qatar National Research Fund under the project number NPRP11S-0110-180250.



Dr. Steven Hunt.

Grand Rounds thrives online

Thousands of healthcare professionals continue to attend the lecture series virtually.

WCM-Q's Grand Rounds live webinar series is attracting large audiences during the pandemic as healthcare professionals take advantage of online access to continue developing their skills and knowledge.

In the past month, more than 4,000 attendees logged in to engage in the three presentations delivered by expert speakers in the series, which is coordinated by WCM-Q's Division of Continuing Professional Development.

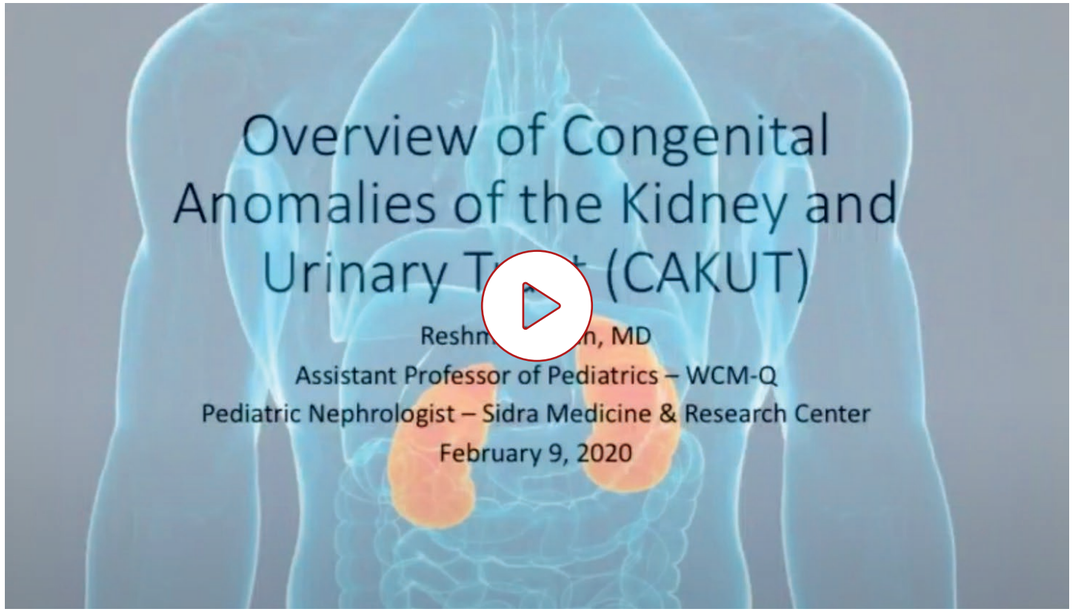
Dr. Noha Yousri, assistant professor of research at WCM-Q, gave a presentation titled 'Epigenetics and Metabolomics of Type 2 Diabetes and Obesity in Qataris', in which she discussed ways in which obesity and diabetes are causing modifications of the genetic characteristics of the Qatari population.

Dr. Yousri described perturbed metabolic pathways in type 2 diabetes and obesity among the Qatari population, discussed epigenetic modifications and metabolic profiling, and gave insights into the impact on DNA activity of DNA methylation, which typically represses gene transcription, the first of several steps of gene expression. Dr. Yousri's presentation was based upon her research, which is supported by Qatar National Research Fund.

Dr. Noor Ahmed Al-Khori, consultant physician in radiology at Sidra Medicine, presented on 'Breast Imaging: Basics and Beyond', in which she defined current evidence-based guidelines for the safe and effective use of mammography, outlined recent advances in breast imaging, and discussed the most common abnormalities that can be detected using imaging. Dr. Al-Khori, who also holds the position of assistant professor of clinical radiology at WCM-Q, is an alumna of the college, having graduated in 2010.

Dr. Ahmad Majzoub, consultant in the Department of Urology at Hamad Medical Corporation, and program director of the andrology and male infertility fellowship, gave a

Dr. Noor Al-Khori.



Dr. Reshma Bholah, assistant professor of pediatrics at WCM-Q and a pediatric nephrologist at Sidra Medicine, discusses congenital problems with the kidneys and urinary tract.

presentation titled 'Evaluation and Management in Male Factor Infertility'. Dr. Majzoub, who is also assistant professor of clinical urology at WCM-Q, discussed the causes and basic methods of evaluation of male fertility, before explaining treatment methods.

The Grand Rounds live webinar series is aimed at physicians, nurses, dentists, pharmacists, allied health professionals, students, researchers and educators. All three webinars were accredited locally by the Qatar Council for Healthcare Practitioners-Accreditation Department (QCHP-AD) and internationally by the Accreditation Council for Continuing Medical Education (ACCME).

Dr. Thuyrayya Arayssi, professor of clinical medicine and senior associate dean for medical education and continuing professional development, said: "We are very pleased that so many healthcare professionals are finding such great value in the content provided in our Grand Rounds series. The ability to offer such high-quality webinars online maximizes participation and is of great help to healthcare professionals in Qatar and beyond as they work to develop their skills and knowledge, despite the ongoing pandemic."

For more information about the Grand Rounds series and details of forthcoming presentations, visit *https://qatar-weill.cornell.edu/continuing-professional-development/grand-rounds*

Healing Hands winners announced

The successful four will take the trip once coronavirus restrictions are lifted.

Four talented high school students have won two-week scholarship experiences in WCM-Q's annual Healing Hands essay competition.

Students Aisha Hassan Alabdulmalik and Moza Fahad Alkaabi of Al Bayan Independent School for Girls, Aljoud Nasser Al Darwish of Park House English School, and Reema Khater Al Bouainain of Vision International School each won the WCM-Q Doctors of the Future scholarship for being judged to have written the best 800-word essays on the implications of social media for human health and wellbeing.

Once coronavirus restrictions are lifted, the winning students will spend two weeks on an educational trip of a lifetime to the US, where they will first visit Weill Cornell Medicine in New York City to observe classes and attend lectures, visit NewYork-Presbyterian Hospital, and participate in supervised research projects in the university's world-class laboratories. They will then travel to Cornell University in Ithaca, upstate New York, to experience life as a student on campus at an Ivy League college. The scholarships also provide for a family member to accompany the students on their trip.

The contest, which is run by the Office of Student Outreach and Educational Development at WCM-Q, is open to Qatari students in grades 10 and 11 and is designed to inspire young nationals to think about careers in medicine and biomedical science, as well as giving them an accurate idea of what life as a medical student is like and encouraging them to think critically about healthcare. Many previous winners of the Healing Hands contest have gone on to join WCM-Q as students.

In her essay, which was praised for being well-researched, balanced and confidently argued, winning student Moza Fahad Alkaabi wrote: "Social media affects people's well-being and health positively and negatively. The positive effects include offering social support and enabling social disclosure. However, social media can cause negative outcomes such as addiction disorder, which is characterized by escapism, mental preoccupation, and distraction from personal life. It also increases a person's susceptibility to stress and low self-esteem."

Noha Saleh, director of student outreach and educational development at WCM-Q, said:

"I would like to offer my warmest congratulations to the winners and my sincere plaudits to everyone who took part for writing such engaging, insightful and well-argued essays. I am sure that all of the participants will go on to have great careers in the sciences and in so doing will make important and meaningful contributions to Qatar's national development."

The following students received honorable mentions for their essays: Sara Nasser Alkaabi of Aljazeera Academy, Moza Mohammed Al-Tamimi of Al Ebb Secondary School for Girls, Deema Mohammad Assami of Amna Bint Waheb Independent School for Girls, and Layan Abdulla Al-Ansari and Mohammad Mansoori of Qatar Academy Doha.

Dr. Rachid Bendriss, assistant dean outreach, educational development and Foundation Program said: cOutreach programs, such as the Healing Hands Future Doctors Scholarship program, provide an early exposure to medical education as a track, which is critical in fostering an appreciation for medical careers and attracting young students to the study of medicine."

Plaudits for research group

Five research papers have received acclaim from the journals they were published in.

A research group at WCM-Q has received critical acclaim for five of its research papers in recent months, bringing their studies on cancer to a broader audience of scientists.

Four of their published articles have now been selected as the 'editor's choice' by the respective journals they were published in – *Cancers* and *Biomolecules* – while a fifth was chosen as the 'feature paper' in *Biomolecules*.

Lead principal investigator (LPI), Dr. Dietrich Büsselberg, professor of physiology and biophysics at WCM-Q, and his team, research associate Dr. Samson Mathews Samuel, and research specialist Elizabeth Varghese, have so far published 13 research papers since June 2019, on the theme of how natural compounds, metabolic management and diabetes medications can influence cancer incidence and progression. Funding for the studies has been provided Qatar National Research Fund (QNRF) under the grant number NPRP-11S-1214-170101.

Two articles published earlier and funded via a bridge funding grant to Dr. Büsselberg from the Qatar Foundation-funded Biomedical Research Program at WCM-Q – 'The Yin and Yang of Natural Compounds in Anticancer Therapy of Triple-Negative Breast Cancers' (*https://doi.org/10.3390/cancers10100346*) - co-authored by Dr. Ravinder Mamtani and Dr. Sohaila Cheema from the Institute for Population Health at WCM-Q and another one 'Flavonoids in Cancer and Apoptosis' (*https://doi.org/10.3390/cancers11010028*) were also selected as 'editor's choice' articles by *Cancers*.

Dr. Dietrich Büsselberg.

'Metformin: The answer to cancer in a flower? Current knowledge and future prospects of metformin as an anti-cancer agent in breast cancer' (*https://doi.org/10.3390/biom9120846*), co-authored by Dr. Chris R. Triggle, professor of pharmacology at WCM-Q, was one of articles picked as an 'editor's choice' by the publication *Biomolecules*, and Dr. Büsselberg's group has also been asked to record a short video discussing the study in order to promote it further on social media. The study 'Anti-Angiogenic Effects of Phytochemicals on miRNA Regulating Breast Cancer Progression' (*https://doi.org/10.3390/biom10020191*) was the one chosen as the 'feature paper' in *Biomolecules*.

The papers were highlighted by the editors of the journals for the quality of the studies and the benefits they may bring to other researchers within the field.

Dr. Büsselberg said: "It is quite an honor to have so many of our papers acknowledged like this in such a short time, and it is testament to the excellence and professionalism of our researchers, and to QNRF's commitment to fund high-quality research that has a strong and positive impact on the lives of Qatar's citizens and the wider world."

The final study – conducted in collaboration with other research groups – that was selected for the 'editor's choice' recognition was 'Fluctuations of Histone Chemical Modifications in Breast, Prostate, and Colorectal Cancer: An Implication of Phytochemicals as Defenders of Chromatin Equilibrium' (*https://doi.org/10.3390/biom9120829*).

Students investigate COVID-19

Collaboration between WCM-Q and NMoQ allows high school students to study epidemiology and mitigation measures.

High school students from across Qatar had the chance to investigate the biology and spread of the coronavirus thanks to a collaboration between the National Museum of Qatar (NMoQ) and Weill Cornell Medicine – Qatar.

The All About Science: The Biology of Pandemics program offered high school students with an interest in science and medicine the chance to learn more about the current pandemic and place it into the context of historical pandemics.

Using mathematical tools, the students learned how scientists study the epidemiology of the virus and how measures like social distancing, vaccinations, and travel restrictions impact upon the virus' spread.

This one-week online program was offered by Premedical Education's Office of Student Outreach and Educational Development, and was led by WCM-Q's Dr. Becky Cramer, teaching specialist in biology, Dr. Dalia Zakaria, lecturer in biology, and Dr. Kuei-Chiu Chen, associate professor of biology, alongside Raga Mohamed, acting head of public programs at the National Museum of Qatar. Seven current students of WCM-Q acted as program tutors.

Dr. Cramer said: "Throughout the week, the high school students were highly engaged and asked insightful questions as they learned about COVID-19, the tools scientists use to track infections, and the historical context of the pandemic. They then put this newfound knowledge to work, dividing into teams to develop and test a scientific hypothesis about the pandemic, with support from a current WCMQ student. The resulting presentations were of the highest caliber: well-delivered, well-reasoned, and placed meaningfully into the context of the COVID-19 pandemic."

The program was held remotely over video-conferencing apps and was designed to encourage the high school students to pursue a career in science and medicine, and to give them a much greater understanding of COVID-19. In addition, they also developed skills in teamwork, quantitative reasoning and experiential design, skills that will benefit them in their future lives.

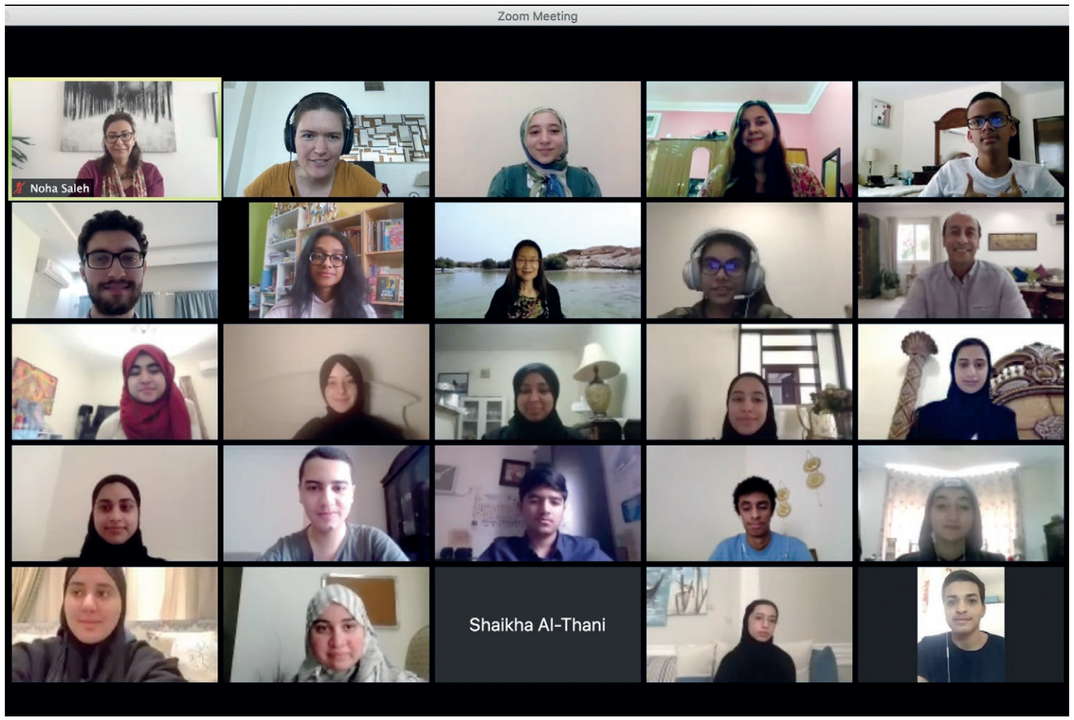
A total of 31 high school students from Qatar and the region actively participated in the program and were excited to share their valuable insight on the program through a survey capturing their feedback. The program was highly rated and described as an amazing experience.

Fatma Al Kuwari, associate director of learning and outreach at the National Museum of Qatar said: "We are proud of the WCM-Q collaboration, which provided learning opportunities to students during such challenging times. They were able to explore the COVID-19 pandemic through scientific, social and historical contexts.

Dr. Abdulla Alsulaiti, deputy director for research and collections at NMoQ, led a session on the series of deadly diseases that have hit Qatar in the past. Participants got a chance to discuss the topic with our field specialist and were presented with original historical documents linked to those time periods. At the end of the program, students were involved in a light art activity. The created artworks reflected their thoughts on the shift of our lives due to the pandemic. As an educational institution, we are committed to offering learning services for our audience and I am very excited for what is to come."

Dr. Rachid Bendriss, assistant dean for student recruitment, outreach, and foundation programs at WCM-Q, said: "This was a fascinating program. Not only were we able to teach young students about the biology and epidemiology of the novel coronavirus, we were also able to explore the series of deadly diseases that Qatar has faced in the past, and discuss what the future may hold.

"We value our partnership with the NMoQ and look forward to collaborating with them again and inspiring the younger generation to pursue a career in science and medicine."



The virtual program taught high school students more about the current pandemic.

The dangers of COVID to the elderly

WCM-Q research examines why the novel coronavirus poses such a risk to older people.

Population health experts at WCM-Q have published research examining why COVID-19 poses such a severe threat to older people compared to other age groups.

The paper highlights that 80 percent of deaths in confirmed COVID-19 cases in the United States have been in adults aged over 65, and that data from April 2020 shows a COVID-19 mortality rate of 4–11 percent for those aged 65-84 and 10-25 percent in those aged 85 and over.

The research details the biological, social, demographic, behavioral and healthcare-related factors which increase the vulnerability of people aged 65 and over to respiratory pandemics. It also highlights that governments around the world have failed to learn from earlier coronavirus outbreaks, overlooking the threat posed to older people by the current pandemic and consequently failing to take adequate action to protect this vulnerable group.

Dr. Sathya Doraiswamy, assistant director of the Institute for Population Health (IPH) at WCM-Q, is the lead author of the research.

He said: "Qatar has been very proactive in terms of protecting its population of older people, but in many other countries there has been complacency, a failure to learn the lessons of previous respiratory disease outbreaks like SARS and MERS, and poorly coordinated responses leading to avoidable illness and mortality. This research calls for a more proactive approach to protecting the heath, wellbeing and dignity of older people."

The research, which takes the form of a commentary, is entitled 'Respiratory epidemics and older people', and has been published in *Age and Ageing*, a leading UK medical journal. Other named researchers of the study are Dr. Ravinder Mamtani, vice dean for student affairs-admissions, population health, and lifestyle medicine, Dr. Sohaila Cheema, assistant dean of the Institute for Population Health, Dr. Amit Abraham, projects specialist and instructor of population sciences, and Dr. Marco Ameduri, associate professor of physics and senior associate dean for pre-medical education, all of WCM-Q.

The researchers looked at data on COVID-19 and past pandemics from a number of countries, including the United States, the United Kingdom, South Korea, China and Italy to determine the factors contributing to the increased vulnerability of older people to COVID-19 and similar respiratory pandemics. Physiologically, old age is associated with a diminished immune system, cognitive impairment, and higher rates of chronic conditions such as diabetes, coronary heart disease, hypertension, kidney disease and cancer, all of which make individuals more vulnerable to the coronavirus. Recovery from any illness is less likely in frail people, recovery takes longer and those recovering are more prone to further episodes of illness.

In addition, older people are more likely to have sedentary lifestyles, poor nutrition, difficulty communicating, and lower levels of health literacy. Social isolation, loneliness and inadequate housing are also more common among older people and negatively affect health outcomes. Furthermore, many older people live in residential care homes or receive in-home care from health visitors, providing routes for disease transmission during epidemics. Older people are also more likely to need to attend hospital, increasing their risk of exposure to pathogens.

Dr. Cheema said: "COVID-19 has placed unique pressures on healthcare services all over the world and has highlighted the vulnerability and needs of older people. We believe urgent action is needed to improve the preparedness of healthcare systems to take account of the special needs of older people and ensure their rights, wellbeing and lives are protected."

Dr. Doraiswamy, Dr. Cheema and Dr. Mamtani also had a letter to the editor of *Age and Ageing* published, in which they called for older people to be treated with kindness and empathy, and for health messages aimed at them to be clear, simple and unambiguous. The letter, written in part as a response to a viral video of an old woman on a bus in China refusing to wear a mask, sparking outrage on social media, stated: "This situation is an illustration of how some older people might behave in outbreaks of infectious diseases. We all know that the ageing process can hamper cognitive skills…it is important for stakeholders to acknowledge that older people are a special group and that their lives are as precious as other physiologic age groups. It is critical to be able to design health campaigns and messages that are tailored to their needs during epidemics."

Dr. Mamtani said: "We must ensure that older people are treated with respect, care and understanding so that they can be gently helped to follow healthcare guidelines during the pandemic. Haranguing and abusing older people for failing to follow guidelines is not only ethically wrong but also an ineffective way of helping them adhere to official guidance for the good of themselves and the wider community."

The research can be read in full at *https://academic.oup.com/ageing/advance-article/doi/10.1093/ageing/afaa151/5868023*

Simulation learning and COVID-19

Symposium examines importance of psychological safety for simulation-based medical education.

Experts in medical education from across the Middle East and Europe convened for an online symposium hosted by WCM-Q to discuss the latest trends in simulation-based learning, including the impact of the COVID-19 pandemic.

The 4th Annual Symposium on Optimizing Health Professions Education with Simulation-Based Learning: Psychological Safety in Times of COVID-19 was held fully online for the first time.

In another first for the symposium, course director Dr. Stella Major, associate professor of family medicine in clinical medicine and director of the Clinical Skills & Simulation Lab (CSSL), extended its community of practice to include participants based in countries beyond Qatar, these being Lebanon, Oman, Turkey and KSA. Invited scholars and educators shared their stories reflecting on how simulation-based education and practice had helped the profession prepare for and respond to the emergent clinical demands of the pandemic.

The invited scholars discussed lessons learnt during the pandemic and reflected on the importance of remaining hopeful and resilient, acknowledging that the end-date of the pandemic is difficult to predict and thus the importance for educators and healthcare providers feeling cared for, safe and united, especially in times of physical isolation and prolonged uncertainty.

Dr. Major said: "We did not want to cancel our annual community symposium and worked very hard to learn how to achieve an interactive, educationally safe and inclusive event using online meetings. We were hugely supported by the excellent audio-visual team at WCM-Q who prepared us well so that we were able to connect with our community remotely."

She added: "Discussing ways to maintain and restore psychological safety during simulation-based-education, and in particular during difficult conversations in debriefing, become even more relevant as we practice with masks and face shields, and in online forums, where interpersonal communication becomes even more challenging."

The symposium featured a presentation by guest speaker Professor Michaela Kolbe, director of the Simulation Center at University Hospital Zurich, Switzerland, who is an authority in the field of psychological safety in simulation-based education. Prof. Kolbe said that psychological safety was crucial in simulation-based learning in order to allow learners to speak openly about any difficulties they might be having with an exercise.

She said: "In medicine, and indeed in other industries, we are strongly socialized to want to be seen to be succeeding and discouraged from being open about mistakes. That's a dilemma because to really benefit from simulation-based training, both learners and educators need to feel safe in order to open up and discuss sub-optimal performance. This type of psychological safety is an extremely powerful tool for enabling fruitful learning experiences."

A key part of the event symposium was an interactive workshop that used video materials created by the WCM-Q Clinical Skills & Simulation Lab to demonstrate how to promote and restore psychological safety during the debriefings that follow most simulation-based learning experiences.

Medical students from Qatar, Lebanon and Turkey also attended the symposium and reflected on their experience as learners during the pandemic lockdown period. They described the challenges that many faced in having to adapt to the new norm and celebrated moments when with their teachers they explored and learnt how best to navigate lessons using the ever-evolving technologies within the classroom.

They expressed satisfaction with the opportunities that online learning offered and asked for educators to look forward and embrace newer and more collaborative methods of learning.

WCM-Q is a regional leader in the field of simulation-based learning in medical education, a teaching method that draws upon a variety of simulation modalities from human role players to technologically operated manikin based simulations, to recreate clinical situations for learners to experience learn both practical and human factor skills in a safe yet challenging environment.

The symposium was accredited was accredited locally by the Qatar Council for Healthcare Practitioners-Accreditation Department (QCHP-AD) and internationally by the Accreditation Council for Continuing Medical Education (ACCME).

Simulation-based learning is a vital tool in preparing medical students for their future career.

Twelve faculty win promotion

Dean of WCM-Q leads tributes to their hard work and dedication to the college.

Weill Cornell Medicine – Qatar has honored the achievements of 12 of its faculty members who have been promoted in the last 12 months, including two who achieved the rank of full professor.

In a usual year, the efforts and hard work of these faculty members would have been celebrated with an appreciation lunch, but that has been prevented by the COVID-19 pandemic. However, the dean of WCM-Q, Dr. Javaid Sheikh, did not want to miss the opportunity to congratulate all those promoted.

Dr. Sheikh said: "I offer my sincere congratulations to this remarkable group of talented and accomplished educators, clinicians, and scientists who are preparing our students to be tomorrow's medical leaders, advancing our knowledge of bio-medical research and delivering the highest possible quality of clinical care to Qatar's citizens. It is especially gratifying to welcome two faculty members to the rank of professor.

"This year more than ever, medical professionals have been at the forefront of our thoughts and I am so proud to say that these 12 colleagues - like all of our faculty members – truly embody the qualities that we expect in medical leaders; intellectual excellence, compassionate care and strong commitment to their students, research and patients."

Dr. Sheikh's comments were echoed by Dr. Khaled Machaca, professor of physiology and biophysics and senior associate dean for research, innovations, and commercialization at WCM-Q, who said that the college's faculty were central to its success and standing within the world.

Dr. Machaca said: "Our faculty are the heart of the institution and it is through their achievements, dedication, innovation, and hard work that WCM-Q has leaped from one significant milestone to the next over the past two decades. Heartfelt congratulations to all our primary and affiliated faculty who were promoted during these unusual times of the Covid-19 pandemic. It is unfortunate that we will not be able to celebrate their achievements in person, but I take comfort in the fact that their successes during this trying year are not only advancing their career goals but providing us all with significant scholarly successes and accomplishments of which to celebrate and be proud."

Dr. Thurayya Arayssi, WCM-Q professor of clinical medicine and senior associate dean for medical education and continuing professional development, added her commendation to the 12 promoted faculty members, who work at WCM-Q but also the college's affiliated institutions where they offer students their experience and knowledge in a clinical environment.

Dr. Arayssi said: "Warm congratulations to all of our faculty members who were promoted this year. We thank you wholeheartedly for your hard work, dedication and commitment to the mission of WCM-Q. The faculty is the core of our fine institution and the principal reason for its accomplishments and its success.

"Thanks to our faculty, the curriculum continued to be delivered smoothly this spring despite the sudden and immense challenges brought by COVID-19."

Promoted to Professor

- Ali A. Sultan, MD, PhD, promoted to professor of teaching in microbiology and immunology
- Abdullatif Mohamed Alkhal, MBBCh, promoted to adjunct professor of clinical medicine

Promoted to Associate Professor

- Alice Abdel Aleem, MBBCh, MD, promoted to associate professor of research in neurology and associate professor of research in neuroscience
- Joel A. Malek, PhD, promoted to associate professor of genetic medicine
- Noora Mohammed A. A. Al-Hammadi, MD, promoted to associate professor of clinical radiation oncology
- Nidal Ahmed Asaad, MBBS, promoted to associate professor of clinical medicine
- Ibrahim Mohamed Fawzy Hassan, MD, promoted to associate professor of clinical medicine and associate professor of clinical genetic medicine
- Aisha Larem, MD, promoted to associate professor of clinical otolaryngology

Promoted to Assistant Professor

- Kulsoom Junejo, MBBS, promoted to assistant professor of clinical surgery
- Suruchi Mohan, MBBS, promoted to assistant professor of clinical obstetrics and gynecology
- Nagham Dhiaa Sadik, MBChB, promoted to assistant professor of clinical medicine
- Khaleel Mohammad Khaleel Salameh, MBChB, promoted to assistant professor of clinical pediatrics

More information about the promoted faculty is available at *https://qatar-weill.cornell.edu/faculty/faculty-promotions/promotions-academic-year-2019-2020*.

Twelve of WCM-Q's faculty members have received promotions in the past year.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