



جامعة قطر
QATAR UNIVERSITY

Qatar University Research Magazine

Issue 14, December 2020

The Research Vessel “Janan”



**QU Establishes UNESCO
Chair in Marine Science at the
Environmental Science Center**

Cancer Stem Cells and
Environmental Pollution:
**A New Understanding
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Special Coverage:
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QU Continues to Achieve Research Priorities and the Sustainable Development Goals

Dear Readers,

We are back with a new issue and renewed features of Qatar University Research Magazine, in which we document our most important research achievements and our continuous giving with which we have challenged the Corona pandemic and the emergency conditions henceforth. We return with the knowledge and research momentum and the qualitative interest in the fields of innovation and invention, a tool to solve the problems facing community members and institutions. Therefore, starting from this issue, we have devoted a section to Innovation Oasis, which contains some of the researchers' innovations and patents that were registered in 2020.

In the News Section, we document QU's announcement on the establishment of the UNESCO Chair in Marine Sciences at the Environmental Science Center, which we preferred to place on the cover page of the issue with the Center's research vessel "Janan". You will also find the launch of the Academic Network for Development Dialogue (ANDD), which was established with the support of Qatar University and the Academic Council of the United Nations (ACUNS). ANDD embodies the partnership between a number of universities and educational institutions in the Arab region and the world, and the United Nations Economic and Social Commission for Western Asia (ESCWA). We are also proud of the University's achievements and the international awards it reaps. We congratulate QU's Center for Young Scientists for winning two gold medals in the iCan competition qualifiers, and one gold and bronze medals in the Fifth Korea International Youth Olympiad.

This issue witnesses the expansion of the Research and Graduate Studies Sector within the support framework of Qatar University and its research centers for the State's plan to achieve food and water security by using sustainable scientific means. We announce the establishment of the Agricultural Research Station and the establishment of the first campus -based plant for the Green Leafy vegetables in addition to the Water Unit.

The Projects News Section follows up on the progress and ranking of Qatar University, highlighting its role and continuing on the path to development, transitioning from the level of regional excellence to globalism. Such excellence is a strong evidence of the University researchers' ability to spread renewable knowledge in the various fields of interest to international researchers, which renders the State of Qatar, through its first national University, one of the world's icons of excellence in research and innovation.

Moreover, we also throw some light on the grants and the support extended by the University to improve the quality of its research outcomes, besides the 32 research grants awarded to the University in the twelfth cycle of the National Priorities Research Program (NPRP). I am also pleased to announce the University's launch of its basic research priorities and those related to transformation (2021-2025), through working with colleges and research centers at the University, in collaboration with national stakeholders

and in consultation with experts and specialists. These priorities fall under four research pillars: energy and environment, information and communication technology, health and biomedical sciences, and social sciences and humanities.

In the Spotlight and the Student Projects Section, we highlight the role of researchers and students of the University and their most important achievements and research projects. In the Our Events Section, circumstances forced as to the virtual launch of the summer training programs, and the continuation of the QU's Annual Research Forum and Exhibition 2020, which was organized as an integrated event that was concluded with great success. Its title was "The University of the Future" that plays its role in sustainable development and contributes to building the knowledge economy of the country despite the current regional and international challenges. In addition, we conducted the activities of the Orientation Meeting and the Graduate Students' Open Day. We also launched the Wednesday Research Series to create an effective communication environment within the University community and to recognize the applied and theoretical research projects that the University is working on.

This issue also lists the new publications of the Qatar University Press, most notably the book of the Encyclopedic Historian Prof. Mohammed Hareb Farzat, entitled "Qatar on the Arabian Gulf: A Search for Lost Times in Ancient History."

Sections featuring Achievements, Research Issues and Research Articles include many joint research efforts between the University colleges and research centers, whose researchers address several topics, including the impact of the Covid-19 pandemic on individual and community behaviors, diseases prevalent in society such as cancer and diabetes, and many other achievements, innovations and research studies.

Wishing you pleasant and informative reading.

Prof. Mariam Al-Maadeed,
Vice President for Research and
Graduate Studies,
Qatar University



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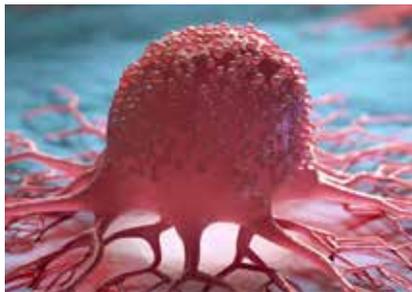
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The Research and Graduate Studies Office acknowledges the contributions made in support of publishing this issue. Editorial contributions are also welcomed on the following email: vprgs.eco@qu.edu.qa

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QU Establishes UNESCO Chair in Marine Sciences **at the Environmental Sciences Center (ESC)**



From right: Dr. Anna Paolini, Director of UNESCO Regional Office in Doha, Prof. Mariam Al-Maadeed, Vice President for Research and Graduate Studies at QU, Dr. Hamda Al-Sulaiti, Secretary-General of the Qatar National Commission for Education, Culture and Science, and Dr. Hamad Al-Kuwari, Director of the Environmental Science Center.



QU President Dr. Hassan bin Rashid Al-Derham, at the press conference; to his left Prof. Mariam Al-Maadeed, QU VP for Research and Graduate Studies, and Dr. Anna Paolini, Director of UNESCO Regional Office in Doha, and to his right Dr. Hamda Al-Sulaiti, Secretary-General of the Qatar National Commission for Education, Culture and Science, Dr. Eiman Mustafawi, QU VP for Student Affairs, Dr. Hamad Al-Kuwari, Director of the Environmental Sciences Center, in addition to members of the UNESCO Office and the Center.

Qatar University announces the launch of the UNESCO Chair in Marine Sciences at the Environmental Sciences Center affiliated with QU's Sector for Research and Graduate Studies with the approval of the United Nations Educational, Scientific and Cultural Organization (UNESCO). This was announced during a press conference held on 7 Dec 2020. Establishing this chair comes in line with the sustainable development goals relating to the preservation of oceans, seas and marine resources, which are among the most important goals through which the State of Qatar seeks to encounter the environmental decline and preserve the natural resources.

The UNESCO Chair and University Twinning Program (UNITWIN), both launched in 1992, are initiatives to establish research chairs in priority topics that fall within the UNESCO area of interest to facilitate global cooperation among higher education and research institutions, and direct university research towards the goals of the sustainable development agenda for 2030.

The UNESCO Chair in Marine Sciences is the first of its kind in the region. The research plan of this proposal covers the natural and human components related to the Arabian Gulf such as: water movement in the Gulf, climate change and rise in sea level, north



Monitoring and protection of sea turtles, one of the ESC projects for conserving endangered species

winds and waves, terrain changes due to coastal and marine processes, environmental pollution and its management, lack of oxygen and ocean acidification and the human impacts on the Gulf Ecosystem.

The program has been approved by the UNESCO National Mission in Qatar, the UNESCO Office in Doha, Ministry of Education and Higher Education, Ministry of Municipality and Environment, and the General Authority for Tourism. Other collaborating organizations include eight research institutions and prominent universities in six countries, as well as oil and gas industry companies in Qatar.

Qatar University aspires in the future, to use the chair to develop capacity building in the country by involving school, college and university students in collecting and analyzing data and participating in scientific discussions.

Individuals and entities interested in coastal regions such as traditional anglers, local community, industries, decision-makers, ministries and departments concerned with marine activities, environment, energy and education will also contribute to this work.

The press conference was attended by His Excellency Dr. Hassan Bin Rashid Al-Derham, President of Qatar University, Prof. Mariam Al-Maadeed, Vice President for Research and Graduate Studies, and a number of QU VPs; in addition to the Director of the UNESCO Office in Doha, Dr. Anna Pollini, and Dr. Hamda Hassan Al-Sulaiti, Secretary General of the Qatar National Commission for Education, Culture and Science, Dr. Hamad Al-kuwari, Director of Environmental Science Center.

It is worth noting that the establishment of the Chair will continue for a period of four years subject to further renewal. One of its main objectives is the establishment of a clean, healthy, sustainable, safe, and productive Gulf, where resources can be easily accessed, and exploited in a sustainable manner.

Qatar University to Host the First Meeting of the Academic Network for Development Dialogue (ANDD)



The Academic Network for Development Dialogue (ANDD) was launched as a partnership between a number of universities and educational institutions across the Arab region and globally, and the United Nations Economic and Social Commission for West Asia (ESCWA), with the support of the Academic Council of the United Nations Organization (ACUNS) and Qatar University. The idea of establishing this network came about because of the many social, economic, political and environmental challenges in the region that require the consolidation of efforts among academic and research institutions, on the one hand, and the staff of the United Nations on the other.

These joint efforts aim to activate dialogue between the two sides, and promote academic expertise and scientific research results to support sustainable development, which is a vital factor for the future of the Arab region. It will also contribute to bridge the knowledge gap at the local level, and direct the scientific research towards addressing development challenges in the region due to significance of academic institutions that will enable them to direct the systematic support and backing of United Nations bodies with innovative solutions. This would help to advance sustainable development and provide the evidence needed to formulate policies in such an area.



This network includes two types of members: institutions and individuals. The membership of institutions includes a wide range of universities, research centers, non-profit institutions, public administration institutions and related organizations in the Arab region and the world, provided that each of these institutions designates a specific point of contact with the Network. As for individuals' membership, it includes experts and researchers from a variety of fields including international relations, international law, trade and development, human rights, human medicine, cultural studies, media, technology, gender studies, civilizational development, and other fields. Among the conditions of this membership is that the individual should belong to one of the Network member institutions.

The Network's first workshop was held virtually (online) on Wednesday, December 9, 2020, in order to familiarize members with the network and its importance. It also highlighted the ESCWA's efforts in disseminating knowledge products and training courses in the field of sustainable development. The workshop was attended by a large number of representatives including: Center for Applied Economics for Development Research - Algeria, the American University in Cairo - Egypt, the Spring of Life Foundation for Medical Sciences and Health Care - Iraq, the University of Jordan and Zaytouna University - Jordan, the Islamic Institute for Research and Training - Saudi Arabia, the American University in Beirut, Saint Joseph University - Lebanon, International Islamic University and Technological University - Malaysia, the African Center for Training and Research in Management for Development - Morocco, Cadi Ayyad University - Morocco, Al Akhawayn University in Ifrane - Morocco, Muscat University - Oman, Al-Quds University - Palestine,

the Silesian University of Technology - Poland, the University of Mogadishu - Somalia, Coventry University - United Kingdom, Qatar University, Hamad Bin Khalifa University and the Doha Institute for Graduate Studies - State of Qatar. This is in addition to representatives from the United Nations Economic and Social Commission for Western Asia (ESCWA) and the Academic Council for the United Nations (ACUNS).

In addition to this, Prof. Mariam Ali Al-Maadeed, QU's Vice President for Research and Graduate Studies and the first President-elect, presented a proposal for the first annual meeting of the Network, expected to be hosted by Qatar University in March 2021, with the theme "Research, Innovation and Cooperation in Achieving SDGs in times of crisis and beyond."

It is worth noting that Qatar University's participation in this Network will be through opening its research infrastructure and facilities, research centers and expertise, and participating in its existing summer research training program that targets students of all levels and provides them with hands-on and theoretical experiences in the field of scientific research. The University will also participate via its Press in providing the necessary support for publishing research and scientific articles, especially those recommended by the Network. It is expected that the Network will participate in certain research journals to share the activities carried out by the Network itself.

In addition, the University will also participate through its existing International Research Co-funds Cooperation Program (IRCC), which aims to develop sustainable research networks between members of the Network, establish partnerships through joint research work and innovation activities, to build trust, exchange experiences and assist in scientific progress in the agreed upon fields. The University also aims to benefit from the resources, infrastructure and expertise jointly between the participating universities, in addition to providing a vital joint research environment between researchers and students by creating opportunities for student exchange.

This program is expected to achieve a number of outcomes, the most important of which are finding solutions to the challenges in the region, and finding ways to achieve sustainable work, publishing high-ranked joint research articles, obtaining patents for completed research projects, and engaging graduate students in research activities, with establishing exchange programs for researchers and students.



Experimental Vegetables Production Plant at Qatar University **The First Fresh Leafy Vegetables Plant within the Campus of QU in the State of Qatar as One of the Innovative Solutions**

Qatar made local food production a major national development priority in the recent past to ensure food security and safety. The state introduced new enabling policies through public-private partnerships, infrastructural incentives, and increased research funding. At present, there are close to 2,000 farms in Qatar. These results in a remarkable increase in vegetables, poultry, and dairy products, locally. In 2018, the Ministry of Municipality and Environment announced that Qatar achieved 82-98% self-sufficiency in poultry products and dates and expected to attain 90-100% self-sufficient in fresh vegetables and other food products by 2020. However, local food production's cost-effectiveness is still a challenge and should be addressed to ensure sustainability.



Dr. Hareb Aljabri, Manager of Innovation and Intellectual Property Office, and Dr. Mohammed Alsafran, Director of the Agricultural Research Station, during the signing of the agreement with the Japanese company “Chiyoda”

Accordingly, Qatar University (QU) and its research centers are promoting the State’s Plan to achieve food and water security per sustainable scientific approaches. The competent research centers in this field are conducting research, collecting, and analyzing data to come up with solutions for the challenges facing sustainable development. These include general environmental protection, water and food security and safety, clean and renewable energy, and efficient waste resources management. Accordingly, the idea of establishing the first Fresh Leafy Vegetables Plant within the campus of QU in the State was born as one of the innovative solutions. The Plant will provide leafy vegetables all year round using the latest scientific technologies. Such vegetables include Lettuce, Spinach, Rocca, and others, which will minimize importing these products from other countries. Given Qatar’s climate, agricultural production requiring limited land and water resources are the best suited for the country. In this regard, hydroponics culture is one of the most popular technologies used in growing perishable food products without soil. The technology is efficient and straightforward. Plants, including vegetable seedlings, are planted in a dormant medium, such that plants are supplied with dissolved and balanced nutrients solutions through the roots. Such solutions are easy for plants to absorb directly in an effortless manner, resulting in a significant increase in productivity all year round, dissimilar to the other traditional farming methods. Hydroponics is about the conservation of water used in traditional farming, as the percentage of water conserved is 92%. As hydroponics is based on recycling water for several times along with adding the percentage of evaporated water (as needed), it is characterized by high quality crops due to the lack of plant diseases related to soil, as well as, not using chemical substances and insecticides. Furthermore, this type of farming helps to minimize the needed workforce, and as such, reduces the operational cost and increases production with minimum usage of fertilizers.

In this regard Dr. Hareb Mohammed Aljabri, Manager

of Innovation and IP, and Dr. Mohammed Hussain Alsafran, Director of Agricultural Research Station, formed a research team with full support from QU. This team is tasked with studying the available options to implement the idea and look for potential local and global partners to initiate the implementation as an innovative solution to overcome challenges related to the State of Qatar’s food security. The research team communicated with many competent companies, within Qatar and beyond, to examine possible aspects of support to achieve the team’s technological and scientific vision. The team selected the Japanese company “Chiyoda” based on its expertise, advanced technologies, and business profile in this field. This idea succeeded on a large scale in Japan with more than 190 factories using the said modern technology. The technologies proposed by “Chiyoda” are compatible with Qatari environmental conditions in terms of water scarcity, limited space and high temperatures. This trickle-down technology is characterized by the irrelevancy between productivity factors and environmental factors, which maintains the continuity of production, quality and safety of the product.

Meanwhile, the team is working on conforming and developing the project’s ideas and concepts with the Qatari environmental conditions, particularly cooling systems and power supply, in cooperation with researchers in the same fields from QU. This project will help reach new horizons in research in several fields in and outside QU, which will open new avenues for students to practice and research further. It is expected that the project will provide a Qatari national product, which will support the local market. It is worth mentioning that this experimental project is under execution as part of the Contribution Project to promote educational and cultural exchange between Qatar and Japan. The project is funded by Marubeni Corporation, a Japanese trading group.

Encyclopedia of Arab Gulf Vocabularies
and their Social Connotations

Ibn Khaldon Center's Encyclopedia Project

Encyclopedia of Arab Gulf Vocabularies and their Social Connotations is supervised by Ibn Khaldon Centre for Humanities and Social Sciences. The Encyclopedia is based on extrapolating the Gulf vocabulary, phrases, symbols and proverbs with a sociological function. In an effort to make them as a sociological introduction for researchers who involve themselves in the field of social research in the Arab Gulf. The encyclopedia will provide researchers with a particular scientific manner to address with social phenomena in the Gulf.

As such, the subject of searching in the Encyclopedia is “Gulf vocabulary” with “sociological dimensions” and the target group will be the researchers in the field of Gulf social phenomenon as mentioned. The Encyclopedia’s work differs from a glossary. A glossary is concerned with the direct connotation of the vocabulary and, if the vocabulary is historical, with the semantic transformations of the vocabulary throughout history. However, the Encyclopedia’s work is based on the search for the social dimensions of the Gulf vocabulary as an introduction for describing, interpreting and analyzing social phenomena in the Gulf.

Ibn Khaldon Center’s Encyclopedia Project is a part of “regionalization”. Regionalization is one of the five strategic frameworks governing the work of Ibn Khaldon Centre. Here, regionalization is intended to make the theoretical structure of the social sciences able to interact with the Arab reality and its questions. The work of the Encyclopedia will provide social researchers with the ability to access social phenomenon through real approaches that belong to social actors itself.

The Encyclopedia aims to transform the cultural vocabulary of Gulf specificity into a scientific introduction to address the social phenomenon in the Gulf. As such, the vocabulary moves from spontaneous use to the sociological one. Generally, this provides researchers with scientific tools in dealing with the social phenomenon associated with that vocabulary. It also provides non-Gulf researchers with the ability to interact with the Gulf social phenomenon through description, interpretation, explanation and prediction. The direct function of Ibn Khaldon Centre’s Encyclopedia Project is to address these vocabularies and looking at their roots and dimensions. The vocabulary is thus caused to be a sociological one that provides the researcher with the ability to scientifically address the social phenomenon.

The most significant elements of the Encyclopedia is the inclusion of articles and scientific research explaining and analyzing vocabularies of the

vernacular, or classical colloquial vocabulary, common in the social and cultural environment of the Arab Gulf States. This is with the aim of bringing them together in a scientific and sociological discourse to enable students to understand vocabularies of the vernacular and their connotations. Further, it may include appendices, manuscripts, pictures and illustrative maps.

In order to be included in the topics and research of the Encyclopedia, the Arab Gulf vocabulary shall meet certain criteria, the most significant conditions or criteria are:

- Criterion of Use: The vocabulary is used in the dictionary and dialects of Gulf societies as well as being used by people in their daily lives. It is not intended that the vocabulary is common and used at this particular time. It may have been used widely in a certain period in the history of the Arabian Gulf States.
- Criterion of Function: The vocabulary has particular dimensions and roles in the Gulf socio-cultural discourse, such as having a religious, ethical, political or sociological function within the Gulf socio-cultural environment.

There are mechanisms for research participation in the Encyclopedia, including: first one is direct recruitment through recruiting researchers who have an outstanding scientific ability in any aspect of the Encyclopedia’s topics, and the second is through the Centre’s announcement of a general invitation to all researchers to participate in writing in the Encyclopedia, according to scientific conditions and particular topics.

Finally, the Center has determined stages for scientific work in Ibn Khaldon Centre’s Encyclopedia. The five stages are as follows: first stage: establishing methodological foundations for searching in the Encyclopedia; second stage: setting the criterion of the vocabulary in question; third stage: statistical search for vocabularies; fourth stage: historical search of vocabularies; and fifth stage: social search for vocabularies.



From right: Dr. Ahmed Al-Anzi, the Encyclopedia Project Coordinator, Prof. Mariam Al-Maadeed, QU VP for Research and Graduate Studies, Dr. Nayef Nahar Al-Shamari, Director of Ibn Khaldon Center for Humanities & Social Sciences.



QU Young Scientist Center Wins Two Gold Medals in iCan Competition Qualifiers **as well as Gold and Bronze in 5th Korea International Youth Olympiad**

Transformation of higher education is one of the main strategic objectives of Qatar University (2018-2020). It aims at providing distinguished academic education that addresses contemporary challenges and focuses on meeting national needs in order to build a society that adopts a knowledge-based economy. To this end, the Office of Vice President for Research & Graduate Studies announced the launch of Qatar University Young Scientists Center (YSC) in March 2020, under the management of Dr. Noora Al Thani. The Center is an extension of the Al-Bairaq Program, which has enabled dozens to be qualified researchers through “I am a Researcher” Program and has won several international awards, including the WISE Innovation Award in Education 2015 as well as a number of prestigious awards at the Reimagine Education Conference.

The Center attracts Qatari students to scientific specializations through engaging them in an environment that encourages innovation by integrating both secondary and university students in order to provide them with knowledge and skills. Additionally, the Center cares for students of all academic stages as well as special needs students. It provides students with support needed for the creation of a generation of human power that is capable of production, creation, innovation as well as meeting the nation's needs of specializations that enrich knowledge-based economy such as science, technology, engineering and mathematics.

It should be mentioned that, in accordance with the intermediate stage of its plan, the Center seeks to publish research papers that are based on the implementation and development of its own educational projects, which aim to develop new models for sustainable and effective educational programs. In addition, the Center aims to document projects in the future and obtain patents for those projects.

Though the Center's launch coincided with the outbreak of Covid-19 pandemic and management of crises, it has proved the strength of its establishment and clarity of its objectives and vision, placing the Center as a hub for school students that contributes to the growth of their interest in high-quality science, technology, engineering and mathematics (STEM) education and scientific research. In addition, to attracting, nurturing and developing their talents so that they would participate in the economic and social development of the State of Qatar, which is in line with QU's vision.

This was clearly demonstrated when the Center won two gold medals in the iCan Competition 2020 finals, organized by the Toronto International Society of Innovation & Advanced Skills (TISIAS) in Canada, as it qualified two innovative projects at the final stage of the fifth tournament of the international competition, held online on the 29th of August 2020.

Forty countries participated in the international competition, including YSC, which represented the State of Qatar. The Center entered the competition after submitting a detailed request for participation in which it listed the various aspects of the two participating projects, such as their benefits, main innovative characteristics, effect and contribution to society as well as potential and future usage.

The two projects were in the building and construction category and science and engineering category. The first was based on a research entitled "Ultra-High Performance Fiber Reinforced Concrete" which was developed by students of "I am a Researcher" track, under the Center's supervision. The project aims to strengthen the properties of concrete, making it more effective and sustainable, and reducing the corrosion rate by adding fibers to it. This process positively contributes to improving the infrastructure and reducing the economic cost of raw materials and maintenance.



QU President Dr. Hassan bin Rashid Al Derham, honoring students who won the 5th Korea International Youth Olympiad in the presence of the Republic of South Korea's ambassador, Mr. Changmo Kim

As for the second project in Science and Engineering Category, it is concerned with innovative educational methods followed by the YSC in all its programs and initiatives. This is to attract youth to sciences, encourage them to research and innovate, and provide an ideal educational environment that allows them to be creative.

Among the 210 projects submitted from 20 countries, the gold and bronze went to the YSC in the 5th Korea International Youth Olympiad, held on 14th October, 2020. The first project is titled "Biodegradable Plastic from Soybean Husks" that won the gold award and a special award worldwide in "Best Invention" category from individual participations. It is worth mentioning that Sharifa Al- Mohannadi, a student at College of Engineering, developed this project during her participation in one of the Center's programs, "I am a Researcher". This project is concerned with manufacturing a new type of degradable polymer from soybean husk residues for use in safe and environmentally friendly packaging applications. As for the second project, it is titled "Fabricate Biodegradable Polymer Non composites for Transparent and Eco-friendly Electronics". It won the bronze prize in the Team Competition for Creativity category. This project aims to dispose off electronic waste by making electronic products that are biodegradable. Hence, this will help in natural and quick disposal without harming the environment. The two students, Sarah Al-Maadeed and Sham Al-Homsi, implemented the project in Qatar University's specialized laboratories over several months. It is also worth noting that the same project is nominated to win the National Scientific Research Competition in Qatar 2020.

Ras Laffan Social Networking Program is the official sponsor of the YSC. It is concerned with supporting development, creativity and innovation among Qatari youth. The Center's partners are UNESCO - Doha Office and the Qatar National Commission for Education, Culture and Science.

Research Center for Agricultural at Qatar University: **Agricultural Research Station**

Qatar is blessed with huge resources and wise leadership with strong vision and favorable policies for the development of various economic sectors as enshrined in the state development agenda, the “Qatar Vision 2030”. Qatar encourages a shift to depend on modern technology in the agricultural sector to overcome the obstacles facing this vital field. The challenges are the small area and water scarcity, with a shortage of arable land and a rapidly growing population. Therefore, there has become an urgent need for effective scientific studies to contribute to overcoming these problems in innovative ways to achieving food and water security. Researchers in the agricultural field at Qatar University have begun to search for alternative agricultural ideas and techniques that are

in line with the country’s climatic conditions, water scarcity and high energy needs.

Accordingly, the idea of the “Agricultural Research Station” came as a research center for agricultural research at Qatar University. The new research station aims to develop innovative agricultural technologies to provide solutions on how effectively the use of scarce natural resources can be made and the challenges of arid land agriculture, including sophisticated irrigation systems, application of integrated pest management and disease control. The station also aims to contribute to achieving sustainable development by supporting the National Strategy for Food Security by creating human capacities, advancing the agricultural sector, and serving relevant institutions and bodies.



QU Journal Receives International Recognition from “Web of Science: Clarivate” Foundation



Prof. Abdallah El Khatib

Editor-in-chief of the College of Sharia Journal



All praise belongs to Allah, we are pleased to announce that the Journal of the College of Sharia and Islamic Studies (JCSIS) has received international recognition from the “Web of Science” Foundation for indexing scientific journals. Therefore, the Journal has become one of the first in the Arab world and in the field of Islamic studies to receive this prestigious international recognition. This achievement crowns the efforts exerted over many years in perfecting and mastering work. The College will continue its development process, God willing. The second issue of the thirty-eighth volume of the Journal will be published in January 2021; while we share celebrations for Qatar being selected as the capital of Islamic culture for the year 2021. So, may Allah increase Qatar’s glory, progress and prosperity.

The Journal of the College of Sharia and Islamic Studies (JCSIS) at Qatar University has been in publication since 1980. It is a periodic peer-reviewed

scientific journal for publishing research in Islamic studies, in both Arabic and English being published biannually in paper and electronic formats. The Journal seeks to achieve leadership in publishing refereed scientific research that addresses contemporary and emerging Islamic issues preoccupying the global public opinion, and to be a scientific platform and reference for researchers of Islamic studies, in addition to be ranked amongst the famous global scientific databases. In its quest to go global, and to benefit from experiences worldwide, the Journal has an international editorial board and an international advisory board comprising distinguished researchers and scholars from different countries. The Journal welcomes distinctive contributions of faculty members from QU University and beyond. To view the journal, please visit the website:

<https://journals.qu.edu.qa/index.php/sharia/issue/view/158>.

Qatar University Rated
among the Top 10
**Regional Positions
with Excellence in
Scientific Research
and Innovation**

Based on its vision to be recognized through its distinctive excellence in education and research, and in order to stimulate social development and build a knowledge-based economy in the country, Qatar University (QU) has made every effort to give due attention to and improve scientific research. Accordingly, QU has worked to integrate scientific research into its strategic fabric to advance economic transformation and social advancement, making Qatar more influential at the regional and international levels.

Interest in scientific research began as part of the humanistic vision at QU and the belief of its leadership that human development over time is based on the pursuit of knowledge through research and innovation to figure out solutions to all important issues at all levels of human activity. In quest to frame its interest in research within measurable frameworks, and to highlight its role and continue the development process from regional to global excellence, QU has presented its achievements to major international university ranking agencies as the latter adopt defined standards in the process based on quality of educational curricula, service models with qualitative social dimension and excellence in research and innovation. One of the most distinguished higher education ranking bodies

in the world is The Times Higher Education World University Ranking. Research accounts for up to 65% of the total score achieved by any university subject to this ranking. Thanks to its ambitious research planning and the excellence of its researchers and students, QU has achieved a remarkable leap of 90 positions on the ranking scale this year. This qualitative progress is due to the following reasons:

First: QU's ability to improve research in terms of quantity, reputation and generating research-supporting income, which accounts for 30% of the total score achieved, as the University improved by 3.5 points to maintain the second ranking in the Arab World and the first regionally.

Second: Increase of the research impact index through an increase in number of citations by 30%. QU has been able to make progress in this field to move from twelfth to eighth place in the Arab World, and thus be among the top ten regional positions.

This, in turn, is a strong indication of the ability of the University's researchers to spread renewed and distinctive knowledge in various research fields to be shared by international researchers, and as such, making Qatar through its first national university, one of the world's windows for excellence in research and innovation.



Qatar University Internal and External Research Grants



Qatar University (QU) provides research grants to academic staff and students of the university, in view of the four central pillars of Qatar Vision 2030; i.e., human, social, economic and environmental development, in the areas of health, energy, environment, computer science, communication and information technology, social sciences, arts and human sciences. QU provides two categories of research grants; internal and external.

QU offers internal grants to support students and researchers and push scientific research forward through five research grant programs. First, Student Grant that aim to develop and reinforce research experiences of students at both the undergraduate and graduate levels, through cooperation between students, scholars and teaching staff. Second are High-Impact Grant, directed at supporting high-impact research projects in terms of knowledge, which will hence contribute to advancing QU in international university rankings. Third are Cooperative Grant, targeting the formation of a research panel comprising scholars and students from different disciplines, thus promoting cooperation between different disciplines in the university and other entities in the State. Fourth are the International Research Collaboration Co-fund, aiming at establishing cooperation between QU scholars and international scholars through research projects of common interest. Finally, the National Capacity Building Program, which aims at supporting research projects of Qatari academic staff.

Moreover, QU has taken the initiative with a quick response to the ramifications of Covid-19 by launching two specific and related grants: The Emergency-Response Grant and the Concept Development: Emergency Grant, to support research projects under specific emergent conditions and circumstances. These grants offer the advantage of being short-term grants to respond to the current urgent need. This is in addition to the regular Concept Development Grant, aiming at supporting and encouraging researchers to move from the “idea” phase to the “implementation” phase and produce prototypes that could be presented to industrial partners.

QU also offers external grants through the Qatar National Research Fund (QNRF), which is the major contributor to QU external grants. QNRF offers a variety of programmes that aim to support researches in various areas. The National Priorities Research Program (NPRP) is one of the main programmes offered by QNRF. NPRP is a two-track program, composed of the NPRP-Standard (NPRP-S), targeting research projects affecting the development of society and economy in Qatar, and NPRP-Cluster (NPRP-C) targeting multi-institutional

and inter/multi-disciplinary research to solve significant and complex problems in a holistic way. QNRF also offers grants to students at all levels, through High School Research Experience Program (HSREP) and Undergraduate Research Experience Program (UREP), which aim at supporting student education through practice, Graduate Sponsorship Research Award (GSRA) which aims at supporting outstanding students in post their graduate phase. Postdoctoral Research Award (PDRA) and Early Career Researcher Award (ECRA) support researchers at the beginning of their professional research career. Finally the Researchers Exchange and Mobility Program (REMP) aims at exchanging research experiences.

Moreover, QNRF provides joint fund programs, such as the QNRF-Ministry of Municipality and Environment (MME) joint funding program, and the QNRF-TÜBİTAK joint funding program. A specific QNRF fund is dedicated to conferences and workshops through the Conference and Workshop Sponsorship Program (CWSP).

It is noteworthy that, Qatar University has received many research grants. The most important of which are (32) research grants in the twelfth cycle of the National Priorities Research Program (NPRP), (31) of which are in the standard track and one grant in the cluster track. (14) research grants in the seventh cycle of the Graduate Sponsorship Research Award (GSRA), (20) research grants in the twenty-seventh cycle of the Undergraduate Research Experience Program (UREP).

Qatar University collaborates with local and global stakeholders and industries through specific external programs. A current funding from Marubeni Corporation, offered financial support to two research programs; the Qatar-Japan Research Collaboration Program (QJRC) which paved the way for a sustainable cooperation between research and innovation institutions in Qatar and Japan; and the Concept To Prototype Program (CTP) which provided an opportunity to develop prototypes, systems and platforms of high technology readiness level (TRL). Another current funding scheme was initiated in collaboration with QAFCO Qatar Fertiliser Company, giving a unique opportunity to QU researchers and students to contribute to the creation of innovative solutions towards food safety.

Other external grants are offered by industries and organizations inside and outside Qatar. QU received a hundred of external industrial grants these last years, such as from Qatar Petroleum, ExxonMobil Qatar, Total Qatar, Qatar Shell, MaerskOil Qatar, Ministry of Municipality & Environment and the Supreme Committee for Delivery & Legacy.

Qatar University Launching its New Research Priorities: A Milestone towards Establishing Knowledge-Based Economy in Qatar through High Impact Research, Innovation and Technology Transfer

As part of its transformation strategy (2018-2022), Qatar University strives to become a well-recognized international higher education institution that drives high impact interdisciplinary research. Being the first national university in Qatar, the University aims to address Qatar's research needs in the areas of national priority with ambition to explore new opportunities of knowledge transfer and research commercialization. Through working with colleges and research centers in QU, and in collaboration with national stakeholders and consultation with the industry, QU is launching its new core and transformative priorities (2021-2025). These priorities fall underneath four research

pillars, which are 1) Energy & Environment, 2) Information & Communication Technologies (ICT), 3) Health & Biomedical Sciences, and 4) Social Sciences and Humanities. Core priorities are essential for responding to the national needs of Qatar, whilst transformative priorities are topics budding from the core priorities with the aim of amplifying the impact of research through exploring potential opportunities of publishing in high impact journals, and being involved in knowledge transfer and commercialization. The new core and transformative research priorities are demonstrated in Figure 1 below.

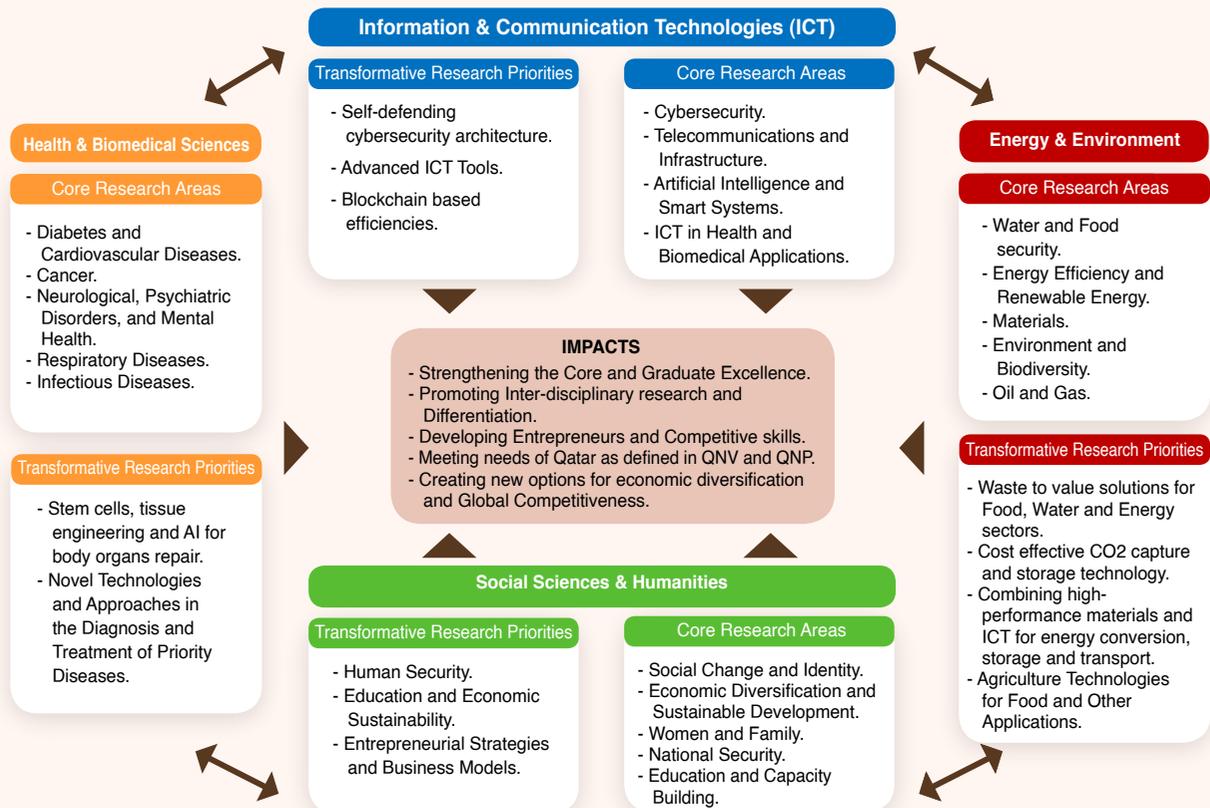


Figure 1. Pillars, core, and transformative priorities of research with proposed impacts at QU (2021-2025)

Law Student Achieves **Acceptance for Publication in Four Peer-Reviewed Journals**

Abdulla Affas Al-Marri

Master's Level Researcher, Private Law, College of Law- Qatar University

About the Researcher

Abdulla Affas Al-Marri, his legal journey began at Qatar University since 2012. He was admitted as an undergraduate student at Qatar University, College of Law. In 2017/2018, he graduated with an "Excellent Standard". Then, he pursued his Master's degree in private law. Among his research achievements are two papers, a "Commentary on a Law" and a "Commentary on a Law Article" which were accepted for publishing in a refereed journal. Topics of these researches and key findings are outlined below:

1 - A research paper titled, “E-Contract between Bargaining and Adhesion- A Comparative Analytical Study”

This paper was accepted for publication in the Journal of Doctrinal and Judicial Studies issued by Higher Judicial Institute in the Sultanate of Oman. The research was conducted under the supervision of Dr. Tariq Jumaa, Associate Professor at QU’s College of Law. The reason for selecting this topic was that electronic contract has a special nature. It constitutes a derogation from traditional contract. Owing to the development in the means of communication and the conclusion of contracts and transactions through the network of information and computers, actual and legal challenges have emerged in recent times. The contract, in the simple sense, is very old, but it was never affected that much throughout its lifetime. Nevertheless, the emergence of the Internet and its use in concluding actions between people have brought about several challenges now facing the nature of the contract in the traditional sense. It is thus crucial that the nature of the e-contract be defined in light of these developments. In view of the several benefits of e-contracting for average persons or merchants, the e-contract has become the preferred contract for people in their transactions. This is because it is more rapid and flexible. Further, it spares contracting parties spending exorbitant sums in transportation, travel and exerting more physical effort. Hence, many companies are interested in this aspect and compete to provide as much services and goods as possible, via the Internet. Moreover, they encourage contracting via the Internet and provide special offers and discounts for those who sign contracts online.

In the research e-contracting is analyzed in light of comparative laws and practical reality to determine its nature whether it is a bargaining or adhesion contract, and through review of legislative and jurisprudential trends. Findings showed that adhesion contract, in the traditional sense, maintains this characterization, even if it is concluded electronically. The e-contract that allows bargaining is not deemed as an adhesion contract. The e-contract concluded between professional provider and consumer is an adhesion contract. Arguing that the e-contract is an adhesion contract results in serious consequences, e.g. interpretation in favor of the adhering party and cancellation or amendment of the arbitrary terms. The recommendations stressed the need to adopt a broader interpretation of the concept of adhesion contracts relating to consumer protection in e-contracts; the need to educate consumers to avoid rushing into concluding contracts without a careful reading of the contract;



Abdulla Affas Al-Marri

the need to pay attention to drafting e-contracts and adopt a simplified approach that is suitable for the contracting parties; giving the judiciary a broad authority to investigate whether an intention of misleading or bad faith exists when concluding e-contracts and the need for appropriate academic qualification to consider such disputes.

2 - A research paper titled: “Characteristics of Major Contemporary Legal Systems: A Comparative Study between Major Law Systems”

Due to the scientific value contained in the research, it was accepted for publication in the “Revue de Droit des affaires Internationales” (Journal of Law and International Business) issued by Hassan I University in the Kingdom of Morocco, Issue No. 30 of October 2020. In this research, characteristics of law in major legal systems were studied. The findings of the research, clearly showed that each of the three major systems (Islamic Jurisprudence, Roman-Germanic System and Common Law Family) share certain characteristics and differ in others. Comparing between legal systems, practical benefits related to drafting national laws and international agreements of various kinds can be achieved. A balance could be achieved in drafting when differences between major legal systems are taken into account. It will also lead to the standardization of certain laws throughout the world through drafting model laws and international agreements in a manner that takes into consideration all legal approaches affecting the largest number



of countries in the world, that almost no country is free from the effect of at least one of them. The recommendations are summarized as follows: the need to direct researchers towards paying attention to comparative law, the importance of comparing between major legal systems and the need to pay attention to comparison with Islamic jurisprudence. This is because of the solutions it offers to legal issues that are suitable for all ages and finally, a recommendation to adapt these solutions to current realities.

3 - Commentary on a Law titled “Provisions to Support the Competitiveness of National Products and Combating Harmful Practices in International Trade in Light of Provisions of Qatari Law No. (2) of 2019”

Commentary on the Law was accepted for publishing in Legal and Judicial Journal issued by the Center of Legal and Judicial Studies of the Ministry of Justice, State of Qatar. This law is one of the modern Qatari legislations that is of special importance. It is the first of its kind in the State of Qatar and deals with top significant economic issues. Through research and commentary on this law, it became clear that this law constitutes a link in the chain of important economic legislations in the State of Qatar, which establish general balances between interests of the foreign investor, state, national producers and consumer community. The study of this law, shows that it is nascent globally. It has not been enacted statutorily in the State of Qatar before. This is the first legislative regulation to combat dumping, subsidies and increase in imports. This law includes special concepts such as the concept of error, which is basically an element of tort liability as per Article (199) of Qatari Civil Law No. (22) of 2004. Further,

it includes a set of measures for the protection of national products.

4 - Commentary on a Law Article titled “Commentary on Article (177) of Qatari Civil Law No. 22 of 2004”

Commentary on Article (177) of Qatari Civil Law No. 22 of 2004 was accepted to be published in the chapter: Reading the Qatari Legislation in the Journal of Legal and Security Studies issued by the Police College, Ministry of Interior, State of Qatar. This article raises the issue of relativity of the impact of the contract and exceptions and applications thereof. The contract, if its elements and conditions are met, shall be valid and effective with respect to its parties. Therefore, contracts cause either benefit or harm only to their parties. The Article provided for this general principle in contracts. It stipulates that “a contract shall not create any binding obligations upon third parties but may grant rights in such third parties’ favor”. Historically, the negative obligation in this article was present in the ancient Roman law, so that no exception to the rule of relativity of the effect of the contract was permitted in any way. The rule, in its negative obligation part, remained without development. However, it developed in its affirmative part related to the third party’s acquisition of a right arising out of a contract that it is not a party to. Further, the research included case studies, history and development of this article and reached a set of significant findings, including inter alia, an assessment of whether placing the provisions of the article was appropriate in terms of the sequence of articles. Another outcome was that the obligation *de porte-fort* (the undertaking to have a third party do something) is only an application of the first part of the provision of the article.

Cancer Research at the Health Cluster
of Qatar University:

Exploring the Role of Virus Infections in Human Breast Cancer

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Cancer remains a global problem with a substantial burden on healthcare systems around the globe, including Qatar. While the origins of this serious disease remain complex and multifactorial, nevertheless, it is estimated that 15-20% of all human cancers may be attributed to viruses, representing a significant portion of the global cancer burden, that can be prevented (Al Moustafa et al., 2014). Today, it is well-established that certain specific types of human cancers such as cervical, lymphoma and liver can be induced by human papillomaviruses (HPVs), Epstein-Barr virus (EBV), hepatitis B and C viruses (HBV, HCV).

In this context, it is important to highlight that HPVs are a group of more than 150 viruses; and these viruses are classified into high-risk and low-risk based on their ability to provoke cancer (Al Moustafa et al., 2014; Fernandes et al., 2020). Thus, high-risk HPVs, EBV, HBV and HCV viruses are called “oncoviruses” as they are believed to cause cancers. Early on, several studies tried to find a link between viruses and human breast cancer using known biological techniques at the time; but were not able to detect virus particles. However, in recent decades and thanks to the advent of new molecular biology techniques, scientists were able to sequence viruses’ genomes including HPVs and EBV. This achievement enabled the scientific community to identify some viral genes, which have been implicated in cancer development and progression. For example, scientists identified E6 and E7 genes of high-risk HPVs, in addition, LMP1 and EBNA1 genes of EBV, which were shown to provoke cancer under the right circumstances, such as specific gene mutation or the presence of other oncoviruses.

Based on that, the Cancer Group of the Health Cluster of Qatar University started to explore the presence of such oncoviruses' genes in different types of human cancers including breast. Thus, the groups' studies revealed that *E6/E7* of high-risk HPVs can be detected in ~50% of human breast cancer tissue samples from Canada, Syria, Qatar and Lebanon (Yasmeen et al., 2007; Akil et al., 2008; Gupta et al., 2020). More significantly, we found that the presence of *E6/E7* genes of HPVs in breast cancer is associated with a more aggressive cancer phenotype (invasive forms). Based on these data, the group explored the role of *E6/E7* genes of high-risk HPVs in several breast cancer cell lines and animal models; they found that these genes (*E6/E7*) can convert non-invasive breast cancer cells into highly invasive and metastatic forms (Yasmeen et al., 2007).

On the other hand, they were able to identify specific types of high-risk HPVs in the breast cancer samples in relation to their geographic location. For instance, they found that HPV type 16 is the most frequent in breast cancer in Canadian women; while HPV types 33 and 35 are common in Syrian and Lebanese samples; in parallel, HPV types 59, 56 and 45 are present in breast cancer samples from Qatari women. Additionally, the studies pointed out that the presence of *E6/E7* genes of HPVs are associated with invasive and metastatic breast cancer phenotype. Given the fact that metastatic cancer is the major cause of cancer related deaths, it is evident that such tragic events can be avoided using simple and effective vaccination strategies. However, and from a preventive standpoint, given the variability of high-risk HPV types and their prevalence in different geographic locations, a careful identification of the types of high risk HPVs present in each country is important in order to decide the right vaccine to use, as there are presently three different types of vaccines against HPVs. The first vaccine is against two types

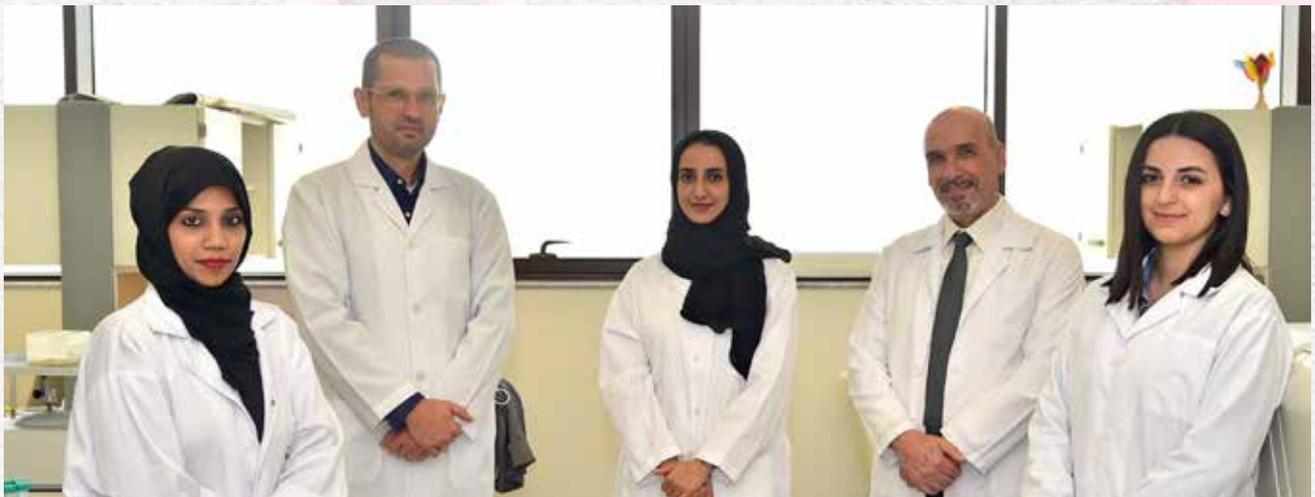
of HPVs, 16 and 18; the second vaccine is against 4 types of HPVs, 6, 11, 16 and 18, while the most recent vaccine is against 9 HPV types: 6, 11, 16, 18, 31, 33, 45, 52, 58 (Fernandes et al., 2020).

The cancer research group also explored the presence and role of EBV in human breast cancer in Syrian, Qatari and Lebanese women (Aboukassim et al., 2015; Gupta et al., 2020; Nagi et al., in preparation). Data revealed that ~40% of examined samples from these countries are positive for EBV. More specifically, we found that *LMP1* and *EBNA1* genes of EBV are expressed in these cancer samples; this is accompanied by over-expression of several genes associated with highly aggressive cancer phenotype.

Moreover, the research team explored the co-presence of high-risk HPVs and EBV in breast cancer samples from Syria, Qatar and Lebanon. They found that 40% of the cancer samples from these countries, are positive for both high-risk HPVs and EBV. Most significantly, co-presence of these oncoviruses is significantly associated with tumor grade and stage in addition to positive lymph nodes and are highly aggressive cancers (Al Moustafa et al., 2016; Cyprian et al., 2018; Gupta et al., 2020). Thus, the team's work clearly indicates that such oncoviruses high-risk HPVs and EBV can be present/co-present in human breast cancer where they can play an important role in the initiation and progression of these cancers.

In conclusion, the Cancer Group of the Health Cluster of Qatar University, was able to successfully identify the specific types of human oncoviruses, such as high-risk HPVs and EBV in breast cancer inside Qatar, which present cases that can be prevented using the right vaccine strategy.

The research team is composed of experienced cancer scientists (Molecular/cell biologists and pathologists) as well as graduate and undergraduate students in addition to post-doctoral researchers.

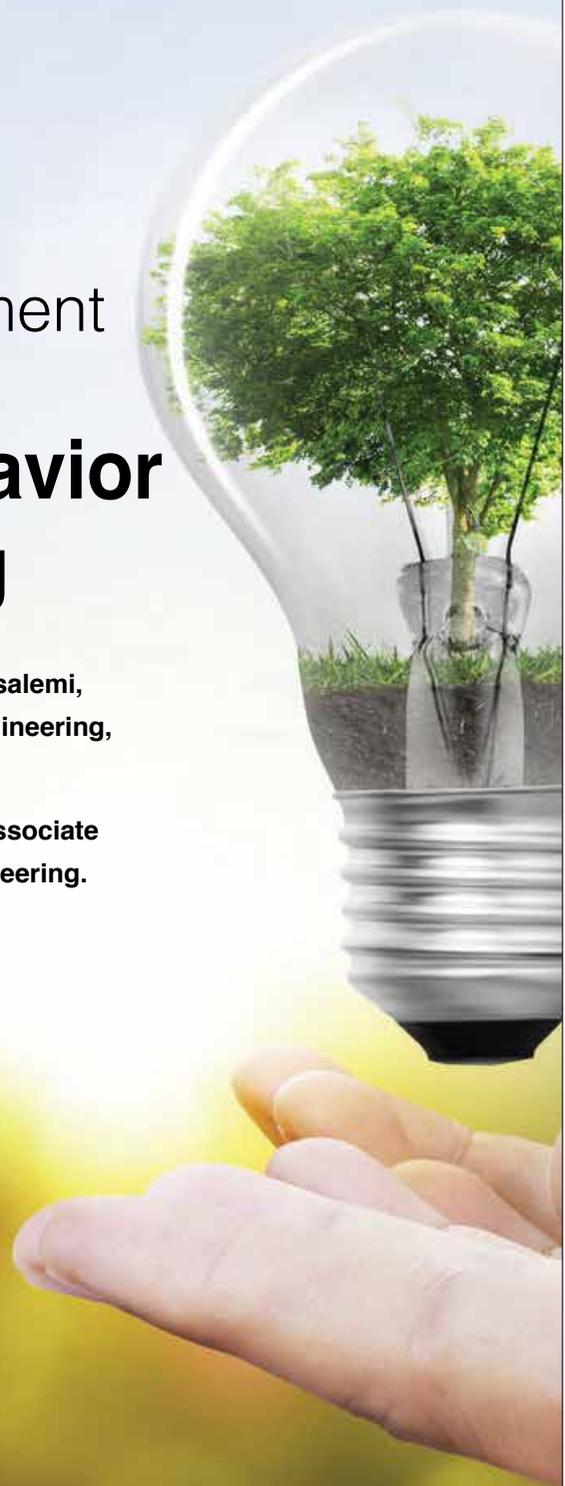


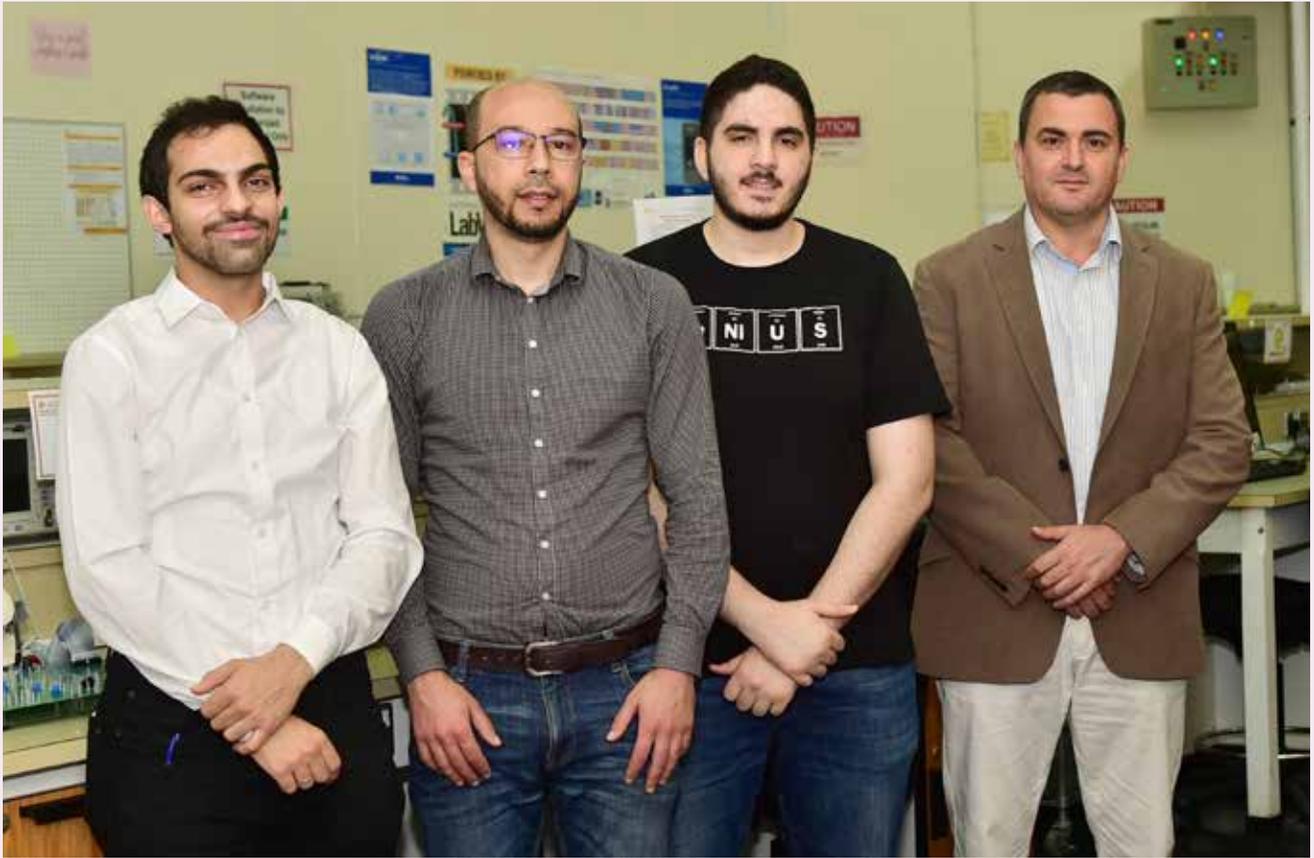
From right: Hadeel, Ph.D. candidate, Prof. Ala-Eddin Al Moustafa, Dr. Hamda Al-Thawadi, Dr. Semir Vranic, Ayesha , Ph.D. candidate.

Qatar's First Micro-Moment Energy Efficiency Lab: **Transforming Behavior for Energy Saving**

Research Team: Dr. Noora Fetais, Dr. Abdullah Alsalemi,
Dr. Yassine Himeur, Ayman Al-Kababji, Electrical Engineering,
College of Engineering.

Lead Principal Investigator: Faycal Bensaali, Associate
Professor of Electrical Engineering, College of Engineering.





From right: Dr. Faycal Bensaali, Ayman Al-Kababji, Dr. Yassin Himeur, and Dr. Abdullah Alsalemi, from the Department of Electrical Engineering at Qatar University.

Current energy projections show that heating and cooling energy usage will skyrocket above 80% by 2030. Despite the rising awareness of global environmental issues, high-energy consumption is arguably a colossal constituent of those issues. Moreover, technology can be a strong enabler in raising energy efficiency. Efforts have been made to utilize cutting edge software and algorithms to transform users' willingness to adopt healthy energy consumption practices.

The term “micro-moments” describes the moments of decision making and preference shaping for the consumer in the marketing sector. However, more definitions have been provided. For instance, the “I want to change” micro-moment can be employed as an enabler to raise awareness about energy efficiency and as the kindle for behavior change. Moreover, visualization of energy consumption helps users to monitor and control their energy usage. These visualization systems are often used as continuous home feedback systems and are usually accessible from mobile phones and tablets.

In this project, we present an overview of the micro-moment based energy efficiency framework (also

known as Consumer Engagement Towards Energy Saving Behavior by means of Exploiting Micro Moments and Mobile Recommendation Systems (EM)³) that aims to integrate behavior change theories, effective data visualization via the end-user application, and personalized recommenders to build and sustain energy-saving habits for domestic end-users. As a collaboration between Qatar University (QU) and Harokopio University of Athens (HUA), our contribution is based on the unprecedented utilization of micro-moments as means to manifest an accurate energy profile for each end-user and to use that profile to create personalized recommendations that improve their energy-saving behavior. To summarize, the main outcomes of the project are:

- The novel use of the concept of micro-moments in energy consumption monitoring.
- The development of a smart plug for energy consumption monitoring and automation. The smart plug collects additional contextual information such as temperature, humidity, luminosity, and room occupancy. The smart plug enables edge-computing capabilities such as

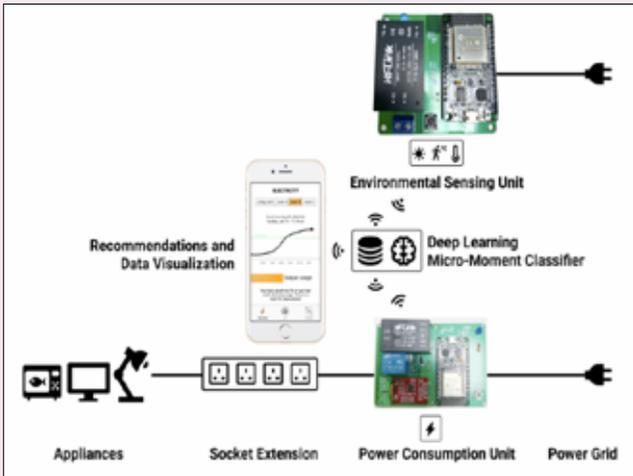


Figure 1. Overview of the (EM)³ smart plug

recognizing multiple appliances connected to it.

- Developing a set of novel algorithmic solutions for extracting appliance-level consumption data from the main consumption without further installation, i.e. using the non-intrusive load monitoring (NILM) technology that is based on artificial intelligence tools.
- Developing state-of-the-art classification algorithms for anomaly detection and micro-

moment extraction of energy usage patterns.

- Collecting appliance-level energy data at QU into an open-source novel anomaly detection dataset.
- The development of an efficient, personalized recommender system for fostering energy efficient behavior.
- Creating a toolbox for energy data visualizations and analytics.

Sensor data is collected and wirelessly uploaded to the backend, a Raspberry Pi server located at the household. Also, the backend stores contextual information, the extracted micro-moments, and energy-saving recommendations in a No-SQL CouchDB server. Currently located at an embedded systems research laboratory at QU, the micro-moment laboratory currently houses two cubicles equipped with appliances. To facilitate and streamline data collection, a special smart plug has been developed. The smart plug aims to consolidate both energy monitoring at the appliance level and ambient environmental information of the current room in the household.

All the data is aggregated into a novel anomaly detection dataset called Qatar University Dataset (QUD).

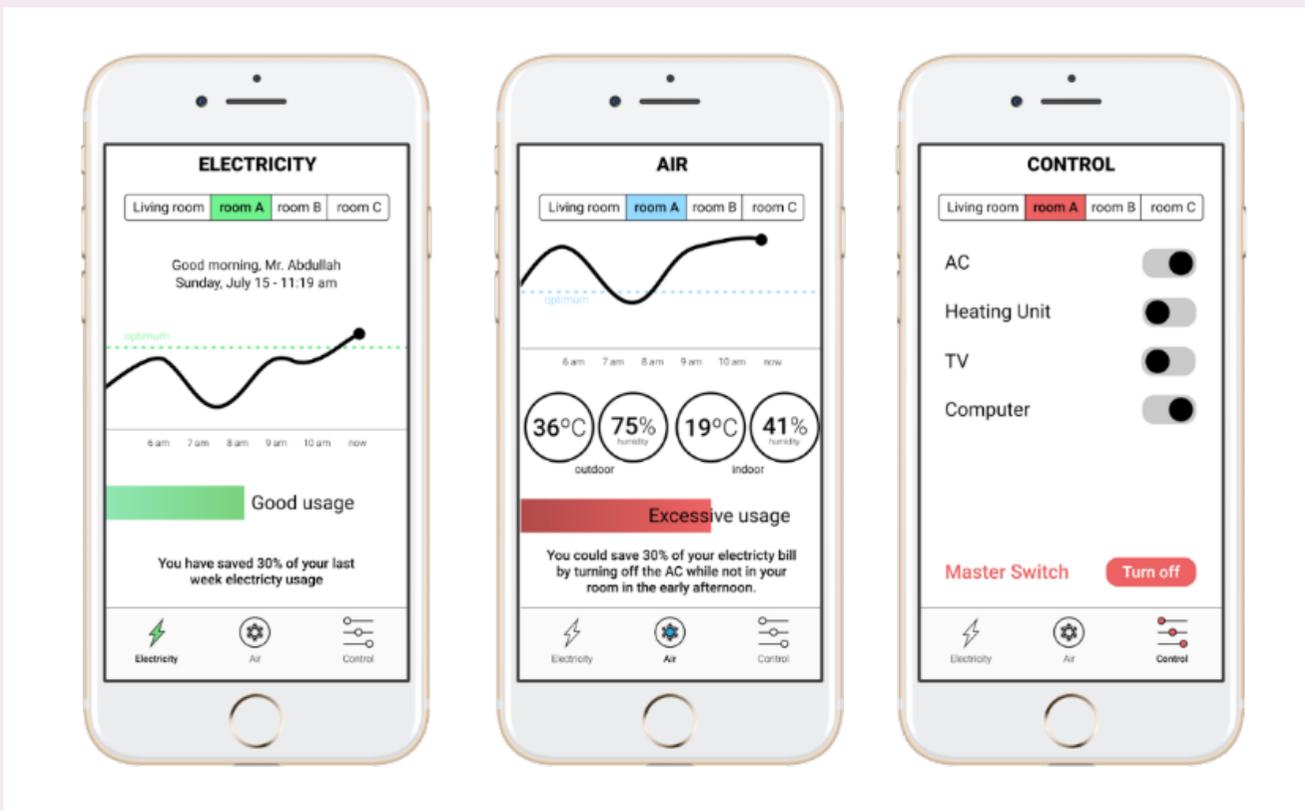


Figure 2. The end-user application for data visualization and behavior change

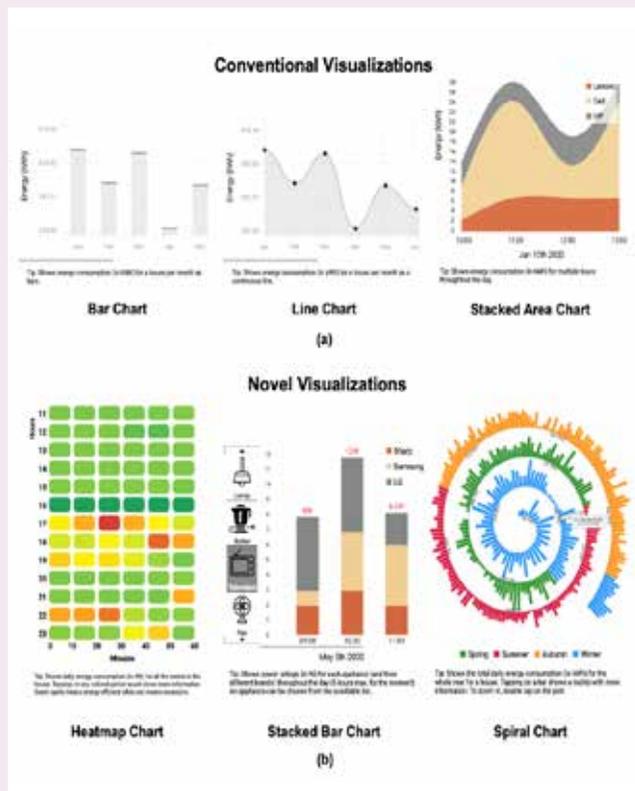


Figure 3. Data visualizations for energy efficiency: (a) conventional and (b) novel

The dataset includes data from multiple appliances exhibiting different behavior patterns. It is also the first dataset that includes comprehensive contextual information such as temperature, humidity, occupancy and luminosity of a given room. The dataset can be found online at <http://em3.qu.edu.qa/index.php/datasets/>.

Figure 1 shows an overview of the (EM)³ smart plug. A power wire from grid passes by the smart plug and goes to an extension socket, where appliance (s) can be operated. The smart plug components measure the current consumed by the appliances connected to the extension cord and multiplies it with standard voltage of the country in which it is operated. Data gathered from multiple data acquisition systems is processed at the server-side. Data fusion algorithms are applied to gathered data to provide a complete description of the environment.

Following successful classification, micro-moments are fed into a recommender system. The recommendations must be personalized to the individual end-user and take advantage of the behavioral economics theory to transform the end user's behavior for sustainable energy saving gradually. In addition, the recommender adapts to

the end-user rate of acceptance of the delivered recommendations, to improve the quality of the generated advice.

In addition to presenting recommendations, the end-user application provides intuitive and meaningful visualizations of energy consumption in addition to a basic appliance control functionality. For each room in the household, the end-user can view energy consumption data per device, air condition statistics (humidity, temperature, etc.), and statistics on the efficiency of energy usage. Figure 2 shows a screenshot of the end-user application.

Furthermore, to find the most effective data visualizations for energy data, the efficacy of several data energy visualizations is evaluated in a randomized controlled trial. Conventional visualizations, namely bar charts, line charts, and stacked area charts, are compared against novel charts, namely spiral charts, heat maps, and stacked bar charts, in terms of effectiveness, aesthetics, and understandability. The study is conducted through a mobile application circulated to participants in 12 countries collecting 133 responses, which allowed us to understand how and when to use the novel and conventional data visualizations. Figure 3 shows the evaluated visualizations.

Presently, current prototypes are working separately with relatively good performance, and the integration of the modules is under progress. Following successful evaluation of a mature prototype implemented on real data, a comprehensive pilot study will be conducted at QU and HUA to measure the effectiveness of the (EM)³ framework in improving domestic energy efficiency.

To conclude, the (EM)³ framework for improving domestic energy efficiency was expounded upon. The framework encompasses a sensor-equipped environment that collects rich behavioral data. The research team has published more than 18 journal articles and conference papers in high-impact venues. More information about the project can be viewed at the official project website: em3.qu.edu.qa

Acknowledgment:

This article was made possible by National Priorities Research Program (NPRP) grant No. 10-0130-170288 from the Qatar National Research Fund (a member of Qatar Foundation). The statements made herein are solely the responsibility of the authors.

A non-Invasive and Low-Cost Kit to Determine the Glucose Level of Diabetics via Calorimetry

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Research Associate, Center for Advanced
Materials (CAM) -Qatar University



Diabetes is recognized as the world's fastest growing chronic disease. According to reports provided by the World Health Organisation (WHO), one in every eleven people suffers from diabetes with a total estimation of 415 million people suffering from this disease. The current method for diagnosing diabetes is invasive as it requires blood sample to be taken for diagnosis. The human breath contains small amounts of Volatile Organic Compounds (VOCs) which can be used as biomarkers of this disease. In diabetic patients, due to the decreased ability of the body to break down glucose, the ketone bodies present in blood cannot be used for energy generation, leading to Diabetic Ketoacidosis (DKA) which results in a high level of acetone in the patient's breath.

This low-cost kit introduces a new non-invasive technique using the breath analysis concept, which

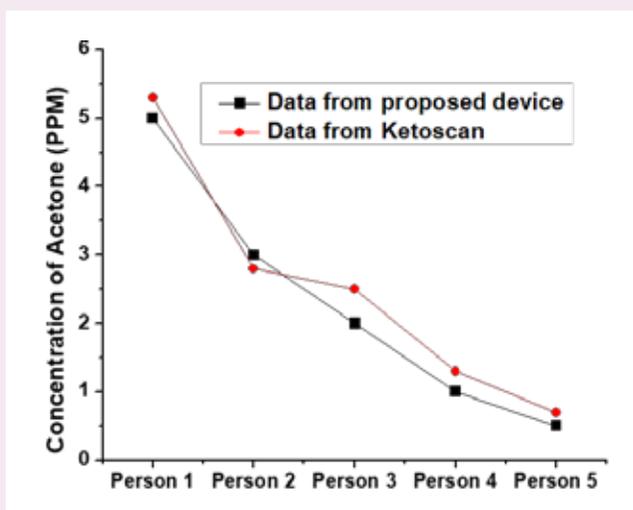


Figure 1. Comparison of data from the kit and Ketoscan demonstrating good accuracy of the kit

will test the presence of acetone, a biomarker for diabetics. The proposed method is a low-cost technique, which is based on image-based colorimetric detection. It possesses great potential to replace the existing breath analysis techniques given its simplicity, cost effectiveness, accuracy, and user-friendly nature. Additionally, this sensor has two-fold benefits as it can also be used as a detector for fat burning.

The kit was developed consisting of the prescription for KMnO_4 (non-toxic) solution, plastic pipe to blow the breath and a transparent glass bottle. Upon development, the functioning and the efficiency of the kit was tested by comparing the results to some standards available in the market. First, the levels of acetone measured using the kit were compared to the levels measured from Ketoscan – a commercial device which costs approximately QAR 800, and

the results are graphed, as seen in Figure 1.

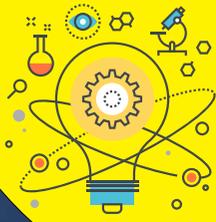
The efficiency of the kit was measured by conducting UV-Vis spectroscopy scans and comparing them to a standard sample of acetone. The colorimetric change was observed for 5 samples with varying standard concentrations of acetone. The results showed high precision as well as high repeatability. When acetone is passed through a solution, initially the purple colour of the solution slowly changes to a greyish purple and eventually to a completely light blue colour. The time taken for the colour change directly depends on the concentration of the acetone.

When the diabetic patient blows the air, the solution changes its appearance, while the color persists for a non-diabetic (normal) person. The patient under diabetic medication also showed similar results as the normal case. The only limitation of the invented kit is that, it can give inconsistent results for those people with diet control due to body fat burning. This can be seen in Figure 2, where the kit demonstrated excellent efficiency and accuracy for acetone detection of the glucose level of diabetic person, as the change in the peaks of the spectrum demonstrate the change in colour of the solution.

The diabetic kit prepared here can control a patient's medication as it offers frequent diagnosis and medication consequently. Additionally, this kit offers excellent market benefits as almost 12% of the global health expenditure is spent on diabetes alone. In this year itself, almost 10.8 billion USD have been spent on glucose monitoring devices. Thus, developing a non-invasive detection kit, especially one which has a cost estimation of 1QR, will be a major breakthrough in this sector. This kit paves the way for more efficient and easier detection of diabetes and thus is an imperative addition to this field of research as well as medical science.



Figure 2. Kit colorimetric change observed after blowing by a diabetic patient



**Innovation
Oasis**

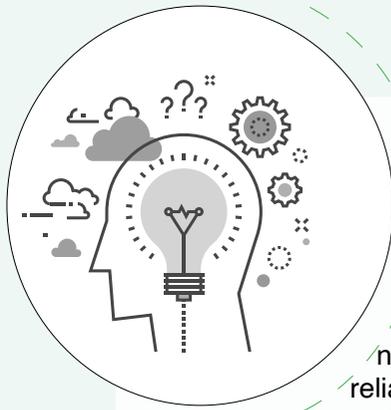
Smart Fault Detection Device to Anticipate Impending Faults in Power Transformers

Dr. Khaled Shaban

Associate Professor of Computer Science, College of Engineering – Qatar University

[US Patent No: 10,794,965 on October 6, 2020]





This invention contributes to the modern electrical power systems, also called the Smart Grids. The vision of Smart Grids targets fully automated power networks where reliable and efficient

operation of every system apparatus is utilized in order to optimize the energy value chain. Achieving this vision in power distribution systems requires the abilities to autonomously monitor and take corrective actions in order to operate the system in the best possible state. We developed a smart device to support advanced distribution management systems. The device continuously monitors power transformers and reports situation awareness features to the Supervisory Control and Data Acquisition (SCADA) system. Moreover, the invented device is most useful during impending faults as it can anticipate, detect, and localize partial discharge activities, sparks, and/or arcs in the transformer. This allows preventing failures instead of mitigating them.

Power transformers, depicted in Figure 1, are expensive and critical assets to power utility companies. The main role of transformers is to transfer electrical energy between the generator and the customers. Their performance impacts the



Dr. Khaled Shaban

power system adequacy and reliability, and their high utilization efficiency is essential to receive a reasonable return on investments. Transformer failures can potentially lead to unplanned power outages, in addition to costly and time-consuming repairs and replacements. Adequate monitoring of such assets is vital to effectively increase the Smart Grid performance.

Some core challenges when developing the device are, for instance, the need to operate in real-time, and the ability to manage high volume of data. Moreover, anticipating impending faults is a challenging task as early stages of failure modes of transformers are developed over time with blurred symptoms that have significantly small magnitudes that may not be noticed in the currents and/or voltages until developed to large values and transformers fail. Cracked transformer bushing, degradation in line insulators, bad terminal connections, and thermal stresses are the major causes of hot spots, Partial Discharge (PD), sparks or electric arcs. PD and arcs are common symptoms of impending faults; however, their transient and intermittent nature disable protection relays to detect them until flashovers with devastating impacts are developed.

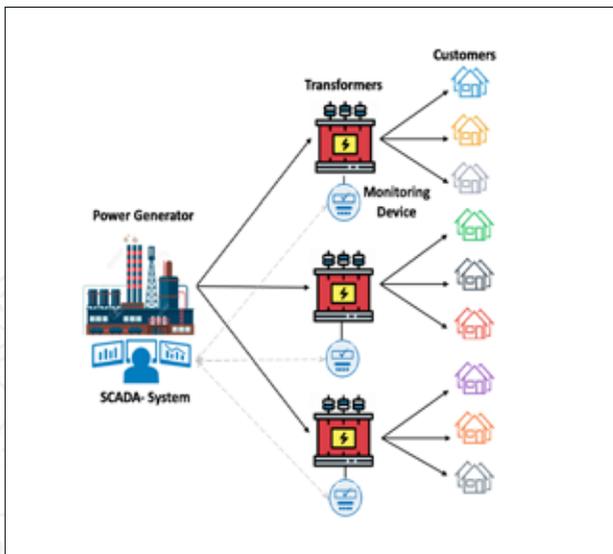


Figure 1. Electrical power system components and the invented transformer-monitoring device

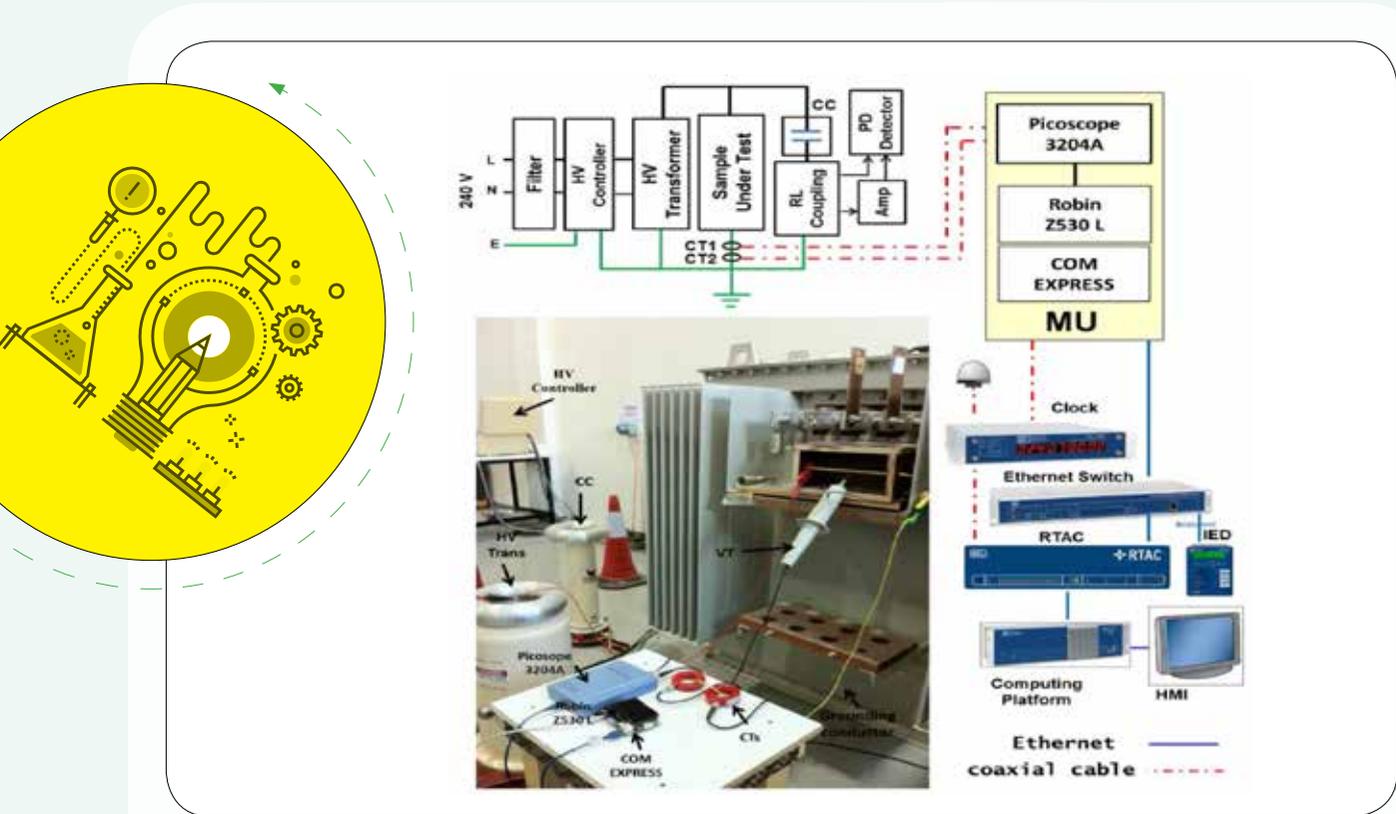


Figure 2. Experimental setup for PD detection and reporting

Unless assets drop offline, distribution systems operators are often unaware of the developing conditions leading to transformer failures. Furthermore, future distribution systems are subject to great uncertainty due to penetration of distributed generation and electric vehicles as well as consumer response to real-time pricing and rewarding policies. It has been reported that a key contributing factor in the August 2003 blackout in the US was due to outdated and inaccurate information collected from none real-time (off-line) diagnostic tools. Anticipating an impending fault in such stressed systems, which operate using complex protection, is a difficult task. Thus, integrating operational and nonoperational data collected from primary and distribution substations as well as other distributed resources is essential for developing situation awareness features, which help algorithms to anticipate impending faults.

The invented device has gone through an intensive experimental investigation as shown in Figure 2 to monitor transient and intermittent nature of PDs, sparks, or arcs in low voltage transformers. A cost-effective solution is investigated in data capturing using real-time sampling and estimated time sampling with apparent high sampling rates

where wealthy information can be extracted. Moreover, experimental investigation included using two-way communication over an Ethernet and a WiFi-5 GHz link between the invented device and the station bus to the SCADA system controller. The impact of data transfer latency of wireless communication and the impact of electromagnetic interference due to PDs and arcs are also investigated. The invented device shows a promising ability to anticipate and report early stages of impending faults that supports decision makers to take remedial actions and prevent full-scale events within future distribution systems. For more technical details, readers are invited to review the patent and a journal article published in IEEE Transactions on Smart Grids and titled: "A Smart IEC 61850 Merging Unit for Impending Fault Detection in Transformers", Vol. 9, No. 3, May 2018.

Acknowledgment

This work was supported by the Qatar National Research Fund (a member of Qatar Foundation) under Grant NPRP 6-711-2-295. The statements made herein are solely the responsibility of the authors.

Interview with an Inventor



Dr. Mohammed Jaber Al-Marri, Associate Professor of Chemical Engineering at Qatar University.

The world of innovation and inventions revolves around innovative ideas and turning them into concrete realities. Innovators in this world are characterized with patience, success and excellence. Today, we will walk you through this world in an interview with the scholar and inventor Dr. Mohammed Jaber Al-Marri, Associate Professor of Chemical Engineering at Qatar University.

Q. Dr. Mohammed, you are a scholar and inventor, how do you present yourself to academic community?

I am a Qatar University Graduate, and now an Associate Professor of Chemical Engineering.

Q. If an invention could be divided into stages, what are those stages?

It is First the idea, then the possibility of working on it, theoretically or practically, and finally validation.

Q. You have obtained a patent relating to the production of porous Cerium oxide at a lower cost, would you please give us a simplified explanation of the concept of the invention and its application?

It is about nanoporous Cerium oxide, which is one of the most important catalyst stabilizers used in the treatment of post-combustion emissions from car engines. Cost is lowered when the preparation stage is reduced to a single stage. Moreover, this stage could be undertaken in a simple reactor in open air. Not only that, this stage is implemented in a lower temperature than currently applied.

Q. What is the local and global significance of this invention?

It all started from the importance of reducing engine emissions and how to deal with this problem in cheaper ways. The main application of the invention is using it as a new supporting material for a car's Three-Way Catalyst (TWC), to reduce engine post-combustion

emissions. The significance of this invention lies in the fact that this innovated supporter is easy-made compared to the traditional method, and hence, it is cheaper. Adding to that is the large surface area and the highly porous (nano-particle) nature of the supporting catalyst.

Q. How many patents have you participated in and in which field?

Four patents: two of them are in the field of environmental air pollution (one of these researches is about methane combustion, and the other is in the field of reducing emissions from engine); the third is in the field of water treatment, while the last is in the field of natural gas conversion.

Q. How can we build the minds of our youth so that they have passion for invention and innovation?

To do this, we need to train them to suggest ideas that should be associated with solving problems facing their society and environment, then work hard and study variables and causes thoroughly. Then, comes motivation with awards and the importance of distinction and obtaining advanced ranks. Media coverage and conducting contests are also important to create a competitive atmosphere.

Q. What are the hardships and difficulties facing innovation?

Funding is one of the major obstacles, in addition to poor communication with the industry to figure out problems and find solutions accordingly.

Q. How could Qatar University support inventors and safeguard their rights?

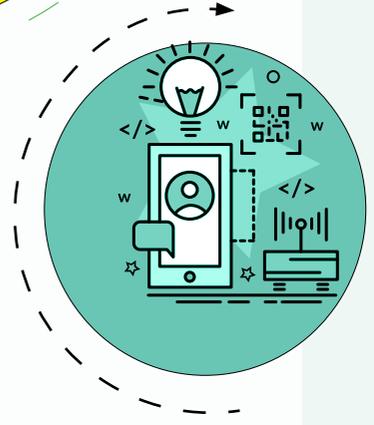
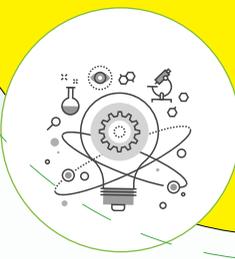
By patenting their inventions and paying financial costs, and the provision of all facilities including equipped laboratories, and analysis tools to help those interested in scientific research and invention.

Q. In your opinion, why are inventions important to societies?

Correlation between economic progress and inventions is key here. Inventions will transform our future and economy. Inventions address the problems faced by society (e.g. what is happening nowadays with the Coronavirus pandemic, which is not solved to this date).

Q. What are your future research objectives? Moreover, how far do you wish to go with your invention?

Working in different directions to solve problems affecting society is one of my major research objectives. As for how far I want to go with my invention; I want to create a product (one that creates jobs and develops the industry) to benefit everyone living in the state of Qatar; who are the driving force of economy.



Intelligent Robot: Educational Therapy Toy for Children

Dr. Ahmad Yaser Al Haddad
Post Doc Fellow, Mechanical and Industrial Engineering Department,
College of Engineering - Qatar University
[US Patent No: 10,792,581 B2 on October 6, 2020]

Description

Many studies showed the effectiveness of using social robots in the therapy of children with special needs and children with autism. There are factual evidences and stories from parents and therapists that children with autism are fascinated about train toys. Trains are distinguished from other toys by several features such as detachable carriages, tracks, motion, repeating patterns, colors, and distinctive sounds. All these features make the train a unique design for these children.

To date, there is no social robot design in the form of a train, hence, the motivation behind this invention. The proposed design will be interactive and contain several carriages, each with a specific educational or entertaining objective. There will also be a carriage containing a robotic hand that will reward a child for interacting positively. The reward can take on any of the preferred forms to the child, for example, child's favorite candy.

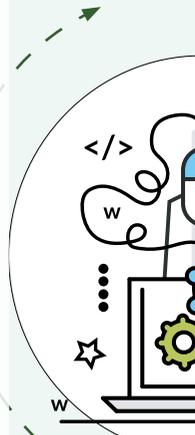


Dr. Ahmad Yaser Al Haddad



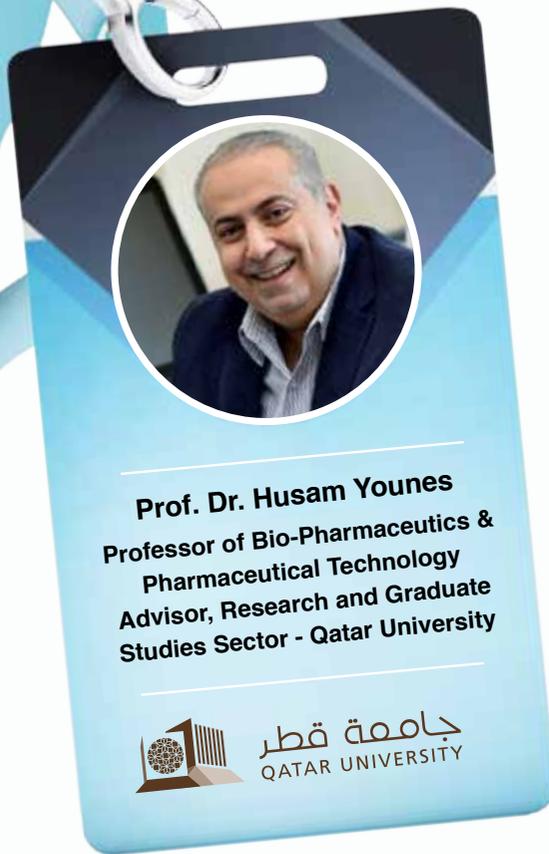
The design of the train will contain a screen that interacts with the child to guide him to accomplish a specific learning task. It can include interactive games for learning mathematics or languages.

Some children generally exhibit aggressive behavior or negative interaction, which in turn can affect those around them including social robots. Children with autism exhibit more challenging behaviors during meltdowns. To ensure the safety of the child in the event of a negative or aggressive interaction, such as hitting the robot by the child, the outer layer of the robot will be made of soft materials to absorb any of the unwanted behaviors and so as not to cause any harm to the child during the meltdowns. The proposed robot usage is not exclusive to children with autism and can be extended to include all children.





Innovation Oasis



Inventor Business Card

Dr. Husam: How would you introduce yourself to the QU community?

In addition to my academic portfolio as a professor and researcher, I am currently working as an advisor to the VP for Research & Graduate Studies on many of the university research plans and initiatives. I am also chairing and serving on many QU committees like the QU-VPRGS recruitment and QU accreditation committees.

What are the most important patents you field at Qatar University?

Since I joined Qatar University, I have filed and been granted two US patents. The patent granted in 2016 pertains to an invention of a new family of biodegradable polymers for drug delivery & tissue engineering applications. The second patent is concerned with novel transdermal non-aqueous nanoemulgels for systemic delivery of aromatase inhibitors and similar potent drugs in cancer therapy.

How does QU prepare an environment that is conducive to invention and innovation?

One of the best ways to spark great new ideas is to give inventors genuine opportunities to develop their ideas. I believe that QU and the VPRGS office were very generous in research funding and supporting innovation and entrepreneurship at the University throughout the last ten years. I had the privilege of establishing and overseeing the Intellectual Property Office at QU while being the Founding Director of Research Planning & Development at the VPRGS office from 2016 to 2018. That was a massive step as part of the 2018-2022 research strategy to support the innovation culture at QU and promote its inventions' commercialization.

How have you advanced your research capabilities, which enabled you to be known as an inventor?

Research impact is measured by our ability to find an answer to a question or a solution to a problem. My approach was always to increase my ability to gather information about the topic, review that information, and analyze and interpret the data that brings us to an implementable solution. Patience and persistence are always needed when we want research to lead to novel discoveries considering that inventions will generate benefits if and when it transfers from the innovation process to the marketplace.

Based on your rich experience, what is your advice for students and researchers to become distinctive researchers?

There are many distinctive researchers at QU whom the University should be proud to have them on board. Research is all about dealing with dilemmas and unanswered questions. I believe persistence, dedication, integrity, and hard work are the keys to success. Genuine efforts in research will always be recognized and predominate no matter what obstacles are faced.

What is the importance of inventions for community development?

The inventions have been given to man as a gift by ALLAH to advance in his own life and teach and benefit future generations. The most important innovations are those which have a significant impact on humanity and societies. Inventions that transform the understanding of concepts and result in better health, education, economy, and prosperity for communities are the ones that are most living and demanded nowadays.

The Impact of Electric Vehicles Charging Stations on the Grid

Eng. Saleh Mubarak Al-Thanya,

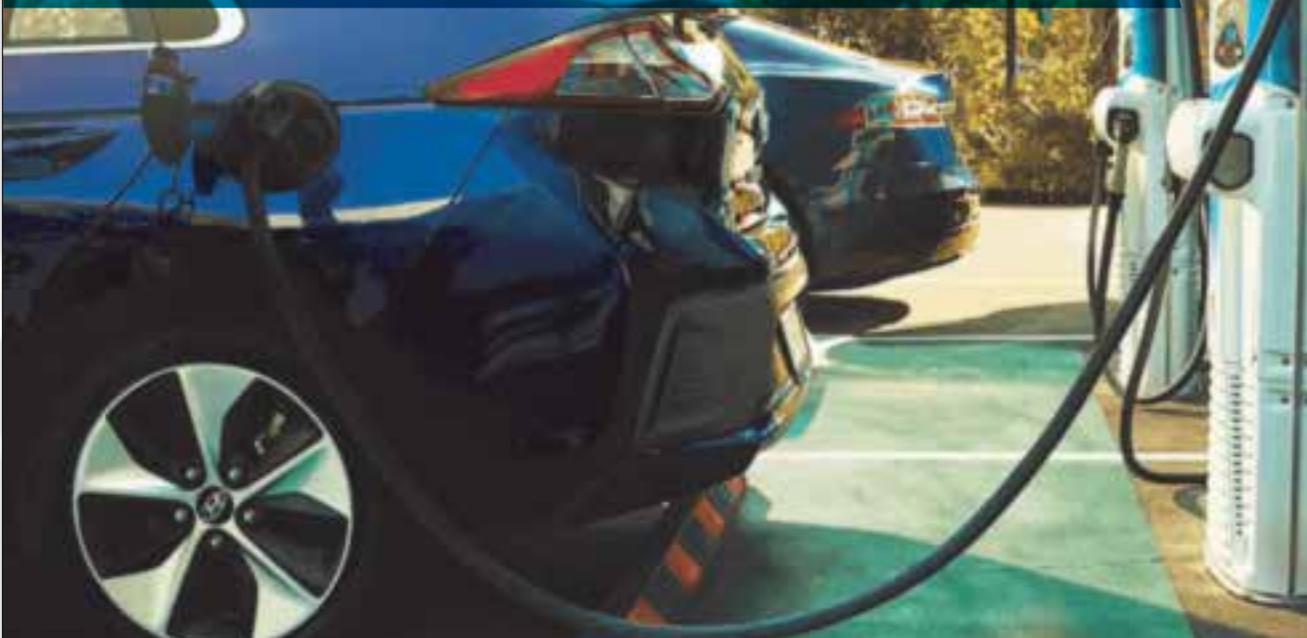
Master of Science in Electrical Engineering, College of Engineering – Qatar University

Supervisor: Prof. Ahmed Massoud,

Associate Dean for Research and Graduate Studies, College of Engineering – Qatar University

Student Biography: Saleh Mubarak Al-Thanya is an electrical engineer who received his B.Sc. (honors) from Cardiff University (UK) in 2017. He joined the college of engineering at Qatar University in 2018 to complete his electrical engineering education journey (master's degree). He focused in his thesis on "The Impact of Electric Vehicle Charging Stations on the Grid."

Main Motivation: Announcement of Qatar General Electricity and Water Corporation (Tarsheed) about launching 400 electric vehicle charging stations by 2022.





Saleh Mubarak Al-Thanya

Thesis objectives:

Studying the effect of charging EVs without coordination on the grid performance.

Coordinated charging time Optimization of EVs to minimize grid losses and achieve reduced voltage fluctuations.

Coordination of EV charging nodes to minimize grid losses and achieve reduced voltage fluctuations.

Review of other ancillary services such as (vehicle to grid (V2G), vehicle to home (V2H), and battery swapping) that can be implemented to overcome the grid issues and also can help in economics.

Main outcomes:

- Charging EVs without coordination leads to grid problems such as increased power losses and voltage deviations.
- Coordinated charging is a solution presented to minimize these issues and increase grid efficiency, stability, and reliability.
- Other ancillary services are suggested, such as vehicle to grid (V2G), vehicle to home (V2H), and battery swapping.

Difference between Conventional charging and fast charging:

Conventional charging can be defined as charging EVs through standard home outlets and considered slow charging (6-11 hrs) compared with fast charging (11-30 minutes). The main difference between the two types of charging is the electric vehicle battery charger (EVBC) as on-board for conventional charging and off-board for DC fast charging, leading to charging the vehicle in a short time as shown in Figure 1.

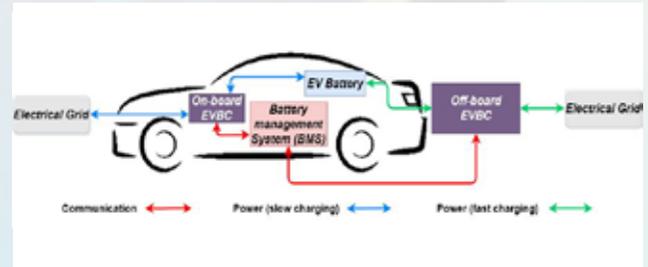


Figure 1. Difference between Conventional charging and fast charging

Figure 2 illustrates the use of the IEEE 33 bus system for simulation purposes as (33) represents houses for conventional charging and fast-charging stations.

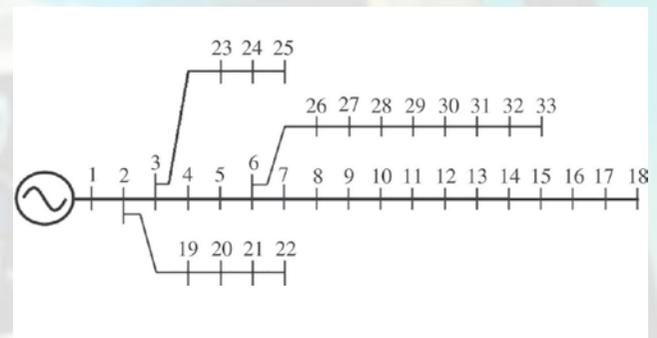


Figure 2. IEEE 33 bus system



Figure 3. Power losses for 50% conventional charging

Main results:

The above Figure 3 shows the power losses for a 50% scenario when EVs charging is conventional with and without coordination for conventional charging.

Figure 4 displays the voltage profile for charging EVs as conventional with and without coordination when the 50% scenario is considered.



Figure 4. Voltage profile for hour 14 as conventional charging

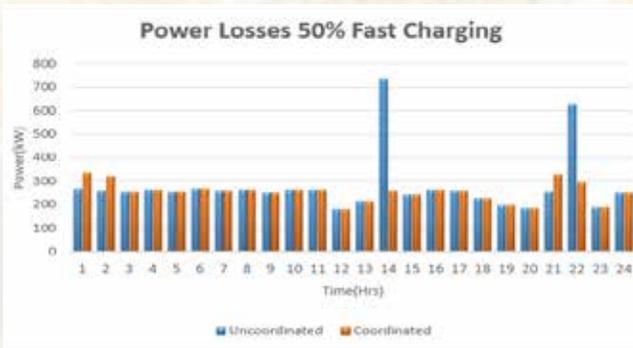


Figure 5. Power Losses 50% fast Charging

The above Figure 5 illustrates the power losses for a 50% scenario when EVs fast-charged with and without coordination for conventional charging.

Figure 6 shows the Voltage Profile for charging EVs as fast with and without coordination when the 50% scenario is considered.



Figure 6. Voltage profile for hour 14 as fast charging

Suggested ancillary services and recommendations:

1- Vehicle to grid (V2G) and Vehicle to home (V2H) services.

These services can Inject Power back to the grid or home as bidirectional. These services can help in terms of power consumption and generation

by charging and discharging at the right moment. Also, it can help with load leveling and voltage regulation. Consequently, good communication is needed between the grid, the vehicles' battery, and the utility provider. In the perspective of the communication from the vehicle to the grid, an on-board precision metering must be installed to detect the battery capacity and communicate with the operator to decide the charging/discharging mode as in Figure 7.

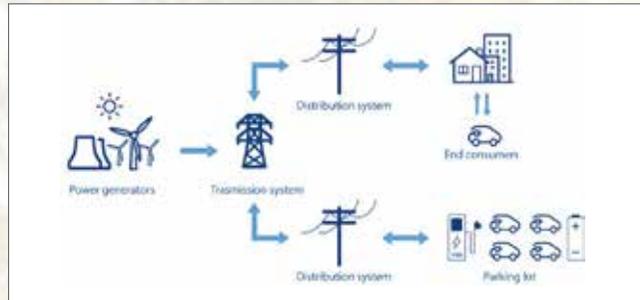


Figure 7. Vehicle to grid (V2G) and Vehicle to home (V2H)

2 - Battery Swapping services as in Figure 8:

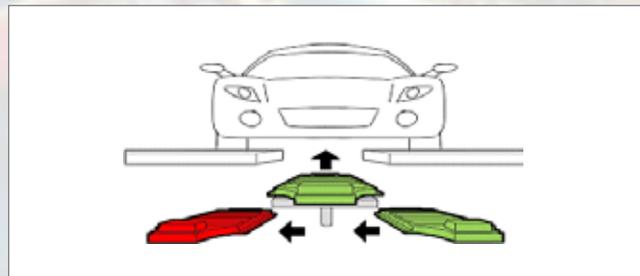


Figure 8. Battery Swapping Services

Main features:

- May help for coordinated charging as the operator of this service can charge and discharge the battery with respect to the grid peak times.
- Less time of waiting, which leads to customer satisfaction.
- Quick maintenance.
- Long Life of battery.

Recommendations: This study has recommended proper communication between the EVs owner, fleet managers, and distributed generation units to reach a coordination charging technique in reality (smart grid) to avoid all the issues faced such as power losses and voltage deviations. V2G services can help in terms of power consumption and generation by charging and discharging at the right moment.

44 New Ant Species Recorded to the **Biodiversity Database in the State of Qatar**

Salma AlHajri

PhD candidate, College of Arts and Science - Qatar University

Supervisor: Dr. Talaat Abdelfattah Youssef,

Research Associate Professor, Environmental Science Center- Qatar University

Advisory Committee member: Dr. Donat Agosti,

Entomologist, Natural History Museum of Bern (NHMBE) - Switzerland

Student's biography: Salma AlHajri is a PhD candidate at College of Arts and Science, in the Biological and Environmental Sciences Program. She earned her MSc degree in environmental sciences from QU in 2013. Her thesis was titled as "Seasonal Changes in Biodiversity and Abundance of Invertebrates in different Ecological Environments in Qatar".





Some types of ants that were registered during the study for the first time in Qatar

Protection of Qatar's biodiversity is an important part of the Qatar National Vision QNV 2030 as well as Qatar National Development Strategy QNDS 2018-2020. Although, insects are considered as one of the most successful organisms in terms of species richness and abundance worldwide, however, there is a lack of information related to Qatar ant fauna as well as insects and their biodiversity. So far only six species of ants belonging to five genera have been recorded from Qatar: *Brachyponera sennaarensis* (Mayr, 1862), *Camponotus maculatus* (Fabricius, 1782), *Cataglyphis nigra* (André, 1881), *Monomorium tumaire* (Collingwood & Agosti, 1996), *Trichomyrmex destructor* (Jerdon, 1851) and *T. mayri* (Forel, 1902a) (Wetterer, 2013; Abushama, 1997; Abdu & Shaumar, 1985; Lush, 2009 and Sharaf et al., 2016).

While there are at least 300 ant species that have been recorded from the Arabian Peninsula (Collingwood et al. 2011), this indicates a huge gap and information shortage regarding our knowledge of the ant fauna and their diversity in Qatar. Therefore, the purpose of this study is to provide the first checklist of the ants of Qatar, describe Qatari ant fauna by morphological taxonomy approach as well as DNA-based approaches and investigate the ant biodiversity (species richness and relative abundance). Also, describe the spatial variation of Qatari ant fauna in the study area. In addition, distinguish between native and introduced ant species in Qatar. Finally, establish a database of Qatar ant species that can be useful for future taxonomic and ecological studies.

Ant specimens were collected using different methods such as aspirator, direct hand collection, litter sifting and pitfall traps during the period of April 2015 to Apr 2019 from 43 sites around the country, such as QU protected biological field, QU Farm, Aspire Park, AlRawuis, AlDhakhera, Ras-Laffan, AlAmeriya, Dukhan, Banana Island and Rowdat AlFaras. These locations have been selected based on accessibility to represent different habitats such as open deserts, depressions (Rawdat), islands, coastal areas and mangrove forests. In addition to human interference, habitats like gardens, irrigated parks, urban areas and farms to study the human impact.

Ants have been sorted to morphospecies using the available taxonomic keys. Each ant was pinned, identified to possible lower taxonomic level and labelled with basic information such as date and location. The collected ant samples were stored in insect boxes to be used later for display in different events as well as for further investigation.

Specimens examined for this study are deposited in the following institutions: Natural History Museum of Geneva (MHNG), Natural History Museum of Basel (NHMB) and Natural History Museum of Bern (NHMBE) in Switzerland and compared with type and other identified materials at these museums. Most of the specimens were photographed at Natural History Museum of Bern (NHMB) in Switzerland. The newest addition was photographed at Environmental Sciences Centre (ESC) at Qatar University in the Research and Graduate Studies Sector.



Ant traps used in the study

In this PhD study, a total of 6100 ant specimens were collected, examined, pinned and identified to a possible lower taxonomic level. Salma AlHajri identified 44 ant species that are newly recorded for the ant fauna of the State of Qatar, increasing the total number of ant species of Qatar from 6 to 50, including one additional subfamily, and 16 additional genera. Among the 44 ant species, two species were recorded for the first time in the Arabian Peninsula.

Furthermore, the preliminary results showed that invasive species represent most of the total ant specimens caught. Moreover, molecular analysis was used for the first time to confirm the morphological identification of some ant species and the results showed that similarity was above 95%.

Furthermore, GIS based techniques were used to study the spatial distribution of ant species in the country. Most of the collected ant specimens were found in the urban areas, which include irrigated private and public gardens. These urban areas provide artificial habitats with regular watering, which provide ants with favorable shelters especially during the hot, dry summer.

To conclude, this PhD research represents a foundation study of ant fauna for the first time in Qatar. Further research about dynamics of populations of ants and their distribution according to ecological factors are greatly encouraged. Considering the fast development and urbanization of Qatar, which

can increase the spread of introduced ant species, therefore, a comprehensive study should particularly clarify the current situation of introduced species, their expansion and invasiveness in Qatar and their possible negative impact on native fauna in Qatar.



Student Salma Al Hajri, during the microscopic examination of samples

Community Pharmacists in Depression Care: **A Missed Opportunity?**

Rula Shami

Public Health Department, College of Health Sciences - Qatar University

Supervisor: Dr. Mohammed Fasihul Alam,

Assistant Professor of Public Health, College of Health Sciences - Qatar University

Co-supervisor: Dr. Maguy ElHajj,

Associate Dean for Academic Affairs, College of Pharmacy- Qatar University



Student Biography: Rula Shami is a master's student and research assistant at the College of Health Sciences, Public Health Department. She holds a bachelor's degree in pharmacy from Beirut Arab University. The title of her master's thesis was "The Role of Qatar Community Pharmacists in Depression Care: A Survey of Attitudes, Practices and Perceived Barriers".

Depression is a very common type of mental diseases, which constitutes as an important public health issue globally. It is characterized by having feelings of sadness and/or a loss of interest in activities once enjoyed, which lasts for more than two consecutive weeks. Depression can lead to a variety of emotional and physical problems and can decrease a person's ability to function at work and at home. In Qatar, mental health has been gaining more attention by Qatar health authorities in recent years, since research done by Hamad Medical Corporation and Primary Health Care Corporation has shown a high increase in psychiatric illnesses, among which depression was found to be the most prevalent. In Qatar, up to 13.7 % patients visiting primary healthcare settings are diagnosed with depression.

Fortunately, depression is treatable. Guidelines recommend either cognitive behavioral therapy, antidepressant medications or a combination of both according to the duration and severity of depression. Yet more than half of the patients who have depression remain untreated. Such patients tend to avoid seeking treatment due to fear of labelling and stigmatization by their society. Even after receiving diagnoses, more than two thirds of patients who are prescribed antidepressant medications stop their treatment prematurely without consulting their physicians. This consequently leads to the high relapse rates seen in depression. Patients are usually concerned about antidepressants' side effects, and have misconceptions and doubts about treatment efficacy and about the need for taking their medication as prescribed. Research has also made it evident that patients with depression, among all patients with chronic diseases, are highly vulnerable to negative attitudes towards mental health from their community, as well as stigmatizing attitudes from healthcare providers. As a result, it is very common that patients do not do the needed follow up, and fail to get all the needed information about their antidepressant regimens from their prescribing physicians. Studies done in western countries have demonstrated several other reasons for patients' non-compliance to antidepressants like the lack of physicians' time, and lack of the needed mental disease knowledge of some primary healthcare providers.

Qatar National Health Strategy called for efforts to be directed towards better mental healthcare delivery, along with addressing mental health stigma by creating awareness, upscaling the skills of mental health care providers and calling for collaboration among doctors, nurses, clinical pharmacists and other allied healthcare entities in the fight against depression.

There are around 1200 community pharmacists in Qatar. Under the umbrella of the Ministry of



Rula Shami

Public Health, these pharmacists practice in private pharmacy chains and retail pharmacies, spread all over Qatar, in addition to the outpatient pharmacies of healthcare clinics and hospitals. Found within primary health care, community pharmacists can provide both counselling on the disease and its treatment and medication management.

The author of this study states that: "Besides their being medication experts, the special thing about community pharmacists is their high accessibility. Working on improving their knowledge and attitudes will open doors to further supporting patients with depression, especially those who fail to follow up with physicians and fail to seek advice on their treatment regimens at health care centers". In Qatar, no data is available on how community pharmacists can contribute to depression care. Based on literature, community pharmacists may be a great opportunity that is yet to be explored and developed. Although studies in Qatar showed that pharmacists had some level of involvement with managing diabetes, cardiovascular disease, asthma and smoking cessation, we do not know what is the actual situation regarding caring for patients with depression. Are community pharmacists currently contributing to depression care, and what is the extent of this contribution? What are their attitudes towards the depression as a disease, and about patients with depression? What are their perceptions towards the role they can play in depression care? What barriers do they perceive against playing such a role?

In an attempt to answer all those questions, a research study was conducted by Ms. Rula Shami, an MPH student and research assistant at the Department of Public Health of Qatar University. It was done in the context of her MPH thesis, which was supervised by Dr. Mohammad Fasihul Alam (College of Health Sciences, Public Health Department) and co-supervised by Dr. Maguy El Hajj (College of Pharmacy).

Addressing depression as a major public health issue, this was the first study done in Qatar, and probably in the Arab region, that intended to collect the views of a diverse population of community pharmacists practicing with different profiles of private pharmacies in Qatar. Results from this study highlighted that community pharmacists in Qatar had very low levels of involvement with care of depression. Pharmacists that participated in the study reported not to be providing even the basic depression medication services, such as medication counselling and management for patients with depression. They expressed some slightly positive attitude towards depression and patients who suffer depression; however, a more positive attitude towards the role they can play in depression care. Results also identified several barriers addressed by pharmacists like the lack of private counselling area inside the pharmacy, lack of trainings on the depression and its management, lack of access to patient records and lack of patients' insight on major depression and the importance of treatment. Female pharmacists and pharmacists who graduated more than five years from the time of the study were found to be significantly less involved in depression care compared to their counterparts. The study also found that pharmacists' positive attitudes towards depression care in general were significantly associated with higher extents of involvement. Such results are consistent with what was seen from studies done worldwide.

The author of this study conducted a nationwide survey of community pharmacists in Qatar. She was able to adapt a survey instrument based on previously published studies, where different parts of the questionnaire were made applicable to the Qatari context. Faculty members from CHS and CPH of Qatar University reviewed and validated this instrument. Qatar Ministry of Public Health provided an updated

contact database of all registered pharmacists in Qatar. The survey was circulated online to all community pharmacists in the list, during the period between September and December 2019. Response rate was 39%, which is generally good compared to what is found in the literature.

Aligned with Qatar National Health Strategy, the research team believes this study improves the understanding of the current situation regarding pharmacy practice in depression care. It also provides an evidence-base for the Ministry of Public Health of Qatar, as well as for some other health care system in the Arab region. This is particularly important since there is a lack of evidence on local research on the community pharmacy practice in the field of depression, specifically pertaining the private health care sector. In addition, several differences exist in the healthcare system between Qatar and the Western countries, where most of the research on this topic was done.

Pharmacists need to improve their knowledge and attitudes towards depression care. They need to be empowered to play their extended roles by providing them with trainings on mental health in order to improve their knowledge and reduce their levels of stigma. Accordingly, action from policymakers is needed so that the private healthcare sector in Qatar can satisfy the role they intend to play, as set by the Qatar National Health Strategy.

Qatar deserves all the efforts exerted in order to drive forward pharmacy practice in the country, and consequently support delivering the best health care to all people of Qatar.

This project was partially funded by a Qatar University internal grant, and was recently submitted for publication in a peer-reviewed journal.



Cancer Stem Cells and Environmental Pollution: **A New Understanding of Cancer Development**

Dr. Hesham Mohamed Korashy
Professor of Pharmaceutical Sciences,
College of Pharmacy – Qatar University



Cancer is ranked as the second leading cause of death worldwide with around 9.6 million death cases in 2018, where it is assumed that 1 out of 6 deaths is mainly attributed to cancer. Cancer does not directly cause mortality but is mainly accompanied with a series of immense pain, emotional and financial strain, and a very poor quality of life. In females specifically, breast cancer is the most frequently diagnosed tumor, with approximately 2.09 million cases worldwide.

Cancer is a growing problem in Qatar as well, where it accounts for 10% of all deaths in the nation. In Qatar, breast cancer accounts for 39% of all cancers in females, and almost 16.2% of these women are between the ages of 45-49 years old. The Qatar Stepwise Report for Chronic Non-Communicable Diseases has indicated cancer as a major burden to the State of Qatar. With an ageing and growing population, it has been suggested that the incidence of cancer in Qatar will double by 2030 with direct effect on Qatar's economy. Therefore, implementing serious measures for decreasing the incidence and prevalence of cancer and the related mortality in the Qatari population is of a great importance. One of the strategies to reduce the morbidity and mortality due to cancer and hence the cost and burden on the government is to better understand the molecular pathways that play an important role in cancer initiation and progression.

Despite all treatment strategies, including surgery, radiation, and chemotherapy, the poor prognosis and high rate of recurrence and chemoresistance is the most challenging factor of breast cancer patients. One of the recent theories for cancer recurrence and resistance is the development of a regenerative small subpopulation of cancer cells that are resistant to all therapies with self-renewal and infinite proliferation properties, known now as Cancer Stem Cells (CSCs). These cells have been identified and characterized as tumor initiators with metastatic and tumorigenic capacity. CSCs are also characterized by 'stemness' properties such as the ability to form tumor spheroids and mammospheres (Figure 1), high expression of ALDH and multi-drug resistant proteins, and several specific cell surface markers CD44+/CD24-. CSCs are highly tumorigenic, as injection of only 200 CSCs were able to initiate breast cancer lesion in nude mice compared to approximately 20,000 non-CSCs. CSCs have been identified in several types of cancer including breast, ovarian, colorectal, lung, leukemia, and brain. Thus, it is currently accepted that failure to eradicate CSC populations severely limits the ultimate effectiveness of many current cancer therapies, and hence elimination of CSCs is critical to improve treatment outcomes and to reduce recurrence and relapse.

CSCs are known to be tumor-initiating cells and thus are considered as major target for environmental pollutants and chemical carcinogens. Interestingly, it has been reported that early-life exposure to environmental pollutants and carcinogens such as 2,3,7,8-tetrachlorodibenzo-p-dioxin (TCDD) and 7,12-dimethylbenz[a]anthracene (DMBA) induces

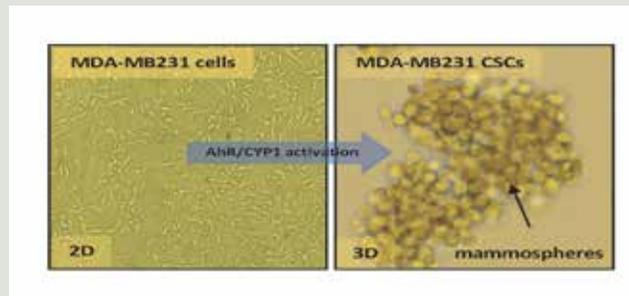


Figure 1. Breast cancer and its CSCs

genetic and epigenetic changes through the activation of a cytosolic receptor known as Aryl Hydrocarbon Receptor (AhR). Upon activation by the environmental pollutants, AhR translocates into the nucleus to heterodimerize with AhR nuclear translocator (ARNT). The AhR-ARNT complex then binds to specific DNA sequence known as xenobiotic responsive element located in the enhancer region of certain genes resulting in the transcriptional induction of cytochrome P450 1A1 (CYP1A1). CYP1A1 is known to play an important role in bioactivating environmental pollutants and procarcinogens into highly reactive metabolites and ultimate carcinogens, which covalently interact with DNA causing cell mutation and tumor initiation (Figure 2).

Dr. Hesham M. Korashy, Professor of Pharmacology and Toxicology, at College of Pharmacy, Qatar University is leading a research group with members namely, Lubna Therachiyil, Shireen Hourani, and Sabah Akhtar to investigate the impact of exposure of environmental toxicants and pollutants on the development of CSCs in both breast and ovarian cancer aiming to understand the mechanism by which CSCs evade the natural death mechanism

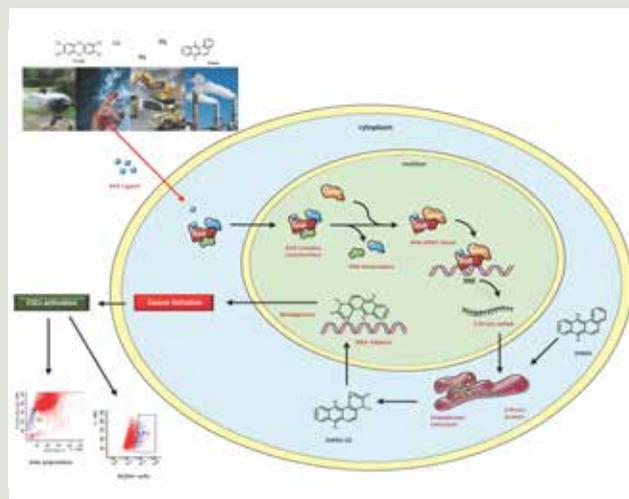


Figure 2. AhR/CYP1A1 pathway (Akhtar et al. 2020)



Dr. Hesham Mohamed Korashy and his research team

and continue to grow and self-renew, hence causing chemoresistance. Dr. Korashy's research group is studying the role and function of AhR/CYP1A1 pathway in CSCs development. Previous study from Dr. Korashy's laboratory published in *Molecular Cancer* (Al-Dhfyhan et al. 2017) has reported that AhR/CYP1A1 constitutive expression is higher in CSCs than in non-CSC differentiating breast cancer cells. Activation of AhR/CYP1A1 through exposure to environmental pollutants significantly increases the CSCs proliferation, self-renewal, and cell surface markers, which were positively correlated with the aggressiveness of the breast cancer stage. The role of environmental pollution on CSCs development was evidenced by the fact that knockdown of the AhR or CYP1A1 inhibited CSCs proliferation and characteristics such as increased ALDH+ and CD44+ cells. This was associated with an increase in the chemosensitivity of CSCs to anticancer agent, such as doxorubicin.

These results encouraged Dr. Korashy and his research team to conduct a proteomic analysis study on breast cancer MCF-7 cells treated with AhR/CYP1A1 inducer, TCDD to determine which proteins are targeted by TCDD. Approximately 1500 different proteins were significantly altered, among which, Bcl-2 protein was the most upregulated with more than 1000-fold, suggesting a possible role for Bcl-2 pathway in CSCs. To further explore the impact of BCL-2, Dr. Korashy has recently

received International Research Collaboration Co-fund (IRCC) grant with Dr. Ayamn El-Kadi at the University of Alberta, Canada and in collaboration with Dr. Shahab Uddin at Hamad Medical Corporation to investigate the involvement of BCL-2 and its interaction with AhR/CYP1A1 in breast and ovarian CSCs.

The main objectives of the project are to investigate the role of Bcl-2, as anti-apoptotic pathway, in breast and ovarian CSCs proliferation, self-renewal and chemoresistance and its crosstalk with AhR/CYP1A1 pathway. In this study, induction of AhR/CYP1A1 in vitro and in vivo breast model increased the expression of BCL-2, which was associated with significant changes in CSCs features. Activation of BCL-2 increased the expression of the pluripotency factors in vitro and in vivo normal and tumor mammary gland tissues. Importantly, blocking of the BCL-2 by venetoclax inhibited the AhR/CYP1A1-mediated activation of CSCs expansion, chemoresistance, tumor formation, and embryonic transformation in mammary epithelial cells.

These findings will provide the scientific community with better understanding of the mechanisms of cancer and CSCs development by increasing our knowledge of the exact role of AhR/CYP1A1 and BCL-2 pathways in breast and ovarian carcinogenesis which will be positively reflected on the cancer health outcomes, treatment success, and discovering novel therapeutic targets.

Female Labor Force Participation in Qatar: **SESRI Study**

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Introduction

Qatar's long-term policy plans outlined in the Qatar National Vision (QNV) 2030 rest on the goal of developing a skilled workforce that is a key driving force in a flourishing, sustainable knowledge-based society. QNV 2030 emphasizes the importance of human capital development and calls for an education system and labor market that provides citizens with the skills required to achieve their educational and career aspirations and to meet the current and future needs of the economy. For this purpose, decision-makers in Qatar have placed the promotion of Female Labor Force Participation (FLFP) high on the policy agenda, and prominent examples of female leaders in Qatar serve as inspiration to others.



Dr. Justin Gengler

Yet, despite some recent progress in boosting the proportion of employed female citizens, Qatari men continue to be employed at nearly twice the rate as women. The most recent Qatar Labor Force Survey reports that 67 percent of men are economically active, compared to only 37 percent of women.⁽¹⁾ Some impediments to female employment may lie in structural factors such as lack of suitable jobs, a mismatch in professional skills and educational qualifications, and other obstacles. However, another type of barrier to FLFP in Qatar relates to lack of societal acceptance of women working outside the home among some individuals and groups in society. Better understanding the degree and substance of this hesitation towards women working in Qatar is an essential task to assessing its effects on FLFP and devising policy approaches to help overcome it.

In 2019, the Social and Economic Survey Research Institute (SESRI) at Qatar University launched a new survey project examining public attitudes towards female labor force participation (FLFP) in Qatar—that is, attitudes towards women working outside the home. A total of 660 Qataris and 889 white-collar expatriates were interviewed for the survey. This article summarizes some of the study’s main findings.⁽²⁾

General Support for FLFP

The survey results reveal that Qatari society is quite supportive of FLFP. Around two thirds of both citizens and expats say that they “strongly” agree with the statement that “women should be able to work outside the home if they wish,” and around 90% agree overall. Both citizens and non-citizens

1 Qatar Planning and Statistics Authority, 2020, Labor Force Sample Survey: Q1 2020.

2 The full policy report, Attitudes towards Female Labor Force Participation in Qatar (June 2020), can be accessed in English and Arabic at [https://sesri.qu.edu.qa/static_file/qu/research/SESRI/documents/Publications/20/Attitudes%20towards%20FLFP_EN_v3.pdf].

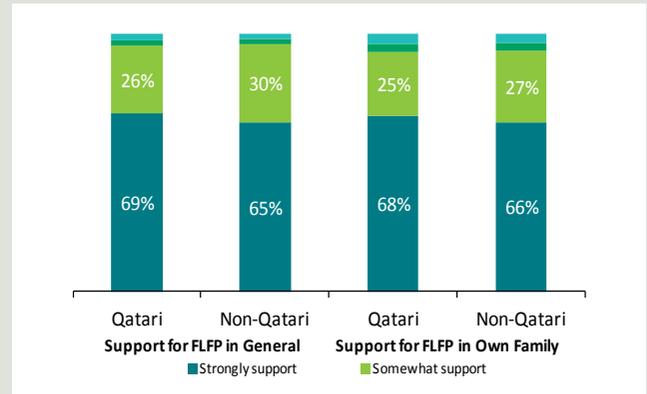


Figure 1. Support for FLFP in General and in Respondent’s Family, by Citizenship

in Qatar are similarly supportive when asked whether they would support their own female family members working outside the home. These findings are depicted in Figure 1.

Meanwhile, support for FLFP in Qatar does differ significantly between men and women. As illustrated in Figure 2, only 55% of surveyed men report strong support for FLFP in general, compared to 82% of women. These male and

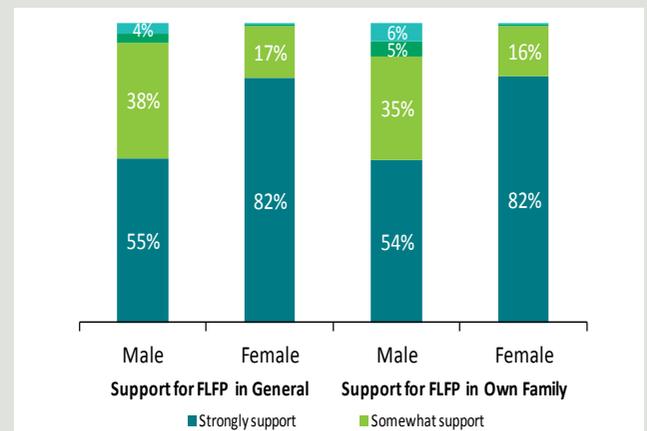


Figure 2. Support for FLFP in General and in Respondent’s Family, by Gender

female proportions are very similar in the case of support for FLFP in one’s own family. Here again, the data show no difference in attitudes between Qatari and non-Qatari respondents. Overall, then, both nationals and non-nationals in Qatar are quite supportive of FLFP; yet, as one might expect, support is substantially higher among women than among men.

Perceived Support for FLFP among Peer Groups

One of the aims of the survey was to examine the ways that people in Qatar seek to coordinate their behaviors surrounding FLFP in light of the perceived attitudes and behaviors of their peers. Research

from other Arab Gulf countries has shown that individuals may adopt more negative orientations regarding women working outside the home if they perceive opposition to FLFP among those who are important to them and who serve as a public opinion reference: for example, friends, family members, a particular age cohort, or ‘society’ in general.

The survey of public attitudes toward FLFP in Qatar therefore included questions that asked respondents to assess the views of three peer groups: their friends, members of their immediate family, and “society in general.” The findings are reported in Figure 3.

Several conclusions stand out. Most importantly, people in Qatar substantially underestimate societal support for women working outside their homes, perceiving friends, family, and society as being more opposed to FLFP than they are in reality. A second notable result is that perceptions of peer orientations differ by gender: males in Qatar are much less likely to view friends (34%), family (48%), or society in general (38%) as being very supportive of FLFP as compared to women (66%, 69%, and 47%, respectively). Third, females in particular perceive a qualitative gap in support between people they know personally – friends and family – and Qatari society in general, whereas males see overall society as being much more closely aligned with the views of their friends and family. Finally, the results depicted in Figure 4 do not differ significantly between Qataris and non-Qataris.

Promoting Work-Family Balance Policies

The survey measured public attitudes toward work-family balance policies, including job training opportunities and benefit availability in terms of flexible work for working mothers. Understanding public attitudes towards these policies can help in explaining female labor force participation outcomes in Qatar. Specifically, respondents were asked about the extent of their agreement with statements

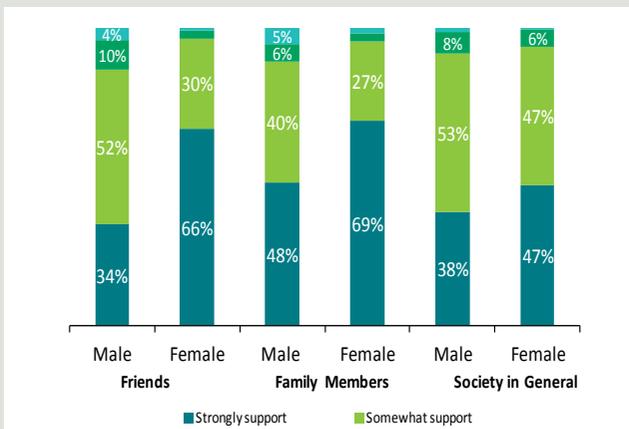


Figure 3. Perceived Support for FLFP among Peer Groups, by Gender

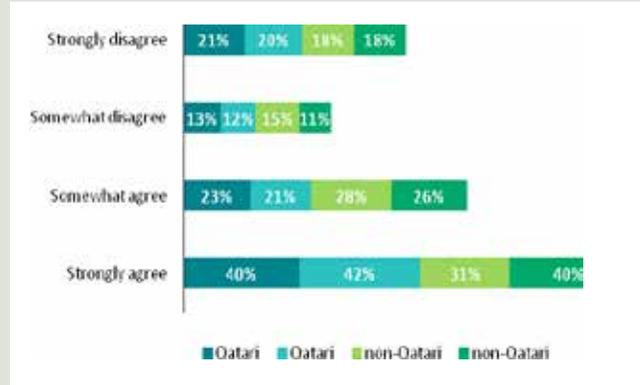


Figure 4. Level of Agreement with the Lack of Adequate Paid Maternity, by Nationality and Gender

regarding the impact of several factors on women’s employment opportunities, such as the availability of adequate paid maternity leave policies, flexible work, and training programs for women in the workforce.

Most respondents strongly agreed with the negatively framed statement that “lack of adequate paid maternity leave forces some working mothers to remain at home at the expense of seeking employment in Qatar.” Specifically, approximately 40% of Qatari male respondents and 42% of Qatari female respondents strongly agreed with this statement, regardless of the industry sector whether it was public or private.

In contrast, many respondents reported that the types of jobs available in the labor market facilitate work-family balance for women. Further, many respondents reported that women are well equipped with essential skills in the workplace.

Policy recommendations

Disseminate accurate information about the high degree of public support for FLFP in Qatar, in order to correct widespread misperceptions of peer attitudes.

Raise awareness among young Qatari females in particular about the high level of societal support for women working outside the home.

Flexible jobs (e.g., part-time, job-sharing, and other options allowing reduced working hours), should be established so that working mothers can simultaneously perform domestic and career roles.

Support for working mothers should be continued by granting paid maternity leave of at least seven months, so that women can build families of any size.

Mentor programs should be offered for working women to help them develop the skills needed to achieve a balance between work and family domains.

COVID-19 Pandemic: Impacts and Future Implications on Commuting Behavior in the State of Qatar

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Qatar Transportation and Traffic Safety
Center, College of Engineering - Qatar University



In December 2019, there was an outbreak of the novel and contagious coronavirus also known as Covid-19 in Wuhan, China. Within the next few months, the virus rapidly spread in many countries around the world. In response to the virus, many countries implemented strict travel restrictions and lockdowns to hold back the spread of Covid-19. The government of Qatar also implemented such restrictions to slow down the spread of Covid-19 in the country.

Figure 1 illustrates the time series of coronavirus cases, deaths, different restrictions imposed by the government and the four phases of lifting the restrictions gradually in the state of Qatar (Ministry of Public Health, 2020). The first case of the virus was identified on February 29, and, as of the 31st of August 2020, more than 119,000 positive cases have been reported of which around 116,000 have recovered while 198 lost their lives. In response to Covid-19, Qatari government imposed different restrictions such as suspension of all public and private schools and universities for all students, restrictions that involved working remotely from home, wearing face masks and use of mobile application “Ehteraz” for location tracking outside home mandatory etc. (Gulf Times, 2020a, 2020b; Hukoomi Qatar e-Government, 2020). It is important to mention that the government of Qatar did not impose a complete lockdown in the country, instead allowing various activities to continue with certain limitations and restrictions

The restrictions imposed by the government and also the subjective fear of being infected with the virus could have strongly affected individuals’ lifestyles including their travel behaviors such as, trips performed for work/education activities,



Dr. Wael Alhajyaseen

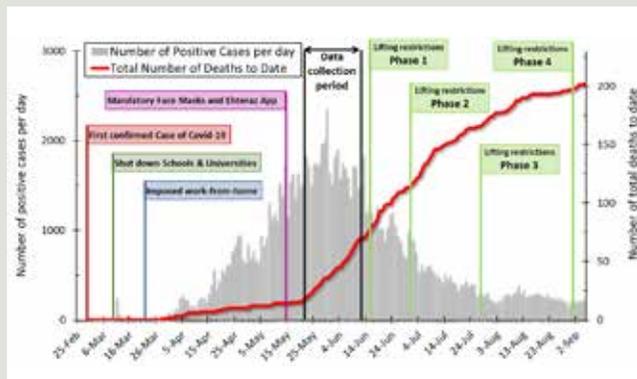


Figure 1. Daily new Covid-19 cases and total deaths to date in the state of Qatar

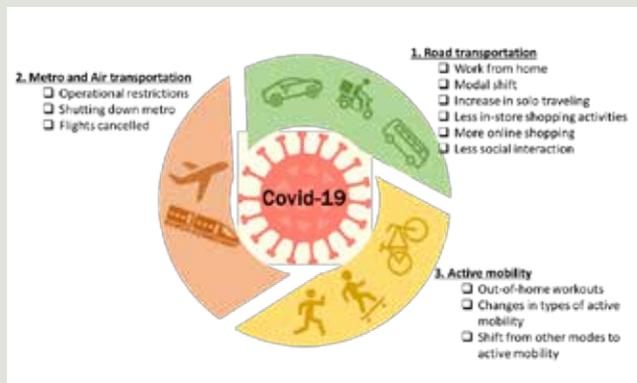


Figure 2. Covid-19 impact on mobility

grocery shopping activities, and out-of-home physical activities etc. In addition, the imposed measures could have altered the ways as to how individuals perform daily activities, causing them to change their transport modes, reducing their social interactions, causing them to opt for online/bulk shopping, and changing their physical activity types, causing them to cancel flights etc. as shown in Figure 2.

The Qatar Transportation and Traffic Safety Center (QTTSC) conducted a questionnaire survey to investigate the impact of Covid-19 on individuals’ travel behavior. The questionnaire survey included questions regarding individuals’ travel activities for work/education, shopping, out-of-home workouts, before and during Covid-19 and the individual preferences and expectations for changes in their daily travel-activity in the future. After removal of the incomplete entries and outliers, the analyses was done including 404 respondents residing in Qatar from whom 63% were males while 36% females.

Figure 3 shows the changes that occurred in individuals’ travel activities performed for work/education, grocery shopping and physical workouts before and during the Covid-19 pandemic. It can be seen from the figure that there were drastic drops for all the activity types. The travel activities for work/education dropped from an average of 4.77

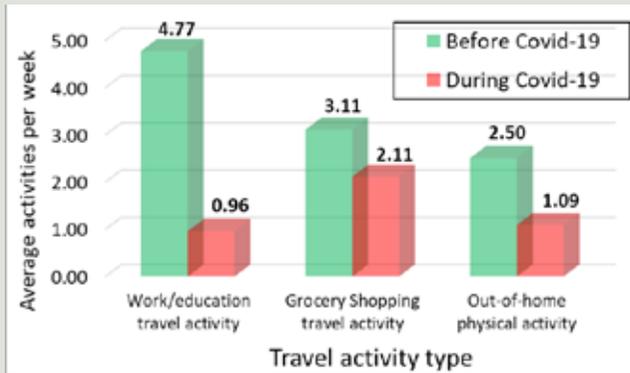


Figure 3. Different travel activities per week before and during Covid-19 pandemic



Figure 4. Percentages of individuals' preferences regarding different activities

activities per week to just 0.96/week. This could be due to the fact that most of the respondents (73.3%) shifted to working from home or online education during the Covid-19 crisis and thus they have no work/education-related travel activities. The results also showed that more than 20% of the respondents who were traveling in a group before the Covid-19 pandemic chose to travel alone during the Covid-19 crisis. Most of them were traveling with family before the Covid-19 outbreak. Albeit, grocery shopping and physical activities were allowed with certain limitations and restrictions in Qatar, these activities also reduced significantly. Regarding the grocery shopping, the activities reduced from 3.11 activities/week before the Covid-19 outbreak to

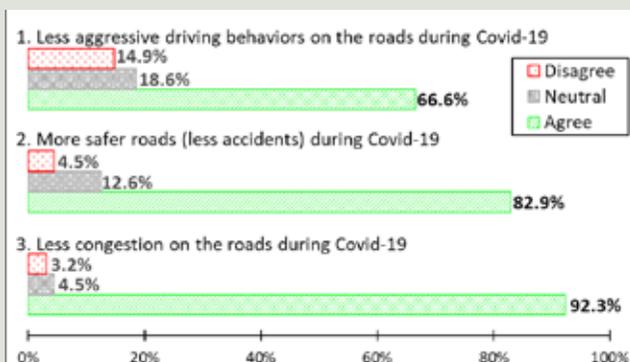


Figure 5. Public perceptions about traffic on the roads during Covid-19

2.11 activities/week during the Covid-19 pandemic. Interestingly, we also observed that 35.1% of the total respondents changed their grocery shopping places due to Covid-19. Some of the reasons stated by the respondents were that the new grocery centers/shops were less crowded, located with shorter distances, imposed hygiene and precautionary measures, and had variety of products available in their shops. Moreover, the out-of-home physical activities were reduced from 2.50 activities/week to just 1.09 activities/week. Interestingly, we reported that respondents who had higher gross incomes and/or were working from home during Covid-19 performed a higher number of physical activities.

The results regarding individual preferences and expectations for changes in their daily travel activities in the future are illustrated in Figure 4. The results revealed that 31% of the total workers in the sample would like to continue working from home in the future. After a closer look, we found that individuals who have experienced working from home during the Covid-19 pandemic, or had no personal car, or possessed lower educational degrees prefer working from home in the future. Furthermore, 65.7% of the total students in the sample had a good experience with online education. Interestingly, female students were more likely to have good experiences with online education compared to their male counterparts. Regarding the grocery shopping, 23.8% and 31.4% of the total respondents prefer to perform online shopping and shopping in bulk, respectively, in the future after the Covid-19 pandemic.

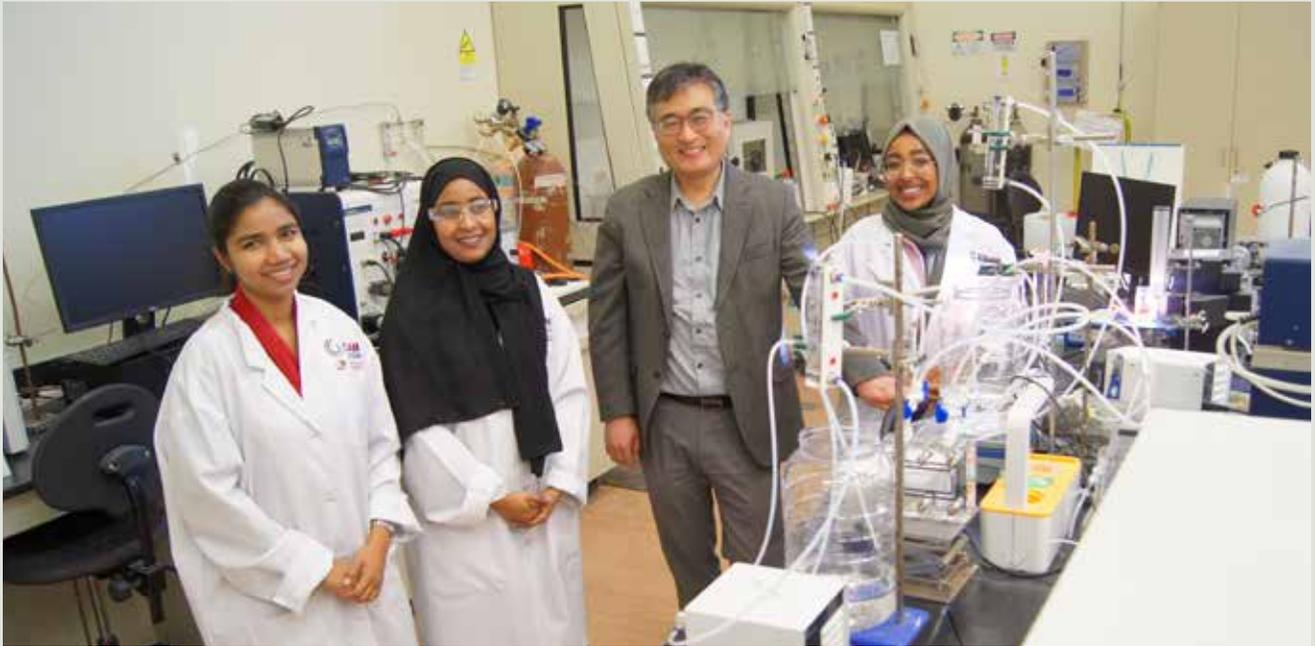
The Covid-19 restrictions allowed people to experience work/education activities remotely from home and to opt for bulk or online grocery shopping, which resulted in less traffic congestion and pollution on the roads. This was also confirmed by our results showing that most of the respondents agreed that the roads were less congested and safer during the Covid-19 pandemic (as shown in Figure 5). Considering the results from our study, policymakers may take this as an opportunity to work with relevant authorities/businesses to structure flexible work/business paradigms in the post-pandemic situations. This could help policymakers to smartly handle the situations in the event of future outbreaks (or the expected second wave of Covid-19) on one hand while reducing the indirect costs for the employers/businesses on the other. Alternatively, this could also reduce the overall trips taken and therefore ease congestion on the roads.

Integrated Smart Solution to Simultaneously Address Water-Energy-Food Nexus Security

Dr. Dong Suk Han

Research Associate Professor, Center for Advanced Materials (CAM) –
Qatar University





Dr. Dong Suk Han and his research team

Food and water make the basis of Maslow's triangle of human needs. In today's time, human life is linked with the extreme use of electronic appliances and devices to assist in all aspects of life. Globally, fossil fuel-based energy consumption heightens the pressure on governments to move towards renewable sources, since the reserves are depleting and heavy usage adds to increased levels of carbon dioxide in the atmosphere, leading to climate change. All governments investigate avenues to secure the water-energy-food trio for their civilians. These three processes are interconnected and work in a nexus. After 5 June 2017, the water-energy-food nexus became the top note priority in Qatar. This is evidenced by the speech of the Emir on 21 July 2017, soon after the blockade, calling upon its residents to thrive on defending the sovereignty and independence of the country.

Qatar's GDP is highly reliant on industrial activities related to trading of natural gas and oil from the reserves. Being true to the famous quote, "everything comes at a cost", the oil mining and treating process generate a considerable amount of environmentally pollutant carbon dioxide and sulfurous gases. Environmental engineers effortlessly work for treating such gasses to yield zero emissions. However, achieving zero-emission by utilizing such gasses in value-added outcomes rather than getting rid of the gas is much preferred and more sustainable.

On the other hand, the sudden blockade severity was high, particularly on food and water security. Previously, Qatar was much dependent upon the food and beverages traded through its open border with Saudi Arabia. Qatar felt the need to

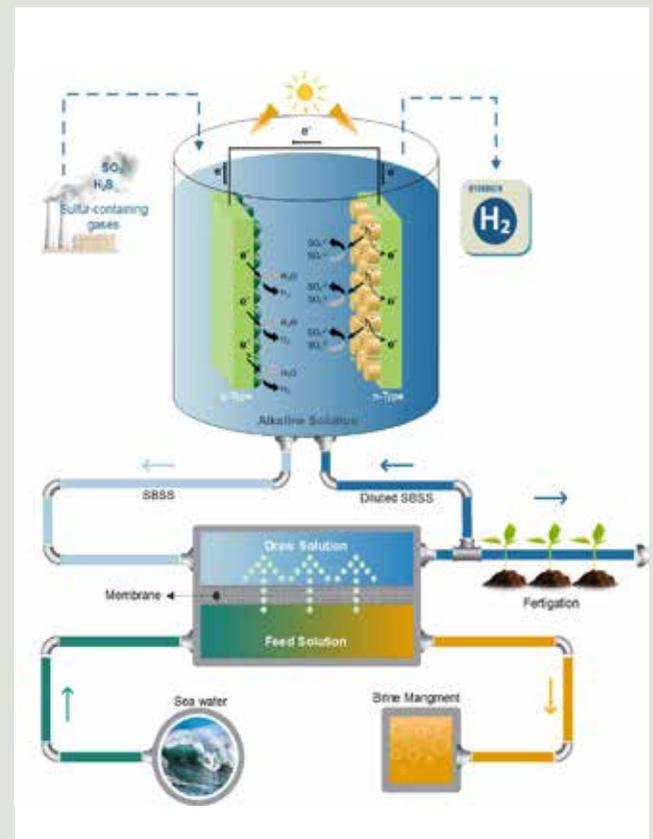


Figure 1. Schematic of the proposed integrated solution

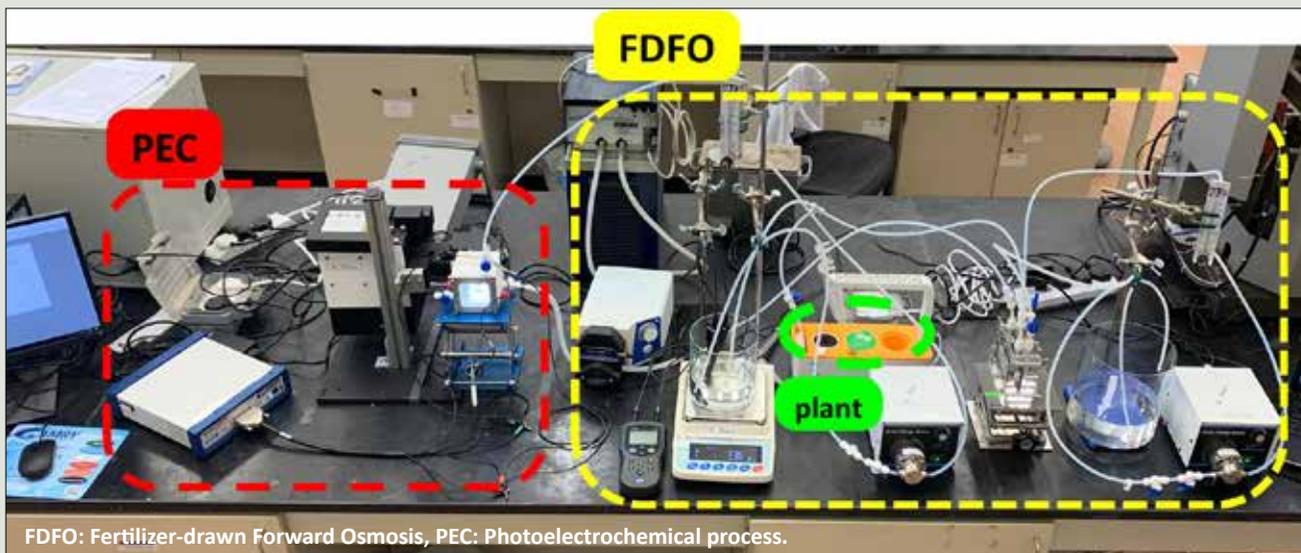


Figure 2. Bench-scale experimental setup at CAM

have its own agricultural, horticultural farms, and cattle farming along with many other novel facilities proposed. Qatar, being a country experiencing scarcity of usable water, generates its clean water by desalination of seawater via energy-intensive reverse osmosis process. Hence, it is imperative to find alternative channels to irrigate the agricultural lands to make the fresh produce economically advantageous/ more viable.

The research proposed an integrated solution to overcome Qatar's challenges, including blockade, climate change, water security, and environmental pollution, and the research has been supported by QNRF (NPRP 9 cycle). The integrated design employs three established processes working in streamline, as shown in the schematic in Figure 1. Initially, sulfurous gasses will be used to produce

sulfur-based seed solutions (SBSS). In the first process, SBSS functions as the electrolyte in the photoelectrochemical system to generate hydrogen gas. Hydrogen gas is emission-free ultimate clean fuel. Qatar, being a peninsula, has ready access to seawater. Therefore, a forward osmosis process to dilute the SBSS utilizing high water flux from seawater is attractive. Forward osmosis, by technique, is less energy consuming and works well with seawater and SBSS as feed and draw solution pair, respectively. In the third process, the nutrient-rich diluted SBSS is used as a fertilizer solution for irrigation purposes.

FDFO: Fertilizer-drawn Forward Osmosis, PEC: Photoelectrochemical process.

The bench-scale system comprising the three components to study the integrated system at CAM is given in Figure 2. Concisely, the system operating at optimum conditions, utilizing reduced-titania nanotube array electrode as the cathode for the photoelectrochemical hydrogen evolution showed excellent hydrogen evolution performance when assessed under chronoamperometric conditions. Similarly, 45% water recovery was attained after 24 h of forward osmosis, with 1 M SBSS solution. Additionally, the ability of SBSS to be used in irrigation evaluated with basil plant growth under controlled conditions showed the rate of plant growth was higher in diluted SBSS fertilizer solution compared to plain water as the fertilizer solution, as shown in Figure 3. As research outcomes, nine research papers were published in reputed scientific journals with total impact factor of 77.74.



Figure 3. Photograph of the basil plant growth after 3 months; (left) diluted SBSS; (right) water only as the fertilizer solution

Critical Approach to Hadeeth and Historical Narratives*



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Preface

One of the values of man rooted in social awareness is that no one may attribute to another what he did not say or do. Moreover, of these values is that no one should accept that another person has said something without proof that the latter has actually said it. Scientific method has established this truth. No one accepts a claim even if it is repeated by many and nothing is true mentally or psychologically except with a proof even if many are those who claim it is true. This is the scientific methodology in what is conveyed and said. Hence, the famous wise saying, “If you claim, provide evidence, if you convey, then authenticate.” A question emerges here: Is there any matter that does not need this methodology? Could any story - whatever is its subject - be accepted or acquire value and credibility without being authentically proven? The topic I would like to discuss in the present paper does not depart from this purpose. I have been asked by some students and fellow history professors with regard to historical narratives - biographical and otherwise. The key and pressing question is, “should the approach of Hadeeth critics be applied to historical narratives? How do we deal with historical narrations being retold in our heritage?”

My plan to reply to that in brief is as follows:

I firstly explain what is meant by historical narrations. These are incidents which had taken place during and not before the Islamic period. Narrations related to the biography of the Prophet Mohammed, the caliphs and the Companions.

Also related to that are incidents that took place in the Umayyads and the Abbasids era, etc. I then clarify the significance of history to Hadeeth scholars and the care they commit to it. I then outline the plan and focus on the setting nine conditions for approving a historical event or narration. A number of examples are also given. Then I explain the stance of Hadeeth scholars in relation to narrations of the Prophet's biography and other historical narrations and related controls. This is followed by a statement of a scientific view of known weak Hadeeths indicating a kind of deficiency in the Prophet (peace be upon him) and how to deal with such Hadeeths. At the end of the article I discuss - inexorably - the approach of the Scholar Ibn Khaldun in criticizing the narrations while discussing his opinion briefly. Before answering this pivotal question, I discuss the importance related to Hadeeth scholars having knowledge of history and its place in Hadeeth studies. It is no secret that knowledge of history is a basic element for Hadeeth scholars. They have studied history since early times and used it in authenticating narrations. Knowledge of history is considered by them as a way to discovering the errors and lies embedded in narrations. They also use history to distinguish between Mawsool (whose chain of narrators are authentic and connected) narrations and those which are Monqati' (interrupted chain of narrators, thus being doubtful) and to identify names (of narrators), and knowing those who might be suspected of unauthenticated narrations, and so on. Imam Sofyan al-Thawri has drawn the general approach for Hadeeth scholars in this statement: "When they lied (i.e. in their narrations), we applied history (to identify those lies)." ["Al-Kefaya Fi 'Ilm Ar-Rewayah", by Al-Khatib Al-Baghdadi, Ahmad Bin Ali, p.119]. Hafis bin Ghaith also said: "If you accuse a scholar (of being a liar in narration), hold him accountable for his years." Explaining that, Al-Khatib Al-Baghdadi commented: "that is, calculate his age and that of the one from whom he got the narration." [ibid., p.120].

I then explained a requirement of Hadeeth criticism among Hadeeth scholars that the critic should be familiar with a set of sciences related to the narrators pertaining to history. This includes: history of narrators: their births, their deaths, their lineage, their schools, knowledge of their journeys and their habitats, dates of mingling of those who mingled with other people, and the names of those who received knowledge from them before or after their mingling. Hadeeth critics are so accurate and precise that they, for example, mention how many times the narrator enters this or that city, and what year he entered for the first time and when was the second, etc. All of this is attested by their books about history and men. This includes: "*Al-Ma'refa wal Tareekh*" of Ya'coub ibn Sofian Al-Fassawy, "*Al-Tabaqat Al-Kubra*" of Ibn Saad, "*Tabaqat*" of Khalifa bin Khayat, "*Al-Tareekh Al-Kabeer*" of Al-bukhari, "*Tareekh Al-Umam Wal Mulook*" of Muhammad bin Jarir Al-Tabari, "*Tareekh Baghdad*" of Al-Khatib Al-Baghdadi, "*Tareekh*" of Ibn Askar, "*Al-Kamil Fel Tareekh*" of Ibn Atheer, "*Tareekh Al-Islam*" of Al-Thahabi, "*Al-Bidaya wal Nihaya*" of Ibnu Katheer, etc. It is no secret that all of these are Hadeeth scholars.

Following that, I clarified and explained the reply. The established original manner with which the incidents of the Seerah (prophet's biography) should be dealt with is that of the known Hadeeth criticism approach. This is with regard to Seerah elements related to Shari'ah and belief. This requires that all narrators are proper, honest men, connected in their chain of narration and their narrations are free of any errors, which may be considered as an abnormality or default. This is the case also in relation to all events related in connection to Shari'ah and belief or related

to narrators or men involved in narrations. The origin of the matter is that those are true and authentic people until the opposite is proven with evidence. Assumptions alone may not defame the status of narrators and men related to narrations. What is otherwise not related to that may be tolerated but with conditions, which are:

- 1 - The narration should not be narrated by a known liar or a Matrook (discarded for being suspected of forgery in his narration);
- 2 - The narration has an authentic isnad (chain of narrators) in prominent authentic books;
- 3 - That it should not be objectionable as far as the meaning is concerned
- 4 - The narration does not include any error which is scientifically proven;
- 5 - The narration should not be told by one or more anonymous persons, especially if the opposite is proven;
- 6 - There should be no explicit violation of history or the established facts of history;
- 7 - There should be no evidence of falsehood in the narration that brings the narrator under suspicion of forgery;
- 8 - The narration is not known except from the account of the opponent, and the narration is contrary to the nature of the one to which it is attributed or his doctrine according to which he lived; and
- 9 - The narration should not be contrary to the established reality.

These issues are then detailed while giving examples of those historical narratives and events in which one of the conditions mentioned is violated, as this is a better method to understand and establish the intended meaning.

Finally, I reached at a conclusion, which I summarize in the following points:

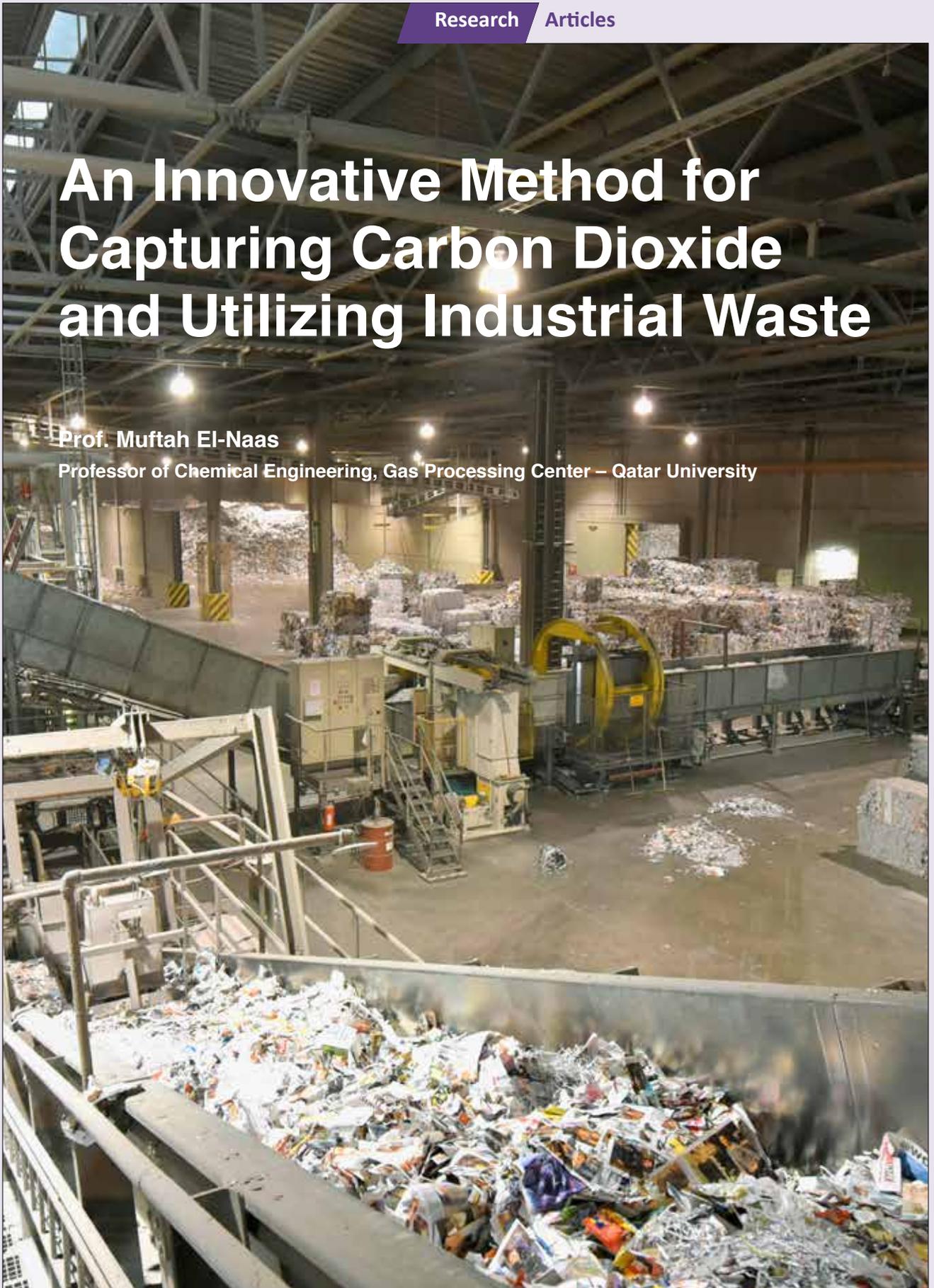
- 1 - The accuracy of the approach taken by Hadeeth scholars in dealing with historical narratives of Seerah and otherwise, and that their approach is objective and rational.
- 2 - The research differentiates between matters that require the use of the Hadeeth critical approach and others that do not.
- 3 - The research provided a cognitive approach in identifying scientific conditions for the acceptance of historical narratives, citing nine conditions with examples from the original sources.
- 4 - The research confirmed that Hadeeth scholars do not rely solely on the criticism process in considering isnad only. Rather, they nevertheless exercise strong criticism of texts and consideration of implications.
- 5 - One of the additions of the research is that it discusses the slightly weak narrations of biography, which point to a kind of deficiency in the Prophet's personality, peace be upon him. This type should not be tolerated, and opposes the rule calling for showing tolerance to the slightly weak Seerah narrations.
- 6 - At the conclusion of the research, the researcher touched on the criticism of the Scholar Ibn Khaldun's critical theory related to Prophet's Hadeeth. The researcher pointed out that the Hadeeth scholars' approach is an integrated and complete one: critique of sanad (chain of narration) and the text, while taking into account conformity in the manner of the Scholar Ibn Khaldun, may Allah have mercy on his soul.

* See Sharjah Journal of Shari'ah and Law Sciences, Volume 14, Issue 2, Rabea Al-Awwal 1439 A.H./December 2017 (www.sharjah.ac.ae/en/Research/spu/JournalSLS)

An Innovative Method for Capturing Carbon Dioxide and Utilizing Industrial Waste

Prof. Muftah El-Naas

Professor of Chemical Engineering, Gas Processing Center – Qatar University



Carbon capture and sequestration (CCS) is an effective approach for mitigating climate change and is considered as a crucial bridging technology, enabling the reduction of carbon dioxide (CO_2) emissions and contributing to limiting the effect of global warming. Mineral carbonation (MC) involves the reaction of CO_2 with active alkaline elements such as calcium and magnesium to produce solid carbonate. It can be utilized to sequester CO_2 from medium-sized emissions point sources. In addition, it is the only recognized form of permanent CO_2 storage with no concerns regarding CO_2 leakage after it has been sequestered.

MC is based on the principles of natural rock weathering, where the CO_2 dissolved in rainwater reacts with alkaline rocks to form carbonate minerals. Since MC is a slow process and takes place over a large time scale, the challenge is to accelerate the carbonation reaction with minimum energy and feedstock consumption.

Usually, Calcium and magnesium silicates are used for MC due to their abundance in nature. However, there are a number of steps that are required to prepare these as feedstock, which include pre-treatments, such as fine grinding, extraction with strong acids and operating at energy-intensive conditions (elevated temperature and pressure). It is worth noting that these pre-treatments and conditions are vital to have adequate carbonation rates. Industrial waste residues emerge as an alternative source of carbonation minerals that have higher reactivity than natural minerals; they are also inexpensive and readily available in proximity to CO_2 emitters. In addition, the environmental



Prof. Muftah El-Naas

stability of the industrial waste is often enhanced by carbonation.

Steel industry contributes approximately 7% of CO_2 emissions worldwide and produces several types of wastes that can be utilized for MC. There are four main types of steelmaking wastes, including blast furnace (BF), basic oxygen furnace (BOF), electric arc furnace (EAF), and ladle furnace (LF). In general, the steel-making waste consists of a consolidated mix of many compounds including calcium, iron, silicon, aluminum, magnesium, and manganese oxides that are present in different phases. On average, manufacturing 1 ton of steel

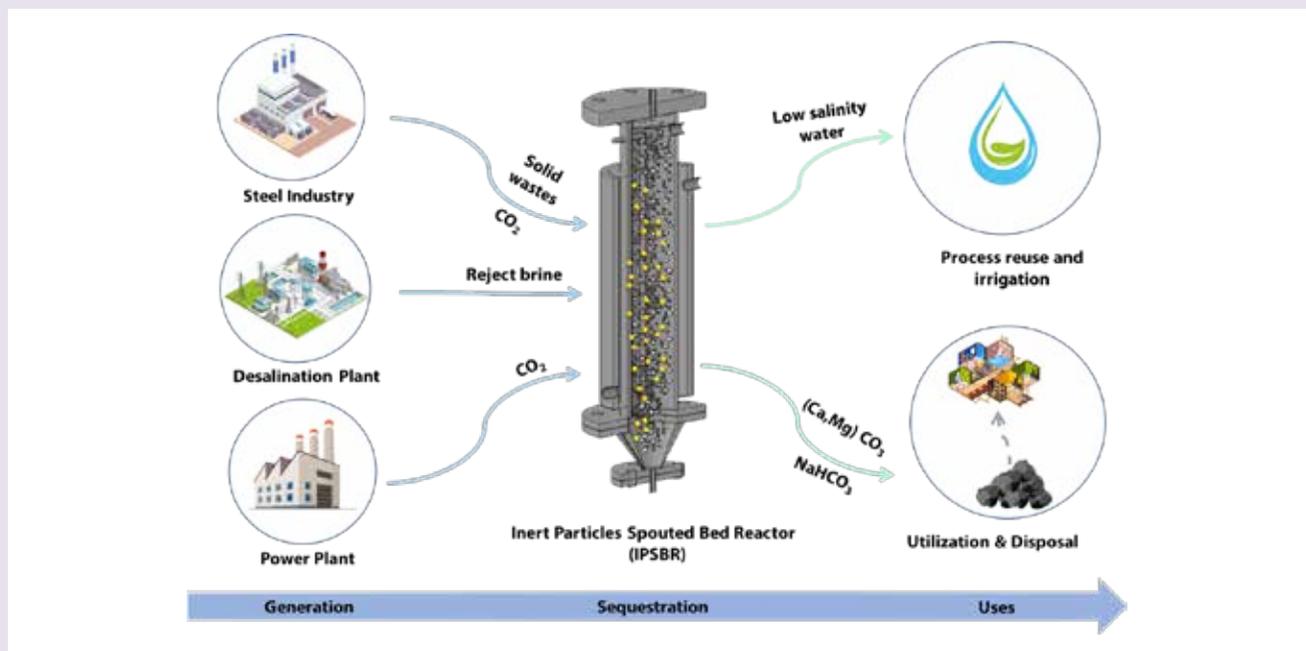


Figure 1. Overview of the mineralization process



Figure 2. Inert particles spouted bed reactor system at Qatar University

produces 2.1 tons of CO₂ and approximately 170 kg of EAF dust and 180 kg of EAF slags. In Qatar, Qatar Steel generated 475,380 tons of EAF and LF slag in 2018.

Desalination plants use large volumes of seawater and discharge concentrated water (reject brine) back to the environment. Brine production is usually equivalent or greater than the total volume of the desalinated water. Brine production in the Middle East and North Africa is estimated to be about 100 million m³/day, accounting for 70.3% of the global brine production. Another major environmental concern of water desalination is attributed to the release of considerable amounts of CO₂, which is mainly due to the use of fossil fuel as the main energy source for desalination plants. CO₂ emission in desalination plants depends on the type of the desalination process, whether it is a pressure or thermal driven desalination. It is estimated that carbon emission of desalination plants is about 76 million tons per year, and it is expected to reach 218 million tons per year in 2040. In addition, reject brine contains sufficient concentrations of magnesium and calcium in the ionic form that can further add to CO₂ capture capacity of the MC process.

Hence, taking a combined approach (Figure 1) of supplying CO₂ from the steel industries or stationary CO₂ point sources (i.e. power and desalination plants) and at the same time stabilizing industrial waste by sequestering carbon dioxide in reject brine can greatly contribute to the total CO₂ emission reduction globally.

In our study conducted in Gas Processing Center at Qatar University, accelerated carbonation of EAF dust in simulated brine was studied in a novel reactor system, especially designed for contacting gases and liquids (Figure 2). The system consists of a vertical vessel with gas and liquid ports and inert particles. The inert particles provide circular motion, which enhance the mixing process and facilitate contact among the three phases (gas, liquid and solids). Experimental design was used to thoroughly classify the effects of the operating parameters (steel dust concentration, CO₂ gas flowrate and inert particles fraction) on the CO₂ uptake. The analysis of the experimental results indicated that the studied factors had a significant impact on CO₂ uptake. At ambient conditions (24 C and 1 atm) and optimum operating parameters, the optimum CO₂ uptake was 0.22 g CO₂/g dust. The best CO₂ uptake performance (0.977 gCO₂/g dust) was achieved at ambient temperature and pressure of 5 bar. Analysis of the solid products revealed that they contain a variety of carbonate products such as calcium and magnesium carbonates. The project addresses three major environmental concerns in Qatar by simultaneously stabilizing steel-making waste, reducing the salinity of the brine and converting CO₂ into useful products. The obtained results are expected to benefit both the steel and desalination industries in Qatar. In addition, it contributes to Qatar's commitment to reduce CO₂ emissions and achieving at least two of the main pillars of the Qatar Vision 2030, namely economic and environmental development.

Serology Profiling of SARS-CoV-2-Infected Patients in Qatar And Performance Evaluation of Different Immunoassays for Diagnosis of COVID-19

Dr. Gheyath K. Nasrallah.

Associate Professor of Biomedical Sciences, College of Health Sciences - Qatar University



In late December 2019, the novel Coronavirus SARS-CoV-2 emerged in Wuhan, China and rapidly spread across the globe resulting in a formidable outbreak. Soon, the World Health Organization (WHO) announced the outbreak as a public health emergency of international concern in January 2020.

In the last 12 months, SARS-CoV-2 has infected more than 67 million people and claimed the lives of over than 1.5 million people. According to the WHO, it is estimated that 50% to 60% of the population needs to be immune to the virus to halt its spread (herd immunity). In Qatar, the first COVID-19 cases were reported on 29 February 2020, and the numbers increased dramatically within few months, therefore, Qatar government took a variety of serious control measures to limit the virus spread. However, the outbreak was associated with high morbidity and mortality worldwide along with loss of productivity, tourism, and trade. In addition to the increased expenses needed for containment and treatment of infected individuals. Thus, Qatar warrants various epidemiological studies and to trace the spread of infection across the country.

In July 2020, Dr. Gheyath Khaled Nasrallah, Associate Professor of Biomedical Sciences, College of Health Sciences, and his research team from the Biomedical Research Center (BRC); consisting of Prof. Asama Al Thani, Director of the Biomedical Research Center, and Dr. Hadi Yassin, Section Head of Research – BRC at Qatar University conducted a three-phase longitudinal epidemiological study in collaboration and under the supervision of the Primary Health Care Corporation (PHCC). The study aimed to estimate the seroprevalence of SARS-CoV-2 among the population in Qatar in relation to age, gender, and nationality. The participants were selected randomly by sending SMS text messages to ~19,000 individuals registered in the PHCC to collect blood and nasopharyngeal swabs to be tested. In the first phase, 2084 participants from different age groups, nationalities, and gender responded to the study. Dr. Gheyath's team performed the serological testing for SARS-CoV-2 IgG and IgM antibodies for these participants using the Mindray CL-900i® automated analyzer. The first phase of the study is completed, and the results showed that ~13.3% of this population were previously infected and developed anti-SARS-CoV- antibodies, and the prevalence of SARS-CoV-2 infection was higher amongst 18-39 years old, with males having higher incidence rate compared to females. In phase 2 of the study (consisted of 986 participants), the

prevalence increased to ~17%. It is currently not known whether having antibodies against SARS-CoV-2 can provide protection against second infection, or how long these antibodies will remain detectable after infection. These questions need further investigations. Thus, Dr. Nasrallah and his team has validated the performance of a new surrogate SAR-CoV-2 virus-neutralizing assay to determine the presence of neutralizing antibodies in infected individuals. This is a promising step for identifying individuals with protective immunity against re-infection and who can serve as donors for plasma exchange therapy for hospitalized COVID-19 patients suffering from critical infection. The team found that at least 90% of the individuals in Qatar who were previously infected with SARS CoV-2, even without developing any symptoms at the time of infection, can also produce protective antibodies i.e., develop protective immunity. Further, establishing this neutralizing assay is very important later on to determine the efficacy of the upcoming vaccine especially when it launches in Qatar.

Serological assays have several advantages over PCR testing; most importantly, serological assays are cheaper and quicker, and many of them available as fully automated. In addition, serological assays are easy to perform and results easy to interpret. They can be complementary to PCR testing in Qatar to improve the diagnostic sensitivity and specificity. Moreover, they indicate the patient immune status and infection stage, and thus, facilitating the selection of the best donor candidates (i.e., with the highest antibody titers) for plasma exchange

In that aspect, Dr. Nasrallah and his team have published two review papers about COVID-19 in very well-known journals. In addition to that, Dr. Gheyath Nasrallah and his team created a collaborative group, including Prof. Laith Abu-Raddad from Weill-Cornell-Qatar, Prof. Patrik Tang from Sidra Medicine, and Dr. Hadi Yassin from Qatar University. The team has done several evaluation studies for different commercial SARS-CoV-2 serological tests including five ELISA kits, two lateral flow assays (rapid tests), and three automated analyzers. Although these serological assays were produced by well-known manufacturers, their diagnostic efficiency has not been clinically evaluated yet. Some of these serological assays are available in various clinical settings in Qatar, including HMC and Sidra, as well as some private clinics and hospitals. However, these assays have not gained the full FDA approval



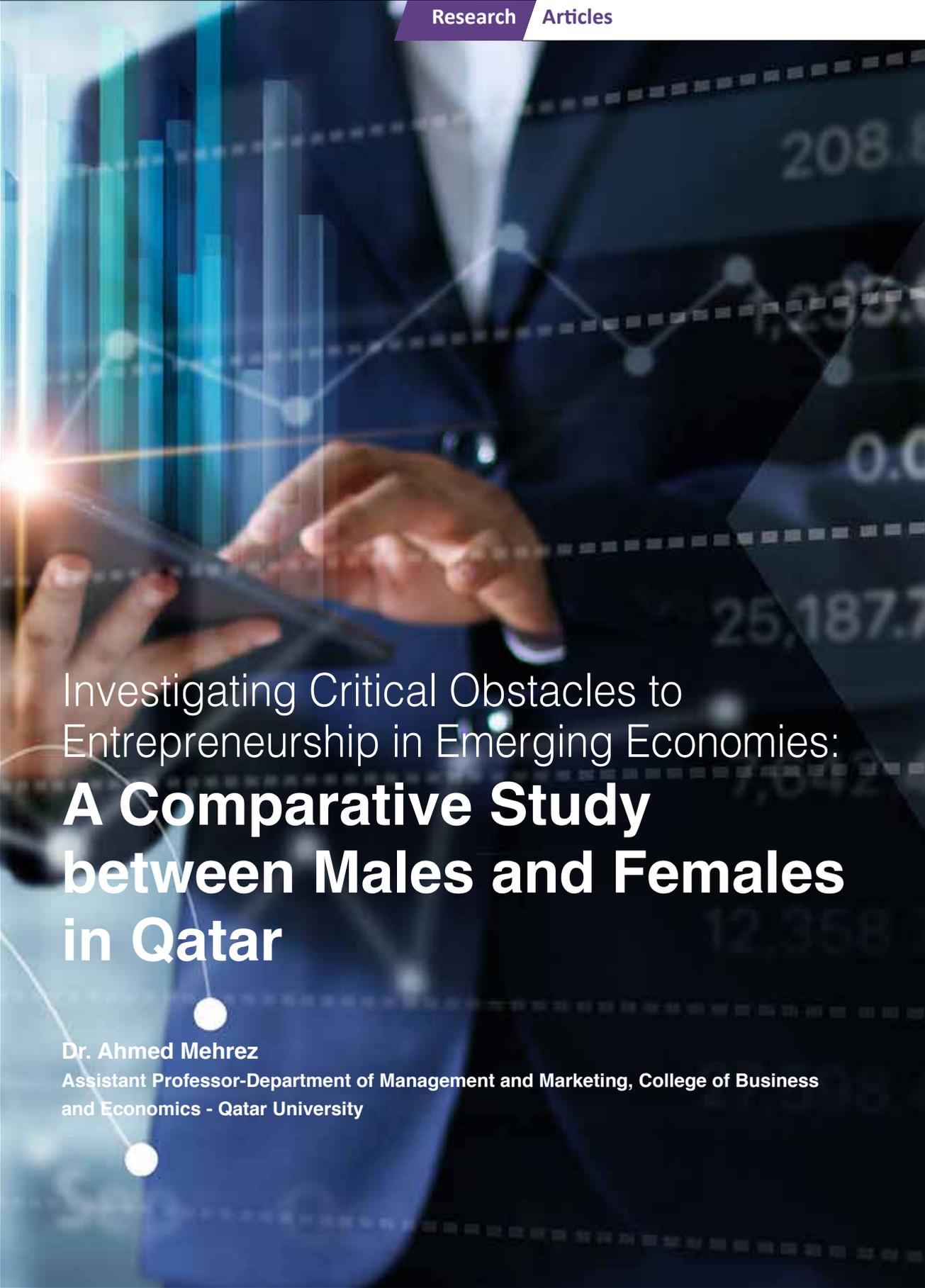
Dr. Gheyath Nasrallah and his research team

yet and neither have been approved by Qatar's MOPH for COVID-19 diagnosis. Therefore, there is an urgent need for evaluating the performance of some of these serological assays to be used in Qatar for the epidemiological and diagnostic investigations of the COVID-19.

The evaluation study has shown very promising results where one of the five evaluated ELISA serological kits (Lionex Diagnostics®-Germany) demonstrated excellent performance with an overall sensitivity of ~90% and a specificity of 99%. The results of the ELISA evaluation study have been recently published in the International Journal of Infectious Diseases Journal. In addition, the three fully automated analyzers showed an outstanding performance in detecting SARS-CoV-2 specific antibodies with a sensitivity of 87.3% for Liaison XL® (Diasorin, Italy), 91% for VIDAS3® (bioMérieux-France), and 93% for and CL-900i® (Mindray, China). The specificity for all analyzers was excellent, ranging from 95%-100%. Additionally, the two evaluated commercial rapid tests (LFAs) for the detection of SARS-CoV-2 antibodies showed a

very good performance with a sensitivity of 86% for AMP® (AMP Diagnostics, England) rapid test and 88% for QuickProfile® (LumiQuick Diagnostics, USA). In addition, the specificity of these two rapid kits was outstanding (98%-100%). Therefore, the team recommended using these tests for the rapid detection of antibodies against SARS-CoV-2 in high incidence areas, where diagnostic lab settings are not available. These rapid tests can be also used in the airport to assist in providing an "immunity passport" for the newcomers and the new arrivals, who are seeking business in Qatar. The idea of "Immunity Passport" is built on the premise that people who have developed adequate antibodies after warding off the virus can neither catch infection again nor spread the disease further.

Finally, the findings of their projects will provide accurate and reliable data that can assist Hamad Medical Corporation (HMC) and the Ministry of Public Health (MOPH) in Qatar to select the appropriate serological tests for mass screening and epidemiological studies of the disease prevalence with minimum false results.



Investigating Critical Obstacles to
Entrepreneurship in Emerging Economies:
**A Comparative Study
between Males and Females
in Qatar**

Dr. Ahmed Mehrez

Assistant Professor-Department of Management and Marketing, College of Business
and Economics - Qatar University

Introduction

Entrepreneurship is becoming a worldwide phenomenon (Clarysse & Moray, 2004). While it is not a panacea for all of the economic challenges facing countries and regions, it has become an essential component for economic growth, job creation and competitiveness (Jodyanne, 2009). A landmark report by the United Nations Development Program in 2004, *Unleashing Entrepreneurship*, demonstrated conclusively the critical role entrepreneurship can play in any economy, especially in emerging economies. In addition, the 2002 Executive Report: *Global Entrepreneurship Monitor* assessed levels of entrepreneurship in over 30 countries. The latent report showed that entrepreneurial activity varied significantly by geographic region, types of business, and entrepreneurial motivation. It was found that “evidence continues to accumulate that the national level of entrepreneurial activity has a statistically significant association with subsequent levels of economic growth.” In other words, promoting entrepreneurial activity and encouraging new business startup and growth promotes the long-term economic development of any country (Cooke et al., 1997).

Qatar is one of Gulf Cooperation Council (GCC) countries' largest entrepreneurship hubs (Wang, 2013). However, authors believe that there are numerous obstacles facing entrepreneurship in peripheral regions such as Qatar (McAdam et al., 2004; Anderson et al., 2001). According to Adair et al. (1995), peripheral regions are characterized by below average living standards due to low innovations in the Small and Medium-sized Enterprises (SME). Small businesses in such regions may experience various diseconomy of scale that leads to an internal extravagant production. Small businesses also find it difficult to distribute its products since they are higher in prices than imported ones (Zhou et al., 2011).

Purpose

Qatar's entrepreneurship sector faces major obstacles that impede its growth prospects. While Qatar has started to focus more on improvement of the entrepreneurial environment through semi-governmental agencies and creation of free economic zones, the overall environment is still riddled with numerous problems that hinder the achievement of this goal. The main objective of this research is to explore the main obstacles facing the entrepreneurship sector in Qatar as an emerging economy and to find out if any differences could be found between males and females in assessing these obstacles.



Dr. Ahmed Mehrez

Design/methodology/approach

In order to achieve the latent objective, a mixed methodology is adopted to collect data. Mixed methodology can be defined as ‘the class of research where the researcher mixes or combines quantitative and qualitative research techniques, methods, approaches, concepts or language into a single study’ (Johnson & Onwuegbuzie, 2004). Therefore, using a mixed methodology can have advantages that: (1) offer a practical and outcome-oriented method of inquiry that is based on action and leads, iteratively, to further action and elimination of doubt; (2) offer a method for selecting methodological mixes that help researchers better answer many of their research questions; (3) represent an expansive and creative form of research; and (4) suggest that researchers take an eclectic approach to method selection in a way that offers the best chance to obtain useful answers.

In order to achieve research objectives, two phases were followed; phase one, semi-structured interviews were used to collect primary data from three main stakeholders namely (regulator, training providers and entrepreneurs). Then in phase two, a designated survey questionnaire was distributed to young entrepreneurs; males and females. The objective is to cover the topic from different dimensions and to highlight differences, if found, between males and females in this perspective.

In phase one, the researcher has asked the interviewee to share only non-disclosed information for the use of the paper. Furthermore, the researcher has paid field visits to the outlet of the startup and

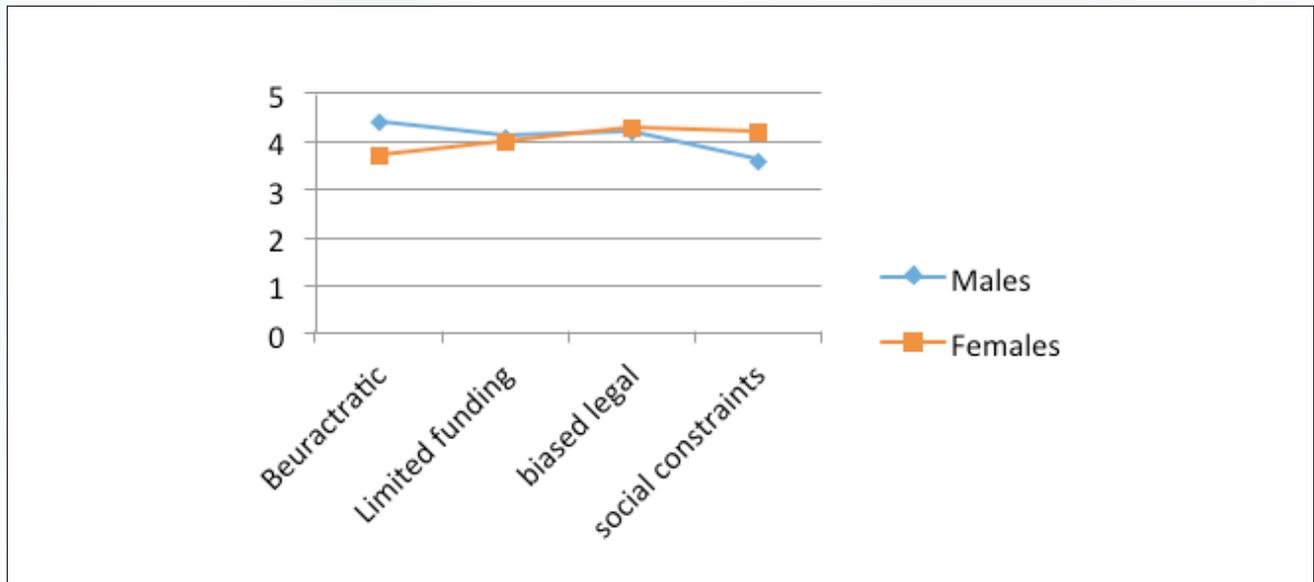


Figure 1. Comparing Males and Females assessed degrees of entrepreneurial obstacles

conducts some observation and learns about the business.

The main questions in these interviews underlined the following enquiries:

- 1- What are the main obstacles of entrepreneurship in Qatar?
- 2 - What are the main forms of support available for entrepreneurs?
- 3 - Is there a one-stop-shop for entrepreneurs to consult and refer to when they need help?
- 4 - Is there an effort to consolidate trainings and services available for entrepreneurs?
- 5 - What are the solutions and recommendations you propose to deal with these obstacles?

In phase two, a designed questionnaire was built based on findings from phase one. A sample of 156 young entrepreneurs from both genders was asked to fill in this paper-based survey where 72 females and 51 males presented valid responses in a total of 123 with a response rate of 78%. This sample was determined out of training programs presented for young entrepreneurs in Bedaya Centre, which is a semi-governmental center designed to present advice and support to young entrepreneurs.

Findings

In phase one of research, 29 interviews have been conducted where different entrepreneurship stakeholders reveal four main obstacles facing Qatari entrepreneurs. These obstacles include: (1) bureaucratic requirements, (2) limited access to funding, (3) restrictive and biased legal conditions,

and (4) social constraints.

In phase two and as previously indicated, a designed survey containing the previously determined obstacles; namely, bureaucratic requirements, limited access to funding, restrictive and biased legal conditions and social and cultural constraints, was distributed to young entrepreneurs from both genders. These young entrepreneurs were asked on a five point Likert scale to assess the previously determined obstacles where 1 is considered the lowest degree of obstacles and 5 is considered as the highest degree. In order to compare results of females than males, an independent t-test was conducted. Figure 1 shows results of exploring the latent inquiry.

In reliance, Figure 1 shows that both males and females believe; in the same degree, that limited funding and biased legal conditions are considered obstacles to young entrepreneurs in Qatar.

However, males believe that bureaucratic requirements do affect entrepreneurs more than females' belief. In the same manner, females believe that social constraints could be a remarkable barrier to entrepreneurship other than males do. Females then may believe that they are still facing difficulties participating in Qatari economic life.

Research limitations/implications

This research is limited to the tools used and to the Qatari community, and would be beneficial in realizing that there are no differences amongst males and females in assessing entrepreneurial obstacles.

The Research Vessel “Janan”

Dr. Jassim Abdulla A Al-Khayat
Manager of Research Vessel, Environmental
Science Center-Qatar University



The research vessel Janan was launched in February 2012, replacing the former research vessel “Mukhtabar Al Bihar” which was the first dedicated research vessel in the region. For three decades (1982-2012), this ship, with its advanced scientific equipment and facilities at that time, contributed to many research studies in the Exclusive Economic Zone of Qatar and the Gulf.



Some photos of Vessel "Janan" research facilities

Qatar University (QU) is one of the leading universities in the region, specializing in marine environmental studies. QU has dedicated much of its attention to environment for the sake of a decent and safe life for humans. For decades, Qatar University has translated this into a tangible reality and a remarkable interest in many research fields related to the environment in general, and the marine environment in particular, where most of the country's life resources (desalination water and fish wealth) and economy (oil and gas) reside.

Realizing this, QU found it necessary to acquire a new research ship for the State of Qatar equipped with highly advanced modern equipment and sophisticated technologies that keep pace with the new era of marine research.

R.V. Janan has latest electronic devices, computers, navigation and communication systems. It is a multi-purpose research vessel, designed as per international standards for marine research. It has the ability to conduct research and surveys in various fields of marine sciences (chemical, physical, biological and geological) and fisheries. In addition to this, Janan is capable of withstanding even the worst weather conditions while operating at the sea.

The world today faces many global challenges because of climate change, food and water security, health, sea level rise and economic development. Such environmental challenges lead to growing need for applied science to help understand and ultimately address these challenges. In the area of marine environment, R.V. Janan provides more oceanographic data to support important scientific research locally, regionally and globally. Qatar University entrusted Environmental Science Center to take-up research studies on weather and air pollution surrounding the marine environment, tidal conditions and water currents, in addition to monitoring the features of the country's territorial waters and the Arabian Gulf.

General features of R.V. Janan

The research ship R.V. Janan ushered in a new era of research and scientific studies in various fields of marine sciences. It attracted many researchers and scholars from the State of Qatar as well as from friendly and international countries to raise the level of studies in environmental sciences and to enhance the scientific and pioneering role of the University and the State.

The most important features of the ship are:

- Its ability to sail in the Arabian Sea, the Sea of Oman and the Arabian Gulf and its ability to complete its research missions non-stop for distances of more than 4,500 km.
- Can cruise with electric hybrid system without relying on the main engines.
- Ability to stabilize vessel position while data and sample collection using Dynamic Position System.
- It contains a system to desalinate seawater and produces about 10,000 liters of fresh water per day, as well as half a ton of grated ice per day.
- It has an environmental friendly sewage biological treatment system.
- It also features the ability to perform hydrographic surveys and seismic surveys of the sea floor, the composition of the sea floor and other matters related to basic geology.
- In the field of studying fisheries, it is characterized by the presence of platforms capable of pulling different types of fishing nets and collecting wandering biological samples such as plankton or benthic and swimming creatures in the water from various depths. In addition, it possesses the availability of sufficient space for laboratories and stores for fishing.
- It has the ability to carry instruments and equipment for studying the atmosphere, climate, air pollution, and other environmental sensors.



Dr. Jassim Abdulla A Al-Khayat

Fields of study and research:

The ship is used in the implementation of many programs, studies and research projects, including:

- 1 - Study of the Qatari marine waters, which includes physical, chemical, biological and geological studies.
- 2 - Training and practical programs for students and technicians.
- 3 - Contributing to supporting student research and postgraduate research.
- 4 - Projects of faculty members and researchers.
- 5 - Participation in studying the waters of the Arabian Gulf and the projects funded by various scientific institutions and government agencies.



Divers' preparations during the "Janan" research trips

Hexoskin is Cost-effective and Lightweight in Measuring Echocardiography during Slow Motion Activities

Dr. Monoem Haddad,
Graduate Faculty with Supervisory Status, Assistant professor –
Physical Education Department, College of Education



A Research team from the College of Education and the College of Arts and Sciences led by Dr. Monoem Haddad from the Physical Education Department conducted a study on the validity and reliability of one of the most lightweight and cost-effective physiological telemetry devices in measuring heart rates. The paper was recently published in “Frontiers in Physiology” (Impact factor = 3.367), which is a leading journal in its field. Frontiers ranks as the fifth most-cited publisher among the 20 largest publishers in 2020. The research was presented at the annual meeting of the American College of Sports Medicine (USA), which is the largest sports medicine and exercise science organization in the world.

Actually, robust, small, and non-obtrusive accurate measurement tracking devices have become increasingly popular in professional sports, recreational exercise, research and clinical setting. Devices that accurately and reliably monitor physiological, metabolic and technical variables during physical activity without being intrusive and without influencing the mechanics of the athletes or patients can be of great benefit by providing the end-user, trainer, clinician, or coach with useful real-time information in real playing situations. However, the plethora of device choices and inflated manufacturer promises makes it hard to select the right measuring and assessment device for the multitude of physical activities, body positions, athlete morphometry, and environmental conditions. Choosing the ideal technology depends on many factors such as cost, mobility, size, and sport specificity. Hence, several observations lend credence to the argument that equipment validity and reliability must be established for each physical activity or sport.

The commercially sold Hexoskin shirt (Carré Technologies Inc., San Francisco, CA) is one of the most lightweight and cost-effective physiological telemetry devices. Hexoskin claims to provide accurate physiological and kinetic data such as heart rate, heart rate variability, breathing rate and breathing volume in real-time via wireless telemetry.



Figure 1. Hexoskin device



Figure 2. Polar Team Pro



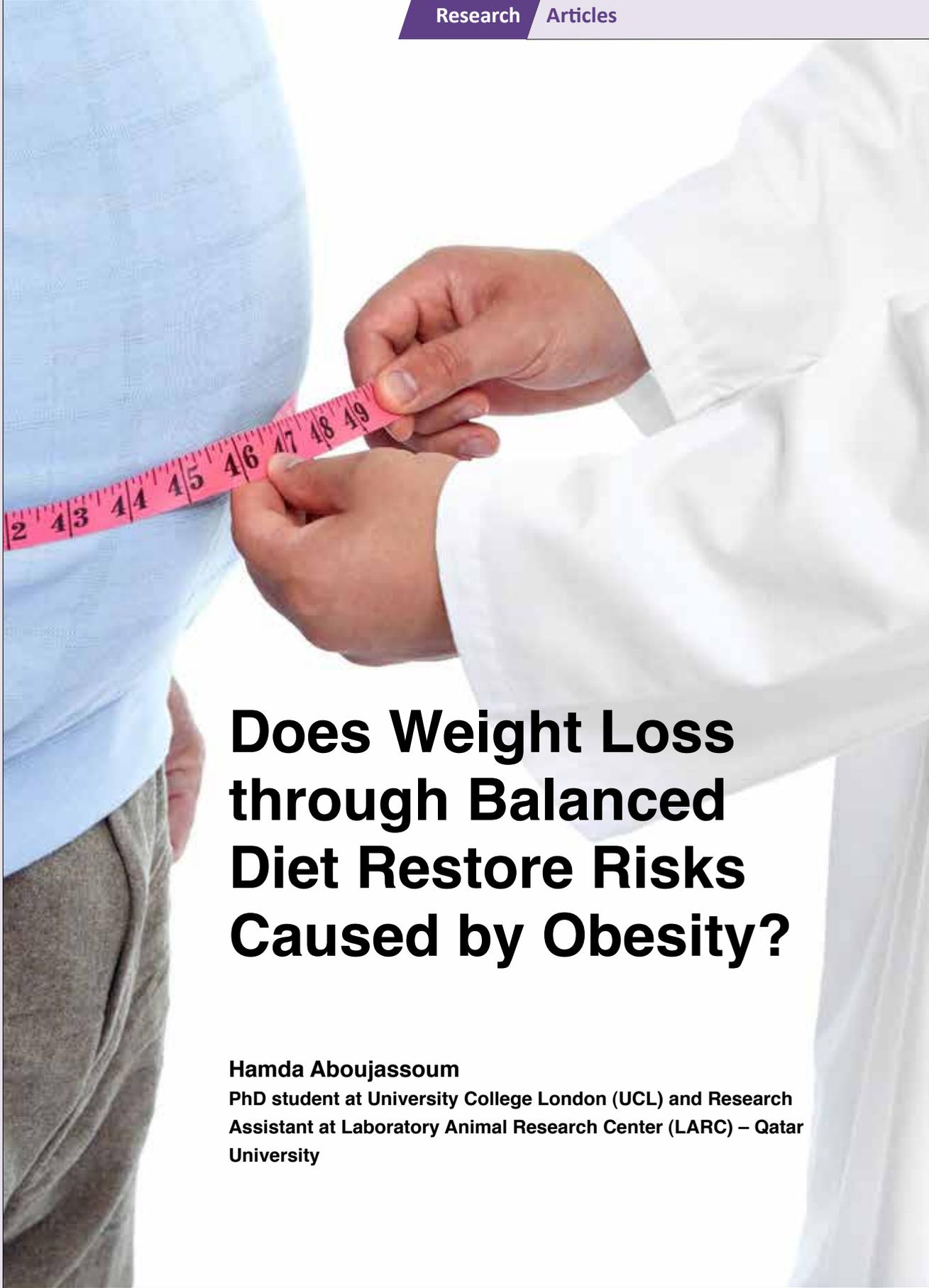
Dr. Monoem Haddad

The device also measures parameters related to physical activity such as exercise intensity, step count, cadence and caloric expenditure by utilizing cardiac and breathing sensors imbedded in the shirt.

Professional handball players among the same team from Qatar Handball League participated in the research by completing two 400 m shuttle run test trials (10 shuttles), each separated by a 48h to 72h recovery period.

Results indicated significant correlations between Hexoskin (Figure 1) and Polar Team Pro system (Figure 2) in pre-exercise HR. In the present study, Hexoskin provided erroneous measurements in many athletes during peak effort. Subsequent correction yielded no consistency between the Polar Team Pro system and Hexoskin in-between the first and the second trial. Hexoskin showed significant reliability in pre-exercise HR. However, Hexoskin picked up excessive artifact during vigorous physical activity in some athletes rendering the results in these cases useless. Nevertheless, in athletes where artifact was not an issue, the intraclass correlation coefficient (ICC) yielded a good estimate.

In conclusion, Hexoskin has good validity and reliability in measuring pre-exercise HR in handball players and hence may be used with high confidence in slow motion activities. However, vigorous physical activity with jarring multidirectional upper body movements posed a challenge for Hexoskin.



Does Weight Loss through Balanced Diet Restore Risks Caused by Obesity?

Hamda Aboujassoum

PhD student at University College London (UCL) and Research Assistant at Laboratory Animal Research Center (LARC) – Qatar University

Obesity rates are increasing rapidly worldwide, which may cause an increase in the rates of obesity-related diseases such as diabetes, heart disease, liver disease and cancer. Diet is one of the most important risk factors for obesity and associated diseases. Although it is difficult to identify the nutrients associated with health consequences, there is general agreement on the essential elements of a poor diet. These elements are characterized by a high intake of processed foods, sweetened foods and beverages, fats (saturated and unsaturated) and salts, versus a lower intake of vegetables, fruits, nuts, and whole grains. In addition to eating large amounts of food, there is a marked decrease in motor activity which induce sedentary lifestyle. Many studies have focused on reducing fat intake, which is considered as one of the main nutrients that causes obesity. Despite this, recent studies have emerged claiming that a diet high in carbohydrates, especially sugar, is a major contributor to weight gain.

Accordingly, Hamda Aboujassoum, a PhD student at the University College London (UCL) and a Research Assistant at the Laboratory Animal Research Center, conducted a research study in collaboration with the Laboratory Animal Research Center and the Anti-Doping Lab Qatar on the effect of high carbohydrate diet on weight gain and associated diseases. In addition, the effect of balanced diet on reversing weight gain and associated diseases.



Hamda Aboujassoum

The study was conducted on rats at the Laboratory Animal Research Center under controlled environmental conditions. The animals were fed a Cafeteria Diet (CAF) characterized by high carbohydrate for a period of time. During this period, body weight, water and food intake were

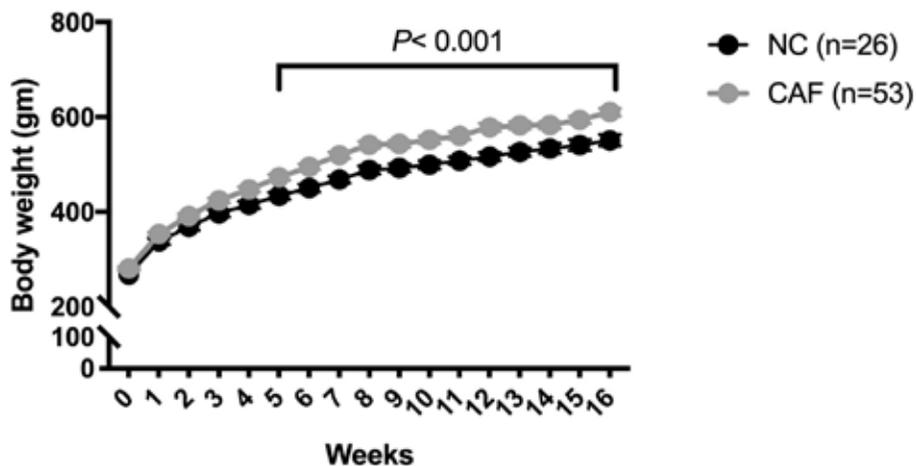


Figure 1. Effect of CAF diet on body weight gain CAF diet significantly induced body weight gain (gray curve) compared to NC-fed rats (black curve), $P < 0.001$. Data expressed as mean \pm SEM

recorded. Once the rats gained 20-30% weight (to be considered as obese), blood samples and liver samples were collected for analysis. Part of these obese rats were shifted to a balanced diet to induce weight loss and were called the reverse group (REV). At the end of the experiment, blood and liver samples were collected for analysis.



Figure 2. External body size of NC and CAF fed rats. Figure showed representative animals from the NC and CAF groups.

The results showed a significant increase in the weight of rats fed with CAF diet compared to rats fed a balanced diet (NC) (Figure 1 & Figure 2). The rats that gained weight also experienced a disturbance in the blood glucose and insulin levels, which increased the risk of diabetes in them. Moreover, the blood analysis results showed an increase in the triglycerides level and liver function enzymes. A histological study was performed on the collected liver samples, and it was found that CAF diet causes fat deposition in the liver leading to fatty liver formation (hepatic steatosis) without signs of inflammation (Figure 3).

Interestingly, when the diet of the obese rats was changed, from a high-carbohydrate diet to a balanced diet, this led to a slight decrease in body weight of 6% within 3 weeks. This modest weight loss resulted in a slight improvement of blood glucose and insulin levels, and a significant improvement in both triglycerides and liver enzymes. The histological study of the liver of this group also showed a significant decrease in fat deposition, which indicates a recovery of fatty liver.

In conclusion, this study successfully developed Diet-Induced Obesity (DIO) model associated with obesity related diseases using a high-carbohydrate diet. This study also indicates that losing weight by adjusting the diet is an important natural treatment to restore health risks associated with obesity.

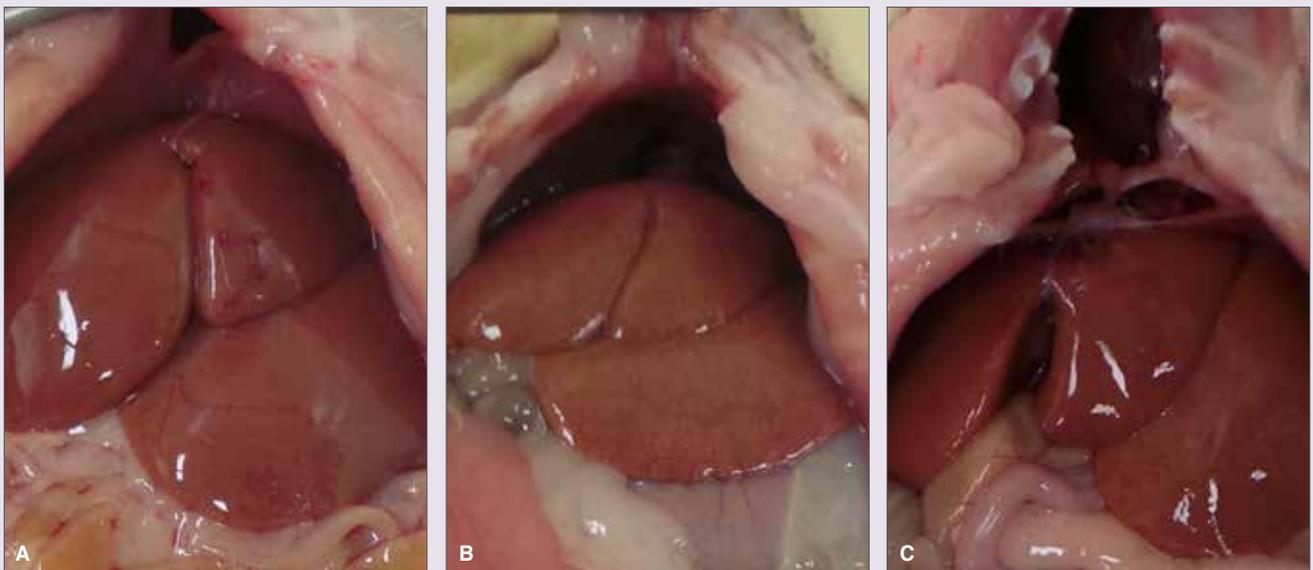


Figure 3. Liver appearance after dissection The liver appeared brown in color with a smooth surface in normal rats (A), discolored appearance was observed in CAF-fed rats (B), discoloration was reduced in REV rat (C), when diet was changed to balanced diet

Decarbonizing Bitcoin:
**Law and Policy Choices for
Reducing the Energy
Consumption of Blockchain
Technologies and Digital
Currencies**

Dr. Jon Mark Truby,
Director of the Center for Law and Development,
College of Law- Qatar University

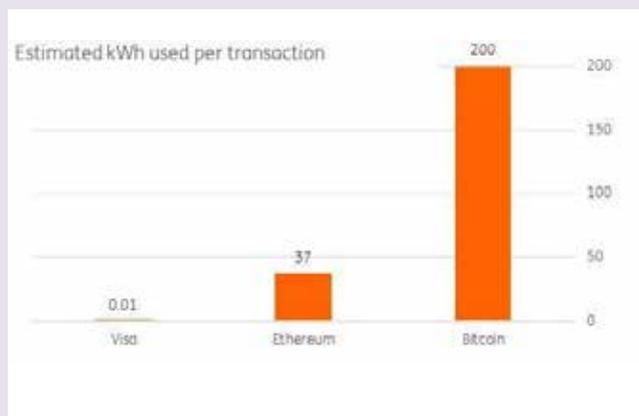


Problem

Research by the Centre for Law and Development at the College of Law, Qatar University, identified a growing environmental threat posed by energy-intensive Bitcoin transactions. The research was conducted and published by Dr. Jon Truby, Associate Professor of Law and Director of the Centre for Law & Development, College of Law, Qatar University

A study published in Energy Research & Social Science (SCOPUS impact factor: 5.75) warns that failure to lower the energy use by Bitcoin and similar Blockchain designs may prevent nations from reaching their climate change mitigation obligations under the Paris Agreement.

For example, Bitcoin's peer-to-peer transaction verification is a polluting process, requiring machine hardware around the world to run at a high rate, 24 hours a day, producing vast amounts of heat and emissions (Figure 1).



(Figure 1): Estimated kWh energy used per transaction of different electronic transactions

T. Brosens, Why Bitcoin Transactions are More Expensive Than You Think, 2017 <https://think.ing.com/opinions/why-bitcoin-transactions-are-more-expensive-than-you-think/>.

As a digital ledger that is accessible to, and trusted by all participants, Blockchain technology decentralizes and transforms the exchange of assets through peer-to-peer verification and payments. Blockchain technology has been advocated as being capable of delivering environmental and social benefits under the UN's Sustainable Development Goals. However, Bitcoin's system has been built in a way that is reminiscent of physical mining of natural resources – costs, efforts rise as the system reaches the ultimate resource limit, and the mining of new resources requires increasing hardware resources, which consume huge amounts of electricity.



Dr. Jon Mark Truby

Importance

Digital currency mining is the first major industry developed from Blockchain, because its transactions alone consume more electricity than entire nations. It needs to be directed towards sustainability, if it is to realize its potential advantages. Many developers have taken no account of the environmental impact of their designs, so we must encourage them to adopt consensus protocols that do not result in high emissions.

Taking no action means society is subsidizing high energy-consuming technology and causing future Blockchain developers to follow the same harmful path. Governments need to de-socialize the environmental costs involved while continuing to encourage progress of this important technology to unlock its potential economic, environmental, and social benefits.

Dr. Truby identified that the processes involved in a single Bitcoin transaction could provide electricity to a British home for a month – with the environmental costs socialized for private benefit. The author explains, "Bitcoin is here to stay, and so, future models must be designed without reliance on energy consumption so disproportionate on their economic or social benefits."

Solutions

Based on this rigorous review and analysis of the technologies, ownership models, and jurisdictional case law and practices, the article recommends an approach that imposes new taxes, charges, or restrictions to reduce demand by users, miners, and miner manufacturers who employ polluting technologies. This analysis also offers incentives that encourage developers to create less energy-intensive/carbon-neutral Blockchain.



The study assesses tax and regulatory options to incentivize the development of “green” blockchain technologies and discourages use of polluting applications.

The study, authored by Jon Truby, PhD, Associate Professor, Director of the Centre for Law & Development, College of Law, Qatar University, evaluates the financial and legal options available to lawmakers to moderate Blockchain-related energy consumption and foster a sustainable and innovative technology sector.

Findings and recommendations

The study evaluates various Blockchain technologies by their carbon footprints and recommends how to tax or restrict Blockchain types at different phases of production and use, to discourage polluting versions and encourage cleaner alternatives. It also analyzes the legal measures that can be introduced to encourage technology innovators to develop low-emission Blockchain designs. The specific recommendations include imposing levies to prevent path-dependent inertia from constraining innovation:

- Registration fees collected by brokers from digital coin buyers.
- “Bitcoin Sin Tax” surcharge on digital currency ownership.

- Green taxes and restrictions on machinery purchases/imports (e.g. Bitcoin mining machines).
- Smart contract transaction charges.

According to Dr. Truby, these findings may lead to new taxes, charges or restrictions, but could also lead to financial rewards for innovators developing carbon-neutral Blockchain.

Achievements

The article was published in Energy Research & Social Science (SCOPUS impact factor: 5.75).

The article has been highly cited and received significant media attention. It was covered by Newsweek, The Independent, and Nature Asia. The author was asked to speak on the subject of Blockchain, climate change and sustainable development at a panel of the United Nations General Assembly.

Links below:

- <https://www.newsweek.com/stop-bitcoin-excessive-energy-consumption-environment-impact-1050798>

- <https://www.independent.co.uk/life-style/gadgets-and-tech/news/bitcoin-cryptocurrency-nature-climate-change-environment-earth-a8607876.html>

- <https://www.natureasia.com/en/nmiddleeast/article/10.1038/nmiddleeast.2018.98>

Story of a Knowledge Platform:



مركز ابن خلدون للعلوم الإنسانية والاجتماعية
Ibn Khaldon Center for Humanities and Social Sciences

Ibn Khaldon Centre for Humanities and Social Sciences is a research institution under the Vice President's Office for Research and Graduate Studies at Qatar University. The Center aims at developing Humanities and Social Sciences, as well as adopting strategic frameworks such as renewal, acculturation, modernization, bridging and regionalization. For further insight on the Center, we met Dr. Nayef Nahar Al-Shamari, Director of Ibn Khaldun for Humanities and Social Sciences Center, to give us more information about the Center.

Q. How would you describe Ibn Khaldon Centre for Humanities and Social Sciences through its vision and mission?

Ibn Khaldoun Centre is an intermediary entity that seeks to establish a sound intellectual framework for the University community in particular and the Qatari and regional community in general. It also endeavors to tackle the cognitive issues and problems facing society and address the drawbacks in the structure of Social Sciences. The Center contributes to the development of scientific research projects among researchers at Qatar University and abroad. The idea behind the Center is to have a scientific entity affiliated with Qatar University that specializes in developing Humanities and Social Sciences and using them in launching academic research that aligns with Qatar University's vision and mission. The Center's work is based on proposing and adopting academic projects in terms of production and management to eventually promote Humanities and Social Sciences in the fashion that links these sciences with needs on the ground and addressing its problems.

Q. What are the strategic frameworks that the Centre adopts in its work?

The core problem in the structure of Humanities and Social Sciences in the humanitarian world is built on the fact that it is not originally generated from the Arab and Islamic cognitive mind. As such, it does not always convey the reality of problems and needs, and secondly, it does not constitute a case of systematic acculturation with the Islamic cognitive system. Hence, the first step to reforming the structure of Humanities and Social Sciences is for the Arab and Muslim researcher to stop thinking "with" a Western mind and "inside" the Western mind. We want the Arab mind to be the tool of exploration and analysis. The resulting outcomes must be the focus of the study and analysis. This type of thinking made knowledge production of the Social Sciences quite isolated from its cultural and social contexts. To achieve this essential first step, all projects, events and scientific production it has been compelling to frame all projects, events and the academic production in accordance with following philosophical frameworks:

Framework One: Renewal-This means that studying the cognitive system that constitutes societal awareness critically to identify non-actors or others who no longer demonstrate positive efficacy towards reality. It also aims to find alternative factors that are more appropriate and in harmony with that reality.

Framework Two: Acculturation-It is the process of cultural interaction between two distinct cultures of constant communication. Structured acculturation requires benefiting from other ideologies to meet the



Dr. Nayef Nahar Al-Shamari, Director of the Ibn Khaldon Center for Humanities & Social Sciences

theoretical and realistic needs of our societies, which leads to the "regionalization" of knowledge. Structured acculturation means to make the theoretical structure of Social Sciences more appropriate to fit the realities on the ground. This is to bridge any gaps, as is often the case, between the reality experienced by a student and the cognitive system studied. Cognitive production in Social Sciences is originally a Western product. Re-applying that production as is without taking into account the region specificities, "regionalization" may create imaginary problems not reflected on the ground.

Framework Three: Realism-Realism here means two things: Understanding reality, which means conducting descriptive studies that explain and clarify the true reality reflected on the ground as the area of study. Without a sound understanding of reality, without a good understanding of the reality, any critical study will not be valid, as assessing a matter is a branch of its perception. The second thing is developing reality: which means establishing evaluation studies that aims to provide solutions for the reality dilemmas and needs.

Framework Four: Bridging-Here bridging means creating a state of methodical interaction between different branches of Humanities and Social Sciences, as well as creating systematic interaction between Social Sciences on the one hand and the Islamic cognitive system on the other. One of the problems that face Humanities and Social Sciences in the Arab world is that each discipline forms an isolated island that is not interacting with the remaining branches.

This isolation has led to absence of the integration factor that guides to maturity in the social structure of knowledge.

Framework Five: Regionalization-It intends to enable Social Sciences to answer the questions of the Arab recipient's reality. Social Sciences, in their theoretical structure, are mostly a direct product of the Western mind and a solution to its problems, thus creating a gap between the theoretical structure received by the Arab researcher and the reality to be analyzed.

Q. Whom does Ibn Khaldon Centre target in the epistemic community?

Ibn Khaldon Centre targets the epistemic community at large, with a focus on the following categories:

- Professors of Social Sciences.
- Graduate students interested in Humanities and Social Sciences.
- Institutions concerned with Humanities and Social Sciences.
- Entrepreneurs of scientific projects related to Humanities and Social Sciences.
- Cultural elites in the Qatari society and Scholars.

What are the most prominent projects for the academic year 2020-2021?

Ibn Khaldon Centre intends to work on several projects for 2020/2021, the most prominently of which is "Culture as a Means to Create Soft Power, the World Cup as a Model." The project aims to reveal the most important religious and social determinants of the normative image of the State of Qatar and the Qatari society. It also aims to uncover the challenges that Qatar faces by studying the perceptions of residents in the State of Qatar towards the Qatari citizen. The second most prominent project that the Center is working on is the "Encyclopedia of Gulf Vocabulary and its Social Implications: A sociological cultural linguistic introduction". This encyclopedia aims to transform the cultural term with Gulf specificity into a scientific approach to address the social phenomenon in the Gulf. Where the term moves from a spontaneous usage to a sociological use that overall provides researchers with scientific tools in addressing the social phenomenon related to that term.

The Center also offered a number of seminars via e-platforms during this year. There are still international and local seminars that the Center intends to hold during the coming period, including conference on the "Philosophy of Higher Education in Light of the Dominance of the Labor Market." The International Symposium titled "Human Rights in Child Literature of the Arab World." An international conference titled the "Future of the Chinese presence in the Islamic World in light of Regional and International Challenges." In addition, an international symposium titled "The Reality

of Anthropology in the Arab world: Outcomes and Prospects." There are many other events, the details of which are available on the Center's web page.

Q. What does the Ibn Khaldon Centre add to Qatar University in its relations with the local and global community?

In consideration of the importance of the Humanities and Social Sciences sector, being the biggest at Qatar University, the University is still in dire need of an academic research entity that handles establishing human and social matters and framing them with scientific frameworks. That entity would also address the phenomena and challenges that society suffers from, and work to bridge the gap between social disciplines among researchers at Qatar University, whether professors or graduate students. The University also needs an entity that works to create scientific ties between in-house researchers having a common discipline with other researchers from outside Qatar University. This entity acts as the interface of cooperation with Qatar University's partner institutions in the social field.

Ibn Khaldon Centre also aims to contribute to renewing Humanities and Social Sciences in order to be able to express the need of Islamic societies instead of expressing the need of Western people. This would not be through partial research, but rather through gathering the efforts of researchers concerned with the issue of renewal and development to be in the form of scientific projects. These projects would be within the framework of a strategic vision to advance Humanities and Social Sciences. The Center further seeks to address the intellectual problems facing Islamic societies in a systematic manner far from politicization and ideology, thus forming a useful material that contributes to solving intellectual problems in the Islamic world.

Q. What are the Center's research outputs?

Ibn Khaldon Centre outputs are diversified among several tracks. There is a track related to scientific publications generated from scientific conferences and seminars. There is another track on scientific research projects. There is also a track for the outputs related to educational curricula at Qatar University. Finally, there is a track related to peer-reviewed scientific journals, which is currently embodied in the biannual Tajseer Magazine.

Q. What are the future goals of the Center?

The Center plans to increase its refereed scientific production of interdisciplinary subjects, which calls for mutually complementary efforts of researchers from different disciplines. The Center will also focus on activities that contribute to spreading awareness across the Qatari society that enables the Center to exercise objective knowledge mediation between the society and its issues.

A portrait of Dr. Abdulaziz Al-Ali, a man with a beard and mustache, wearing a white thobe and ghutra. He is standing in front of a glass display case containing various items, including a framed certificate with the letters 'UTM' visible. The background is slightly blurred, showing an indoor setting.

Interview with a Researcher: **Dr. Abdulaziz Al-Ali**

In this age of technology, digital computers, and the vast space driven by smart tools and devices, we at the Qatar University Research Magazine are pleased to interview the Director of the KINDI Center for Computing Research at the College of Engineering – Qatar University, Dr. Abdulaziz Al-Ali.

Q. Dr. Abdulaziz, would you please introduce yourself and talk about your major?

My name is Abdulaziz Al-Ali, I joined Qatar University as a teaching assistant in 2008 after completing my scholarship from the Ministry of Education and Higher Education and acquiring my bachelor's degree in Computer Engineering from the University of Miami, Florida, USA. Soon after joining Qatar University, I continued my education journey where I was awarded another scholarship by Qatar University to pursue my master's degree (completed in 2011) and eventually my PhD in Machine Learning from the University of Miami in 2016. Upon my return to Qatar, I worked as an Assistant Professor in the Department of Computer Science and Engineering at the College of Engineering. In 2018, I was appointed as Associate Dean for Student Affairs at the College until the end of last semester (Spring 2020). I currently hold the position of Director of the KINDI Center for Computing Research in the College of Engineering. My research interests focus on Machine Learning, Artificial Intelligence, Data Mining, and their applications. At present, I am participating in several research projects, including a project to identify fake news on social media that is a partnership with Al Jazeera Media Channel. Since joining Qatar University, I have been awarded several research grants, including the National Priorities Program for Scientific Research from the Qatar National Research Fund.

Q. What attracted you to study AI?

My background in Computer Engineering enabled me to write programs and develop applications for PCs and smart phones. By the time I completed my bachelor's degree, I had already developed several personal and commercial applications, yet every time I created a new application, I already knew ahead of time how to write the program and even imagined how it will look like. Thus, not only was the process relatively straightforward, I also found the experience repetitive and somewhat lacking challenges. When I was introduced to Machine Learning, I was surprised by how unpredictable the outputs of ML-based programs were, particularly when using the same program to achieve completely different goals. This is what attracted me to learn more about the inner workings of Machine Learning algorithms, and how they seemingly do this "magic".

Q. What is the simplified definition of Machine Learning?

Machine Learning is a sub-discipline under Artificial Intelligence. It is a focus area in data science which studies the ways to automatically learn from previous information to build rules, models, and algorithms that enable us to predict future events or automatically classify new, previously unseen, data.

Q. Does AI have multiple applications? If yes,

what are they and in what areas are they used?

Absolutely, I believe AI and especially Machine Learning is one of the most important discoveries of humankind. The applications of AI exist today in many areas, including medicine, cyber security, and perhaps in most of our daily activities without even noticing it. An example of this is in our smart phones, where algorithms learn from our typing behavior to automatically complete sentences while typing. Similarly, these algorithms are also used to recommend new content to be watched or read, as well as unlock a mobile phone after identifying the fingerprint or photo of the owner. Here, the algorithm identifies a specific person after being photographed several times. Another common application is in search engines, where for example, previously trained models are used to search for images of a specific person, a place, or an object. In the medical field, we have examples where Machine Learning enables us to recognize the type and location of a bone fracture (if any) after checking an X-ray image. This is done after training a learning algorithm using images of previous fractures provided by experts. It is expected that such algorithms will be used in even more domains in the coming years like self-driven vehicles.

Q. As we are witnessing the Covid-19 crisis, how AI serves humanity in facing crises?

AI can effectively contribute to early detection of pandemics and limiting their spread. This is achieved in many ways: such as the rapid analysis of what is published on social media on a large scale to warn the persons concerned about an approaching pandemic, a natural disaster, an economic or political risk. A popular recent application is to predict the number of expected newly infected people over a given period of time. AI algorithms also help in accelerating the discovery of an appropriate vaccine for a given disease. This is accomplished by feeding information about previously developed vaccines in learning algorithms to discover highly effective new ones. AI techniques are also very affective in diagnosis; several recent studies show that AI can effectively be used for rapid identification of Coronavirus infection in an individual by looking at his/her chest X-ray images. Even without having X-ray images some studies aim to predict whether a person is infected or not by looking only at the apparent symptoms. This is done by having a person answer the most indicative questions. In addition to social distancing and traditional methods to limit spread, AI is one of the best approaches to counter pandemics.

Q. Could you please shed light on your research projects in the College of Engineering? What have you published so far?

I am currently working on various multi-disciplinary research projects due to the nature of Machine Learning

being applicable to diverse applications. One of my current research projects is to predict dangerously low levels of blood sugar (hypoglycemia) in diabetes patients without using invasive devices such as implanting sensors under the skin. This research is in collaboration with Weill Cornell Medicine-Qatar. In another project, we use AI to reconstruct old cultural heritage paintings that may have gotten damaged due to time, erosion, or accidents that affected their quality. Another research project I am working on is to determine whether a not-yet-verified rumor currently spreading on Arabic social media is fake or not. This is determined by considering the pattern of fake news content, the nature of users prone to spread such news, and previously observed spreading patterns of fake news. This project is a collaboration with Aljazeera Arabic channel.

Q. What are the scientific aspects of the KINDI Centre for Computing Research and what are the outputs of the research center?

KINDI Center for Computing Research is currently interested in the cyber security field and its applications in various domains such as health care, telemedicine, Internet of Things, methods of searching encrypted data, and identifying risks associated with cloud computing. This is in addition to determining the efficiency, reliability, and privacy of storing data in cloud storage and using Machine Learning to detect cyber attacks. KINDI has successfully published a wealth of scientific articles in reputable journals over the past years. One of the recent contributions is an intrusion detection technique in health care systems by examining health and communication data. Another contribution is about developing cloud computing security analysis tools. The center has also filed for patents for security methods and systems for monitoring communications.

Q. What are your most important future aspirations and the goals you seek to achieve through your management of the KINDI Center for Computing Research?

KINDI is currently considered one of the best centers in Qatar in cyber security. Besides further developments in this important field, we are currently undergoing an expansion in our research scope by adding a new research track about AI algorithms and AI-related applications. This expansion is in response to the rising importance of AI at present day as witnessed by the global race to AI knowledge and expertise. This is also highlighted by the newly launched national strategy for AI in Qatar just last year! Opening this area of research will pave the road to establishing new agreements and relationships with more bodies in Qatar, such as government sectors, and private institutions. I also look forward to collaborate with the Computer Science and Engineering department to create research opportunities for undergraduate students so they can participate in the center's ongoing projects, which should result in a more stimulating environment within the college. Doing so will help prepare students should they decide to follow up their education in master's programs after graduation, as well as equip them with the necessary knowledge to take on future industry challenges. I also aspire to reach the younger generation in high schools by coordinating with the Ministry of Education and Higher Education. We also aim to raise public awareness by conducting public workshops as well as special training courses for target working groups from the government and industry. I am confident that our efforts and tight collaborations with industry and government partners in the country will ultimately lead to the discovery of novel solutions that will keep Qatar smart and safe.





Dr. Esmat Zaidan
 Department of International
 Affairs, College of Arts and
 Sciences
 Qatar University (QU)



Researcher Business Card:

Q. What specialized work duties do you perform at QU?

I am currently an Associate Professor of Urban Planning and Development at the Policy, Planning and Development Program at the International Affairs Department, in addition to being the Department's Academic Coordinator.

Q. Tell us about your most prominent research achievements

I have published more than 32 scientific articles in top-tier (ISI/Scopus indexed) international journals with high impact factors in areas of urban planning and development. In addition, I have contributed to community partnerships, public lectures, events, conferences, MOU for research collaboration with a reputable international academic institution such as Cologne University, Germany. I worked closely with two other colleagues in editing a special issue published by Routledge that focuses on transitions towards sustainable development with a spotlight on Gulf Cooperation Council (GCC) countries, specifically Qatar.

My current NPRP focuses on the transition to zero-carbon communities; it is crucially concerned with the socio-economic and human context of

sustainability in this regard. This project is part of an international collaboration between Qatar University and Rutgers University in the USA, along with local stakeholders from Qatar General Electricity and Water Corporation (Kahramaa), and the Ministry of Transportation and Communications. The scope of the work includes modeling and prototyping of control technologies, and understanding of the social and urban impacts of connected building prosumers.

Q. What are your research targets for the Academic year 2020-2021?

My main research target is to publish the findings of this project that will enable new urban models in international scientific journals with very high impact factor. Currently, I am in the last stages of the preparation of a research paper in collaboration with colleagues from Rutgers University. We are aiming to submit the work in Nature journal, dedicated to smart sustainability planning and smart energy. We will also submit results of our research to several stakeholders and relevant authorities, including the Ministry of Municipality and Environment, the Ministry of Transport and Communications and Kahramaa, as our findings propose recommendations for planning officials, municipalities and policy makers in Qatar.

Q. What is the significance of the policy, planning and development discipline of the International Affairs Department in professional life?

Public policies and strategic development planning stand as one of the most important disciplines associated with Qatar's transformation towards a sustainable future. The State is in a significant need for local graduates who possess strong leadership skills and competencies to develop policies in order to design, plan and implement strategies that will help the State achieve the Qatar National Vision 2030. Graduates of the program currently hold important positions in various ministries responsible for developing strategies and analyzing economic, social, educational, health, environmental and other policies.

Q. In your opinion, how does the scientific research journey affect a student's life?

Student participation in research activities enriches their experiences through their involvement in various research activities that will enhance their knowledge and provide them with advanced research-based learning and practice in line with Qatar University Strategy 2018-2022. Focus will be specifically on developing the practical and applied aspect of education that allows students to be more qualified and skilled as they enter the workplace or graduate studies.

Interview with an Author
“Physician’s Civil Liability in
Qatari and Comparative
Law” Book:

Abdulla Hamad Al-Khalidi



For easier and better communication and exchange of information all over the world, researchers and students tend to record research findings in books and publications. Through these pages, we interview an author whose name has been associated with Qatar University, both academically and professionally. He is legal researcher, Abdulla Hamad Al-Khalidi, a PhD candidate at College of Law.

Q. To start with, Abdulla, how do you introduce yourself to the University community?

I would like to introduce myself as a legal researcher who had passion for his major at the undergraduate level. Since then, I started to admire law and everything that it represents. Hence, I decided to go all the way and start a career in this field. I successfully completed my master's degree at the College of Law, Qatar University. I was in the first batch of master's degree graduates. This stage refined my research skills by the grace of Allah and the efforts of my professors and supervisors and I came out as a real researcher. At the master's level, I published an article in an international peer-reviewed journal. I was then selected by the College of Law to be among the first batch in the PhD Program to continue seeking knowledge and learning more fair values and valuable principles, to give back to my dear country.

Q. Why did you choose to publish your master's thesis as a book?

First of all, Law is one of the comprehensive specialties that covers all facets of life. It addresses the rules that regulate the inter-relations between community members, relations between countries in their sovereign capacity, and the inter-relations between individuals and states as well. Law contains other disciplines of which Civil Law is the broadest as part of the Private Law. I have chosen the physician's civil liability as it encompasses a lot of rules and regulations and addresses a wide range of law cases. In other words, doctor's civil liability is an issue that is evolving continuously with the development in the profession. Every day, new discoveries are being made, and new medicines and vaccines are created to cope with the development in diseases. Not only that, but another key reason for choosing this subject is its direct link to the community, its interests and public health, which is one of the key pillars of Qatar National Vision (QNV) 2030. Virtually, no society is free from the issues raised due to medical errors. So, through this study, I tried to shed light on the solutions provided by other regional and international legal systems, in order to choose the most effective, appropriate and recent ones for the benefit of our Qatari community.

I did not want the master's thesis to remain locked in drawers, but rather I wanted to place it at the hand of the community to optimally benefit from, and that its conclusions and recommendations to be taken into account.

Q. The title of your book is “Physician’s Civil Liability in Qatari and Comparative Law”, could



you please explain this title in a simple way so all readers would understand it?

The medical profession is one of the noblest professions that humanity cannot do without. Yet doctor's mistakes are not tolerated as they involve physical harm, and the right to bodily integrity is one of the fundamental human rights protected by legislations and laws.

The book contains my master's thesis that I have successfully completed on 11th September, 2017 at Qatar University. It was revised to be published as a book that would benefit Qatari community. The key research problem in this book aims to answer the question on the need for a private law to regulate civil liability of physicians in the State of Qatar, which is currently governed by the general rules in civil law. The book reviews an array of solutions adopted by several legal systems and comparative case law in their attempt to overcome the problems associated with this liability.

Q. What are the subjects that you discussed in your book?

The first chapter addresses the most significant element of medical liability, which is medical error. The first topic touches on the characteristics and features that distinguish the medical error from other civil liabilities while the second topic explains

how to prove the medical error and the problems that emerge from that.

The second chapter deals with compensation for the doctor's civil liability. The estimation of compensation is discussed in the first topic while insurance against liability for medical errors is discussed in the second topic.

Q. As we all know, not every researcher is an author, so what are the skills that a researcher must possess to be able to write a book? And how did you refine your writing skills?

It is true that every researcher is not an author and not every author is a researcher. Literary publications may not always be scientific researches and a research may not be converted into a book. Many papers are published as scientific articles in peer-reviewed journals and other magazines. On the other hand, writing scientific books is usually more comprehensive and general, and topics of books are more relevant to the community. In my opinion, every researcher can publish and authorize, but not every research topic is suitable for publishing as a book. This is because there are several formal and substantive criteria that must be taken into consideration, for example the size of the research and what impact it will have on the community as a whole or on a specific community, such as the community of doctors as the case is in my book.

As for the second part of the question, actually I owe all my success to Qatar University from which I got my undergraduate and graduate degrees. As such, I decided to pursue knowledge at this University, not at any other university, through the new PhD Program offered by the College of Law. There are two good reasons why I took this decision: first, is the high standards of teaching and second is the top-level teaching staff who, after Allah's grace, contributed to seasoning my research skills. This is evident in my ability to publish a peer-reviewed paper in the Asian Business Lawyers Journal issued by Korea University, when I was still a master's student,. This proved to me that I have become a true researcher, by the grace of Allah, and then with the relentless efforts that I have made and the support still provided to me by Qatar University.

Q. In this era, what reaches the reader faster: paper based publishing or online publishing?

Currently, we live in a digital age with its research resources becoming unlimited. Naturally, electronic publishing is faster to spread and reach readership. Nevertheless, there is a significantly large segment including myself, who still prefer relying on paper books in their research and reading. Hence, I

preferred to publish my research on paper.

Q. What are the lessons you learnt from your experience with researchers and professors of the College of Law?

Undoubtedly, I learnt a lot through my study at the College in the undergraduate and graduate levels and, now, in the PhD. This is in addition to the availability of several opportunities to participate in local and international seminars and conferences held in the State of Qatar and submit scientific papers in some of them. I benefited first from the connections I made. Then, I benefited from the knowledge, approaches in research and teaching, analytical depth, comparative skills and professional skills such as writing notes and drafting contracts as well as other valuable skills in the academic and professional fields.

Q. What works do you intend to publish after the PhD?

Legal areas and topics with poor publications in Qatari law are plenty. However, by virtue of my specialization in civil law and civil liability in particular, I intend to continue in this field and write on civil liability in the medical profession and for medical obligations in particular. This is due to its continuous development, expanding scope, variety of subjects and specializations. There are also many areas that still need further research and study, including liability of contractors and subcontractors, lease agreements, profession responsibilities, etc.





Graduate Student Business Card:

Q. Please introduce yourself to the University community.

My name is Mohammed Abdul-Rahim Al-Janahi, a young man aspiring to have an impact on the field of education, and to provide modern and specialized content, that keeps pace with the younger generation of students.

Q. Tell us about your educational and professional journey.

I graduated from the QU's College of Engineering in 2010 with a major in Mechanical Engineering. I worked as a Mechanical Engineer at Maersk Oil, Qatar. In 2014, I was assigned by the "Teach for Qatar" to work as a preparatory level math teacher at Al-Ahnaf Bin Qais Independent Preparatory School for boys. During my two years as a Math teacher, I was able to bring Mathematics closer to the students through using unique methods that are desirable to them by portraying lessons as real-world scenes and then showing them to the students in classrooms. I have also participated in enriching the Arabic digital content on YouTube, by creating an educational channel, which is specialized in simplifying educational subjects for students to which I upload the educational

production. I followed a unique style, writing lessons in the form of eloquent poems and recording them as high-quality songs. These chants spread across the Arab world and received the acceptability of the public concerned with the field of education, whether students or teachers.

After the completion of my two years of assignment in 2017, I changed my career from working in the energy and industry sector, to working full-time in the education sector. I am currently serving as a head of Community outreach, at the "Teach for Qatar" organization. I completed my postgraduate academic career, and obtained in 2020 an M.A. in Curricula, Teaching and Assessment Methods from Qatar University, College of Education.

What motivated you to choose your M.A. Major?

I believe that the professional side can never be unique unless it is enriched by academic education. Thus, after I changed my career from working in the energy and industry sector, to the education sector, I realized that there is a necessity to support my new career with graduate studies. I consulted a number of my friends, who are working in the academic field, about the best program to join. They all recommended the quality of the graduate programs offered by Qatar University. After further inquiries and consulting specialists in the field of education, it was clear that an M.A. in Curricula, Teaching and Assessment Methods is the most appropriate choice that will enable me to fulfill my current requirements and future ambitions.

Based on your academic and practical experiences, what message would you like to give to Qatar University students?

I advise them to mark this period of their lives with much seriousness and positivity. They should go through university life to the fullest, and engage with all its aspects. University stage is one of the pivotal milestones that man goes through. It refines his personality and thought.

Difficulties undoubtedly exist in every path that leads to each purposeful issue. A discerning person is the one who realizes that facing many obstacles renders an all-round person. Reaching the goal at the end is guaranteed if a person perseveres and avoids stopping and regressing.

Q. What are Mohamed Al-Janahi's future goals?

I have a big dream. I wish to employ the potentials of creative persons to contribute to the field of education. I have begun the steps on the path leading to this goal and hope that I would reach it one day.

Interview with a Student:

Manal Musallam Othman

Qatar University (QU) is proud of the graduate studies community, as it is full of productive minds and promising competencies. To learn about the distinguished academic and research environment that QU provides to its students, and to discover individual student capabilities, in this edition, we interview Manal Othman, PhD student at the Medical Sciences – Community and Population Health program at the College of Medicine.



Manal Musallam Othman

Q. Tell us about yourself Manal and, why did you choose the Medical Sciences – Community and Population Health Program?

My name is Manal Musallam Othman, Director of Diabetes Education at Hamad Medical Corporation (HMC); member of the Scientific Committee of Qatar Diabetes Association; and Co- Chair for National Patient Empowerment Committee of the National Diabetes Strategy. I have an MSc in Public Health, Medical Education major, from the Faculty of Medicine at Jordan University of Science and Technology. I published four papers from my master's thesis Addressing Metabolic Syndrome and Risk Factors among Qatari Population. I am currently a third-year PhD student, majoring in Medical Sciences at the Department of Community and Population Health at College of Medicine, QU.

I have chosen this Major as I believe that the development of prevention methods against chronic diseases and their complications, by using advanced educational programs that are appropriate to patient's need and culture, play a significant role in improving the quality of medical care and reducing the burden on healthcare systems, and hence improving community health.

Moreover, being the Director of Diabetes Patient Education at the National Diabetes Center in Hamad Medical Corporation , and based on my practical experience in this area, I am aware of the need to providing such educational programs for patients who suffer from chronic diseases, especially diabetes; so that they would be trained based on structured curriculum on self-management for these diseases based on evidence-based scientific foundations that are proven by research studies dedicated for this group in the Qatari society and Arab region.

Q. What is the concept of your research project? What addition will it make to Qatari Society?

The concept of the project is to create a training and educational program dedicated to diabetes patients that is based on the latest methods of self-care and coping with the disease to ensure improving blood sugar levels and reducing diabetes complications.

This will be the first research-based training program that is prepared on proven modern scientific foundations in order to be appropriate with Qatari traditions and customs.

Q. What will Manal add to the research studies in her scientific discipline?

The idea of this training program is based on a research methodology that ensures reviewing all similar training programs directed to people with diabetes all around the world and discovering the weaknesses and strengths of these programs. This shall contribute to the development of a training program that encourages self-management for diabetes and reduces the burden on health facilities. The idea of the project came to my mind from a scientific article that featured the top ten research topics in relation to diabetes, published in The Lancet, the scientific journal.

Q. How do you picture yourself in the future to stand out in your field?

This study will help in implementing a scientific evidence-based training program with an innovative methodology that is appropriate to the Qatari environment. This will enhance the role of the health educator with regards to the healthcare provided to people with diabetes.

Q. How do you evaluate the availability of scientific references and sources that serve scientific research in QU library?

QU library is abound with the most recent scientific journals and magazines, and the library provides continuous training courses on how to use such references in relation to these magazines.

Q. How would you describe the relationship between professors and students in the College of Medicine?

It is a relationship that is based on mutual respect and cooperation in order to reach set objectives.

Q. Through your experience, how can we at QU attract more students?

The availability of graduate programs, especially the College of Medicine's PhD program gives QU a momentous academic head start in the region as a whole.

Q. How does QU prepare graduate students to be future leaders and scientists?

QU encourages graduate students and provides them with opportunities to attend scientific conferences that season their scientific experience by meeting scientists and scientific research leaders worldwide. The University also nominates graduate students to participate as keynote speakers in conferences and scientific seminars, representing QU. Also, they nominate students to be members in different committees related to their expertise.

Q. Do you have any innovative suggestions or ideas that you think might add to the Medical Sciences - Community and Population Health Program in particular and College of Medicine in general?

There should be cooperation with various government authorities and other universities to exchange experiences and develop research-based health systems that are suitable for Arab societies to realize Qatar Vision 2030 in accordance with the sustainable development strategy.

Empower Generation Consortium (EGC) Launches Intensive Training Course for High School Qatari Students

Empower Generation Consortium prepared an intensive training course for high school Qatari students from 28th July to 27th August 2020. It is the first of its kind in the State of Qatar in terms of Coronavirus pandemic and medical virology-centered content. The content has been carefully designed on a specialized, scientific and academic level. During this training, 24 students from various schools have participated, including: Michael E. DeBakey for Health Professions-Qatar, Hayat Universal School, Doha Academy, Al Arqam Academy, Al Bayan Secondary School, Rabaa Al Adawiya Secondary School, Rawda Bint Mohammed Secondary School, Qatar Academy as well as Al Iman Secondary School.

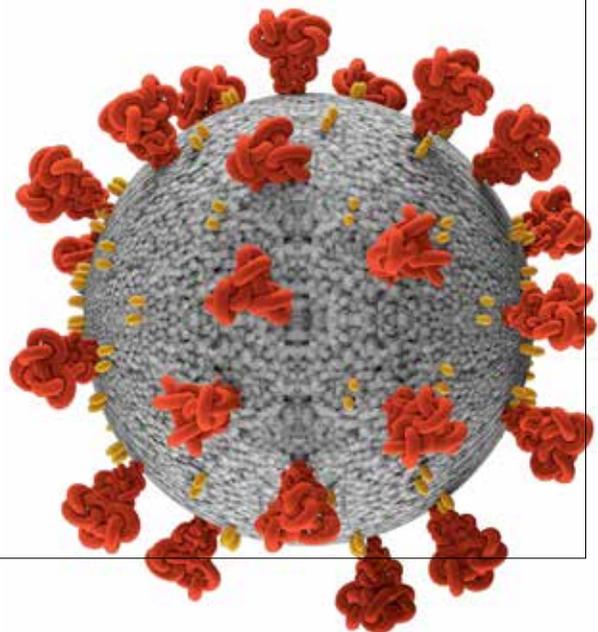
The training took place under the directions of the EGC founder, Prof. Asmaa Al Thani, Professor of Virology, Director of the Biomedical Research Center and Associate Vice President for Medical and Health Sciences for Strategic Development. Praising the role of the EGC, she said, "This Consortium is a model for high impact collaborative projects. It exhibits the active role of the QU in evaluating the Qatari labor market's occupational demands and developing appropriate solutions for capacity shortage and empowering this promising Qatari generation. Achieving a national base for human resources in healthcare and life sciences is one of the items listed in the QNV 2030 regarding human development. It is one of the key priorities that we are working hard to achieve.

"We seek to bring research centers and healthcare institutions to the world class standards by investing in the national capabilities of this generation," added Al Thani.

Furthermore, the content of this training was designed under the supervision of Dr. Hadi Yassin, Associate Professor and Researcher in Virology and Head of Research Projects at the Biomedical Research Center. He indicated, "this specialized course is designed for young Qataris in high school who are interested in virology and scientific research. A mini-research group was

formed from the participating students of both genders. In this group, ten scientific articles and a presentation were given. The presentation was given by students as one of the specialized training completion requirement."

It is worth mention that the intensive training course focused on medical virology and epidemiology. It comprised of several sessions, mainly: principles of medical virology that was delivered by trainer Aisha Fakhro, and another one on Covid-19 pandemic delivered by two trainers Najla Al Thani and Al-Reem Johar. Furthermore, a specialized training in genomics and personalized medicine in viral diseases was delivered by trainer, Al-Bandari Al-Khater. It is also worth mentioning that all the trainers are from Barzan Holdings team who are spending a research-training period at the BRC on Infectious Diseases and Molecular Biology. It must be reiterated that the EGC won the "Oscar of Education on the Middle-East", the World's Gold for the Discipline of "Life Sciences" and the World's Silver for the "Best University-Employer Partnership in 2019" at QS- Reimagine Education conference in London, UK. This conference rewards the most successful educational and innovative projects that enhance learning outcomes and employability globally.



Research and Graduate Studies Sector Holds Summer Research Internship 2020 Online due to the Pandemic

In the face of all the challenges and hardships, Research and Graduate Studies Sector at QU managed to overcome the impact inflicted by the Coronavirus pandemic on several research areas. One of the successes of the Sector was holding the Summer Research Internship 2020 during June 7 and July 2, 2020. Summer Research Internship 2020 covered 22 different research topics focused on the national needs and priorities and in line with the Qatar University Strategy (2018-2022). This internship program carried a view to support the state's orientation towards a knowledge-based economy, to train students on the methods & techniques used in scientific research, and to enhance the research skills of the participants in fulfillment of QNV 2030. Summer Research Internship 2020 trained 150 students from different colleges at Qatar University.

Six research centers, namely; Centre for Advanced Materials (CAM), Biomedical Research Centre (BRC), Laboratory Animal Research Centre (LARC), Social and Economic Survey Research Institute (SESRI), Central Laboratories Unit (CLU), and Qatar University-Young Scientists Centre (YSC), hosted this year's Summer Research Internship.

Moderators from research centers played a key role in the success of this program. On a related note, Dr. Peter Kasak, Technical Manager at CAM stated that "the Summer Internship involved students from different disciplines and provided them the opportunity for their involvement in current projects in the Center." Dr. Layla Al-Mansoori, Senior Research Assistant at BRC said, "Our remote teaching experiment proved that students are capable of adaptation and absorption of the information provided during the internship.





They had an opportunity for smooth and effective interaction with each other and with the moderators.” Mr. Imran Khan, the Senior Microbiologist at LARC, pointed out that “students were trained on all the ISO accredited techniques. He also touched on how students enhanced their technical skills through this training”.

To celebrate this achievement and to honour the participated students, the Research and Graduate Studies Sector organised a ceremony on 14 October 2020, via WebEx. Prof. Mariam Ali Al-Maadeed, Vice President for Research and Graduate Studies at QU, Dr. Nasser Al-Nuaimi, Director CAM, Dr. Asmaa Al Thani, Director BRC, Dr. Hamda Al-Naemi, Director LARC, Dr. Hassan Al-Sayed, Director SESRI, Dr. Mohammed Al-Safran, Head of CLU, Dr. Noora Al Thani, Director YSC, QU Faculty Members, Researchers, and QU Students attended the ceremony.

During the ceremony, Prof. Mariam Ali Al-Maadeed emphasized the importance of such initiatives; stressing, “Qatar University’s Summer Research Internship is a qualitative addition towards the productive use of the summer vacation. The research internship is a valuable program for students to be acquainted with research methodologies and tools and to gain practical skills and experiences in their areas of interest. The virtual training experience of the Summer Research Internship 2020 is greatly

successful, thanks to the responsiveness of Qatar University students and the efficiency and dedication of the University’s academic, technical and administrative cadres”. Furthermore, Dr. Abdelbary Elhissi, Acting Director of Research Planning and Development Office, indicated that the Summer Research Internship 2020 via online platforms was proof that the University had an amazing breakthrough along the path of digitization, serving not only traditional education, but also making the best use of the non-conventional opportunities for research training.

Directors of the research centers speaking during the ceremony commended the efforts of mentors and students and their ability to overcome the obstacles of the lack of physical attendance in laboratories, despite the internship being fully based on only audio and images.

During the ceremony, internship completion certificates were distributed to the successful participants. One student from each center; namely: Aldana Al-Yafei from CAM, Amine Zaidi from BRC, Sofia Basha from SESRI, Taher Al-Otaibi from CLU, Dhabya Al-Khater from LARC and Aisha Al-Thani from YSC, shared their research experience and its significance in shaping their future research. Summer Research Internship 2020 motivated students to utilize the summer vacation for acquiring new research skills with the help of the researchers and program officials.

Qatar University Annual Research Forum and Exhibition 2020: **Hybrid Event**



QU President Dr. Hassan bin Rashid Al Derham, HE. Dr. Ibrahim Saleh Al-Nuaimi, Undersecretary of the Ministry of Education and Higher Education, and some attendees of the QU Annual Research and Exhibition Forum 2020.

In the spirit of Qatar University's (QU) vision, which aims to regionally get QU the recognition for its distinctive excellence in education and research as well as for being the preferred choice for students and researchers alike, the Office of Vice President for Research and Graduate Studies is keen to keep the Annual Research Forum and Exhibition event as one of its focal points of interest. This significant event is a meeting hub for researchers, academics and students of QU's ten colleges, research centers and institutes, along with partners and stakeholders. Therefore, out of the ordinary and in compliance with current circumstances arising from Covid-19 pandemic, the Annual Research Forum and Exhibition (QUARFE) 2020 was held remotely on WebEx on Wednesday, the 28th of October 2020, under the slogan "University of the Future: Re-imagining Research and Higher Education." The Forum was well-attended by QU's faculty and students in addition to all the actors involved.

This year, the Forum discussed the "University of the Future" theme. It is a term indicating a university, which plays a role in sustainable development and contributes to building the State's knowledge economy despite current regional and international challenges. The Forum derives its importance from being an opportunity for a distinctive group of elite researchers and academics from QU and elsewhere, to meet and discuss ongoing research projects, address issues and challenges and apply for new programs. Moreover, the Forum offers opportunities for cooperation, innovations and other projects related to QU Scientific Research Roadmap 2018-2020, Qatar National Research Strategy and Qatar National Vision 2030. More than 300 research posters in various fields were presented during the Forum in cooperation with local and international partners.

The Research Forum and Exhibition program started this year with a welcome speech, given by His Excellency Dr. Hassan Rashid Al-Derham, President of Qatar University, in which he welcomed guests and participants, stating, "we are pleased to hold this Forum in the campus of Qatar University, despite the emergency circumstances and are proud of the participation of an elite group of intellectuals and researchers, who engage in deep discussions and sessions where they exchange opinions and ideas about the prospects of upcoming transformations and future innovations conducted in our university, emphasizing the critical need for developing global cooperation in the field of research to achieve a successful transformation and effectively address expected and growing needs of society."

The Forum program also included an opening speech given by His Excellency Dr. Ibrahim bin Saleh Al



Honoring the graduate studies award winners

Nuaimi, Undersecretary of the Ministry of Education and Higher Education, in which he highlighted the significance of organizing this Forum in light of the great and rapid changes all over the world, which necessitate the need to adopt innovative programs and policies to keep pace with these transformations and strengthen the role of universities in addressing upcoming challenges.

Additionally, the Forum helped in the promotion of global communication, enhancement of a dialogue among various civilizations to achieve human progress, enabling researchers to interact with global issues and contributing to bridging the gap between higher education outcomes and labor market needs, as well as strengthening the relationship between universities in their capacities as think tanks and research beacons so that proposals and ideas can be connected with developmental requirements of the public and private sectors.

Furthermore, H.E. stressed the importance of the Forum as a progressive step towards fostering efforts directed at building a knowledge based society and economy under the wise leadership of His Highness the Emir of the State of Qatar. This guidance has enabled Qatar to become an oasis of science and knowledge, and an incubator for the largest leading research and academic institutions in the world. It helped the country to play its role in producing, establishing and employing knowledge in its sustainable development related to economy, society, environment and culture.

During the event, Professor Mariam Al-Maadeed, Vice President for Research and Graduate Studies, gave a presentation entitled "An Overview of Research and Graduate Activities", in which she stated: "Excellence in research and education is one of the main objectives of QU's vision, mission and new strategic plan dedicated to the transition from reform to transformation. Therefore, the Office for

Research and Graduate Studies at the University has endeavored to establish a research base capable of carrying out high-level internal research, centered on national priorities in areas of energy, environment, health, technology, human and social sciences. These researches have made a big positive difference on innovative research that is in line with changes, meets needs and addresses challenges.”

She also referred to research achievements of the QUARFE 2019 which was a huge success as well as this year’s Forum achievements, including: the establishment of Qatar University Center for Young Scientists (YSC) and the Agricultural Research Station, in addition to collaborative research, partnerships and memoranda of understanding with many local and international entities, opening new doors for co-financing critical projects. These achievements also included continuous progress in research performance and production, along with QU’s world ranking, promotion of digitization and virtual performance.

Besides, she emphasized the protection of intellectual property, academic freedom, patents, affirming that QU continues to secure sustainability and diversification of resources and finance through new internal, external grants and promising rentier projects that enhance cooperation with industry and society.

The event program also included several discussion sessions, such as a session entitled: “University of the Future: View of Local and International Collaborators”, which was moderated by Prof. Saif Al-Sowaidi, Professor of Economics at Qatar University. Another session entitled “Regional and International Challenges and their Impact on Research Cooperation” was moderated by Prof.



QU President honoring HE. Dr. Ibrahim Saleh Al-Nuaimi, Undersecretary of the Ministry of Education and Higher Education in the State of Qatar.



Honoring winners of Research Excellence Awards in the fields of Science and Engineering, Social Sciences and Humanities, and Medical, Health, and Biomedical Sciences

Mahjoob Zweiri, Director of the Gulf Studies Center at Qatar University. It should also be mentioned that the Forum had significant virtual participation and attendance from several universities, namely: the Catholic University of Portugal, the International Islamic University Malaysia, Silesian University of Technology in Poland, Al Akhawayn University in Ifrane, Morocco, Saint Joseph University of Beirut, Lebanon, in addition to the International Publishing House of Elsevier and Hamad Medical Corporation.

At the conclusion of the QUARFE 2020, awards were granted to distinguished researchers who have exerted efforts in relation to research and made remarkable achievements that QU is proud of. Dr. Aboubakr Abdullah, from the Center for Advanced Materials, was awarded the Excellence Award in Science and Engineering Research; Dr. Justin Gengler, from the Social and Economic Survey Research Institute, was awarded the Excellence Award in Social and Human Sciences; Dr. Nasrallah Ghiyath, from the College of Health Sciences, was awarded the Excellence Award in Medical, Health and Biomedical Sciences.

Additionally, awards for visual presentations, research posters and graduate studies were given to researchers who had participated in the Forum. Three awards were given to visual presentations in the categories of photography, video and social media. Sixteen awards for research posters were given to faculty members, post-doctoral researchers, graduate and undergraduate students. These awards were given within a number of categories, including: energy, environment and resource sustainability; social change and identity; population, health and wellness; information technology, and finally for research related to Covid-19 pandemic. Furthermore, fourteen awards were given in the Graduate Studies category for distinguished theses and dissertations, including two awards for outstanding scientific research.

QU Holds Orientation and Open Day Event for Graduate Students on WebEx

Students Affairs Activities in the Graduate Studies Office

Graduate Students Orientation Day:

Orientation is an essential and significant step for graduate students in their academic career, as it contributes to informing them of the main policies, regulations and services available at Qatar University (QU). To this end, the Graduate Studies Office held a freshmen orientation on WebEx on Saturday, 15 August 2020. Nearly 460 male and female students attended in addition to representatives of various colleges concerned with graduate studies.

The event started with a welcome speech given by Dr. Ahmad Al-Own, Dean of Graduate Studies at Qatar University. He talked about the nature of study in the graduation stage, explaining how it is different from previous academic stages. He spoke about the Graduate Studies Office, its sections and services provided to students. Finally, Dr. Al-Own urged students to exert their best efforts and exercise due diligence and consider this stage a time of challenge and determination.

In the same context, Ms. Ghada Al-Kuwari, Assistant Dean of Graduate Studies for Student Affairs, gave a comprehensive presentation of the Graduate Studies Office page on QU's website, along with a detailed explanation of the main policies related to graduate students which they must conform and adhere to while studying at QU. The orientation also included a speech given by Dr. Mary Newsome, Assistant Dean for Graduate Student Support at the Office. She introduced assistance services for graduate students, including workshops, TAD Boot Camp and TAD Talks (related to writing theses and dissertations). Individual support sessions and training on certain specialized programs, such as SPSS, is provided as well.

For her part, Dr. Sandi Adib, Head of Research



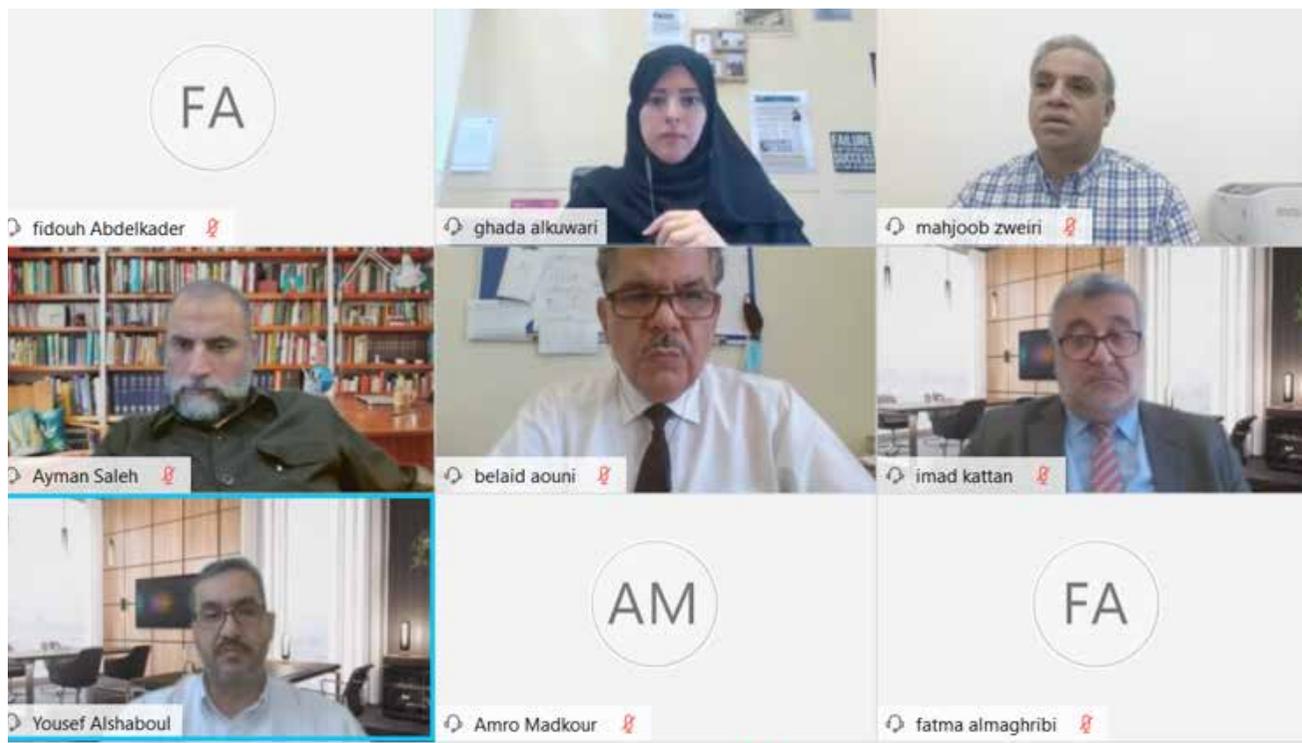
Ghada Al-Kuwari, Associate Dean for Student Affairs at the Office of VP for Research and Graduate Studies

Ethics and Integrity Department, gave a detailed presentation on research ethics as well as the approvals students must obtain when starting to prepare their theses. The Student Services Section also participated by presenting information on how to obtain student ID card, books, in addition to photocopying and printing needed materials.

The event concluded with a session of open discussion in which all students' inquiries were answered by officials the concerned.

Graduate Open Day for Students Wishing to Pursue their Graduate Studies in the Upcoming Spring 2021 and Fall 2021 Terms:

Continuing to implement precautionary measures and in the best interest of students, the Students Affairs Section at the Graduate Studies Office organized an Open Day event on WebEx on 28-30 September 2020. The event was held for students wishing to continue their graduate



Part of the Graduate Students' Open Day Virtual Event

studies and apply for the graduate program during Spring and Fall 2021 terms, in addition to introducing them to procedures required to successfully complete the application process. New research doctoral programs as well as existing doctoral programs were announced. Each college made a presentation on available programs and how to get admitted to them.

To ensure that students receive the desired benefit from the Open Day, the event extended over three days according to the type of programs offered. The first day (Scientific Track) included scientific disciplines from the Colleges of Engineering, Arts and Science. The second day (Medical Track) was dedicated for medical sciences specializations, including the Colleges of Health Sciences, Medicine and Pharmacy, while the final day (Arts Track) was dedicated to non-science disciplines, including Colleges of Education, Sharia and Islamic Studies, Management and Economics, Law, as well as literary majors from the College of Arts and Sciences.

The event was attended by all QU's Colleges offering graduate studies programs and some research centers of the Research and Graduate Studies Sector, including the Environmental Science Center, the Center for Advanced Materials, the Biomedical Research Center, the Laboratory Animal Research Center. The Gas Research Center, KINDI Center for Computing Research

and Qatar Transportation and Traffic Safety Center representing the College of Engineering. The centers spoke about their supporting role of students, engaging them in the research process and assisting them in their research projects. Additionally, Qatar University Press participated in the event, for its role in publishing research papers, as well as the Innovation and Intellectual Property Office of the QU's Research and Graduate Studies Sector, for its role in maintaining rights of research innovations and patents. Finally, for the significance of graduate studies freshmen, QU's Admission Department, QU Library and QU Testing Center, participated in the event as well.

Virtually attended by more than 500 male and female students, the Graduate Open day was very well-received as it plays a significant role for graduate students. Prof. Mariam Ali S A Al-Maadeed, Vice President for Research & Graduate Studies, explained this role in her speech saying: "Graduate Open Day is an annually held event which mainly aims to introduce freshmen graduate studies students to all issues related to these studies, including programs, requirements, services, etc. On this day, various entities of the University join efforts to provide assistance and guidance needed by students to start and continue their academic studies, so that they can become skillful cadres, capable of meeting requirements of their nation and society.

QU Launches Wednesday Research Series as part of **Serial Distinctive Research Episodes**



Part of the first discussion episode in the Wednesday Research Series

The Wednesday Research Series is a distinctive initiative launched by QU's Research and Graduate Studies Sector. It aims to create an effective communication environment within the University community led by specialized scholars and academicians. The initiative also seeks to keep pace with the current research issues through the visual media, and shed light on the local and international issues to achieve QU's vision and mission in terms of research excellence and knowledge using virtual platforms: WebEx, Live Chat via Instagram.

This research series was launched on Wednesday, November 18, as the first episode on the WebEx platform titled: "Cancer in Space: Taking Qatar to the International Space Station" presented by Professor Serhiy Souchelnytskyi, Professor of Molecular/Cell Biology, College of Medicine at Qatar University, and Engineer Abdul Rahman Kaladari from the Qatar Satellite Company, "Suhail Sat".

The episode included workshop discussions focused on the development of cancer diagnosis using space technologies through which the mechanisms of carcinogenicity in space will be studied during a field trip to space next August. This is considered a unique project in the region.

The second episode of this research series was held on Wednesday, December 2, titled: "Publication Stages in the Universities' Publishing Houses: How to Publish Your Book or Paper". It was

presented in Arabic by Dr. Okasha Eldaly, Section Head of Acquisitions, Qatar University Press, and was available on the Instagram Live Platform via the account of the Research and Graduate Studies Sector (@QUResearch).

The episode stressed the importance of publishing houses, citing QU Press as an example supporting QU's efforts to prepare a generation capable of participating in the national development process and achieving national aspirations towards a knowledge-based economy. This can be realized by improving quality of research, education and academic programs, and raising the efficiency of students and researchers in a manner that ensures the success of the sustainable development programs for the community. In addition, it seeks to support the University's role as an incubator for ideas and innovation in order to increase knowledge and meet the needs and aspirations of society so that the accuracy, authenticity and design of scholarly manuscripts are maintained and ensured.

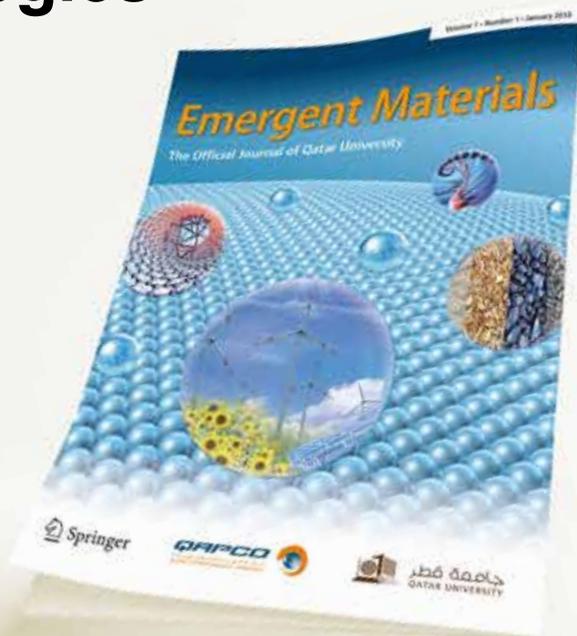
The episodes of the Wednesday Research Series will continue to cover the published scientific, human and social research works, innovations, research achievements and projects, outputs of internal and external grants, students' research works and mainly those of graduate students, in addition to other research interests. A dedicated web page has been created for this Wednesday Research Series to document information and research seminars.

Emergent Materials Journal at Qatar University

QU Holds Online Conference on “Chemicals and Materials for Emerging Technologies”

“Emergent Materials (EMMA)” Journal launched by the Qatar University (QU) has been indexed by the “Web of Science and Scopus” after assessing the quality, number, and characteristics of papers published in EMMA. The Journal aims to provide a publication source to the growing community of materials scientists, chemists, engineers, physicists, and researchers who are involved in doing research in materials science and engineering. Its goals are to publish a series of high quality and high impact research articles that reflect and bring the best research, at the forefront of physics, chemistry, biology, and engineering of advanced materials, to the international research community.

Recently, Qatar University organized an online conference on ‘Chemicals & Materials for Emerging Technologies’ (CheMET) from 15-17 Nov 2020 through the online portal, organized by a collaborative effort between the editorial boards of ‘Emergent Materials’ (EMMA), and Chemistry Africa (CHAF) journal published by Tunisian Chemical Society. These journals complement each other very well in terms of scope and topics covered. Qatar University organized this online seminar to promote both journals (i.e. EMMA and CHAF) and shed light on latest research topics. The main purpose of this conference is to bring the academicians, industrialists, researchers and students on a common platform where they can exchange their ideas and interact with the peers, towards the development of synthesis techniques of materials and developments of Smart Materials for Emerging Technologies. Though, nanotechnology took decades in its establishment, smart nanotechnology is an emerging area with a wider scope. Highly renowned scientists presented their findings on this platform, during the keynote speeches and the various sessions of the e-conference. The e-conference pledges to encourage and provide the perfect platform for generating opportunities towards future collaboration among its participating members



coming from cross-disciplinary work areas.

QU has constantly invested in strengthening infrastructure support for the materials research. There are around 100 faculty members affiliated with conducting research in the materials and nanotechnology areas. The research of this sub-theme spans across several colleges and centers/institutes. Excellent research facilities and infrastructure exist in these units for material synthesis, characterization and testing. The sub-theme is a classic example of interdisciplinary research at the University. Moreover, there are more than 14 stakeholders including Qatar Petroleum (QP), Qatar Petrochemical Company (QAPCO), Qatar Aluminium (QATALUM) and Qatar Steel that closely interact with the group. The moto behind starting this journal is to encourage the researchers to work on the materials science and publish their manuscripts drafted at the QU. Journal website on link:

<https://www.springer.com/journal/42247>

The Gulf Studies Center and Covid-19



Covid-19 has brought numerous transformations to the standard flow of life at all levels, including education. Many institutions, including Qatar University, responded to the current challenges, and switched to the online mode of studies, conferences, and meetings. After a few months of the pandemic outbreak, when the COVID-19 countermeasures started demonstrating their effectiveness, or in crude terms when the economic, political and social disturbances resulting from the crisis have manifested themselves more clearly, a plethora of scholarly articles appeared in which researchers of all denominations made attempts to generalize the accumulated experience and work out the specific course of action.

The Gulf Studies Center (GSC) also played an active role in generating new knowledge regarding the Coronavirus pandemic outbreak, its development, and consequences. Like other research centers at Qatar University, the GSC has not been standing idly by; rather it got actively engaged in the critical comprehensive assessment of the phenomenon by engaging with the broad scholarly community in Qatar and beyond.

First of all, the Gulf Studies Center dedicated a special section to the Covid-19 topic in the Gulf

Insights, a series coordinated by Dr. Luciano Zaccara, Research Coordinator in Gulf Politics at the Gulf Studies Center. The insights are published on a regular base with the aim to promote informed debate with academic depth across various disciplines. Since March 2020 until now, fourteen Gulf Insights were published, some of them authored by the Center's faculty members and most of them by guest scholars and researchers from the region.

The publications reflect the broad range of topics – from economics, politics, international relations and sociology- that the Center tried to cover along the crisis, as well as the cases that were dealt with since March until now, which included all the states within the Gulf region. The Center is specifically dedicated to the Gulf Cooperation Council states, Iran and Yemen. Together with our own faculty, students and former students, guests from Qatar and the region, and renowned international scholars, such as Juan Cole (University of Michigan), James Dorsey (Nanyang Technological University) and Djavad Salehi-Esfahani (Virginia Tech in Blacksburg, Virginia), the series reflected the preoccupation and interests around the impact that Covid-19 is generating in Qatar and the region.

All publications are available through the webpage of the Gulf Studies Center (<http://www.qu.edu.qa/research/gulfstudies-center/publications/gulf-insights>), and were widely shared and distributed through email listing and diverse social media, generating a broad debate and providing visibility to the Center's research productivity, engagement and networking.

In addition to that, Dr. Mizanur Rahman, Research Coordinator in Gulf Society and Culture at the Gulf Studies Center, applied and obtained a Qatar National Research Fund summer grant for his project The COVID-19 and Migrant Workers in the Gulf: Challenges, responses and a way forward for Qatar, where he is the sole Principal Lead Investigator. The results of his research are expected to be presented along the fall of 2020 semester to the QNRF and published in a reputed academic journal.

In order to explore the cutting-edge and novel potential solutions to the numerous challenges posed by Covid-19, the GSC organized three webinars where the GSC and QU faculty and international experts presented their views on the issue:

1 - August 24-26, 2020: 'Pandemic Politics: Reflections on Covid-19 in the Gulf', co-organized with the SEPAD and Richardson Institute at Lancaster University. Convened by Luciano Zaccara (Qatar University) and Simon Mabon (Lancaster University), this series of webinars discussed the impact of Covid-19 in internal politics, regional politics and public policies, and accounted with the participation of Karen Young (American Enterprise Institute), Jacopo Scita (Durham University), Justin Gengler (Qatar University), Marc Owen Jones (Hamad Bin Khalifa University), Steven Wright (Hamad Bin Khalifa University), Sana Alsarghali (An-Najah National University), Lucia Ardochini (Swedish Institute of International Affairs), Gertjan Hoetges (University of Groningen) and Guy Burton (Vesalius College).

The papers presented at the webinar will be included in a special issue of the Global Discourse peer reviewed journal, published by Bristol University Press.

2 - June 4, 2020: 'Social Sciences and Societies in the age of Covid-19' moderated by Cesar Wazen, from Qatar University, and the participation of Francisco Marmolejo (Qatar Foundation), Wu Bingbing (Pekin University), Martin Beck (University of Southern Denmark), Pardis Mahdavi (Arizona State University), Vicky Barham (University of Ottawa) and Mahjoob Zweiri (Qatar University).

3 - June 1, 2020: 'Gulf Security in the age of Covid-19', moderated by Mahjoob Zweiri, from Qatar University, and the participation of Juan Cole (University of Michigan), Nikolay Kozhanov (Qatar University), Luciano Zaccara (Qatar University) and Majid Al Ansari (Qatar University).

All webinars were conducted with the technical support from Qatar University ITS and using WebEx platform, as well as they were broadcasted through QU YouTube channel, guaranteeing worldwide outreach.

Finally, the GSC academic staff worked out a syllabus for a PhD elective course, GULF 639 (Gulf and Covid-19) to be delivered in the fall of 2020 by our faculty members, Dr. Hela Miniaoui and Dr. Farhan Chak, with the main objectives to thoroughly analyze the repercussions of the global pandemic on all facets of life in the Gulf region. Apart from that, the aim of this module is to explore the manifestations of good governance and authoritarianism, and how they affect economic growth, political rights, freedom and civil society, as well as their influence on the future of the Gulf region amid these monumental global transformations.

Despite the limitations due to Covid-19, the Gulf Studies Center managed to mobilize all its human resources to produce, debate and disseminate its researches in such difficult times.



Qatar University Press

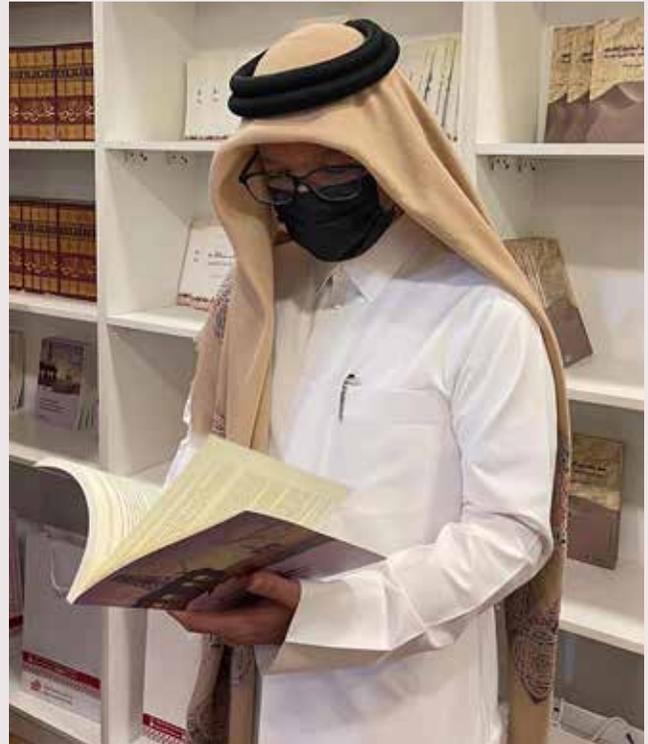


QU Press Latest Publications

Under the current circumstances, which arose due to the Covid-19 Pandemic, Qatar University Press produced a new batch of publications covering various fields.

In a statement regarding the latest publications, Dr. Talal Abdulla Al-Emadi, QU Press Founding Director, said: “I consider this batch as the mosaic of QU Press’s production. It includes titles focusing on a variety of scholarly fields. In fact, the creativity of the authors is blended with the originality of content, the sobriety of their preparation, the depth of their knowledge and the beauty of their production. We look forward to attaining further progressing our publishing programs, while exerting further efforts during COVID-19 era.” Dr. Talal concluded by praising the authors of this unique collection, thanking them for their scholarly contribution and full cooperation, looking to broaden publishing opportunities with all researchers, scholars and academics.

One of the most significant publication is a book by the Encyclopedic Historian, Prof. Muhammad Hareb Farzat, titled “Qatar on the Arabian Gulf: A Search for Lost Times in Ancient History.” This book is the culmination of a long experience in study, research, and continuous encyclopedic academic work in Qatar and the region’s ancient history, knowing that Farzat has set foot in Qatar in 1975. The uniqueness of this book is unescapably evident. In fact, its author went deeply into Qatar’s history in order to uncover aspects of the forgotten and lost time, through diligent, documented research. His intent is to bridge gaps in Qatar’s history starting from prehistoric times to the history of Arabs and Islam, highlighting Qatar’s modern renaissance. As an historian, Farzat was keen to distinguish between civilizational history and political history. Indeed, he presented with neutrality and objectivity the civilizational history of Qatar, and placed it within the framework of historical geographies, trade and civic relations in the history of the ancient Mashriq. The author was able to bridge gaps in the history of Qatar and link its episodes, in the first attempt to write a continuous history from prehistoric times to Arab Islamic history in a different style and a new approach. In this book, the author highlights the role of the historical site of Huwaila in the Roman era, and persistently puts forward the issue of searching for the origin of the name Qatar and its historical linguistic source. The latter are meant to be introductory points for future research by young researchers to expand research on the history of Qatar and the Arabian Gulf. This book is an insightful new scientific work that portrays a different picture to the ancient history of Qatar, based on the results of archaeological excavations and scientific documentation from original sources in its languages. It is also based on many sources and references that have not been used before, and here, QU Press is presenting this pioneering work for researchers and anyone interested in the history of Qatar and the region.



Dr. Talal Abdulla Al-Emadi
QU Press Founding Director

Another recent publication is a book titled “DNA paternity testing and disclosure of its incidental results: New Fiqhi Perspectives,” written by Dr. Ayman Salih, Professor of Jurisprudence and its Origins at the College of Sharia and Islamic Studies, Qatar University. This publication is considered one of the most accurate books specialized in dealing with issues of contemporary Islamic jurisprudence. It aims to employ the latest scientific and laboratory innovations, such as testing the genetic footprint (DNA), in order to benefit from it in the field of contemporary Islamic jurisprudence related to genealogy.

The third publication is titled, “The Eloquence of Quranic Miracles and the Limits of Interpretation” by Dr. Jamila Bekouch, Associate Professor of Rhetoric and Criticism at Ibn Khaldoun University in Algeria. The main topic of the book is “the inimitability of the Qur’ān”, and the author highlighted the role of rhetoric in shaping the concept of inimitability among fundamentalists and ancient scholars, and the difference between interpretation and hermeneutical mechanisms in understanding the Qur’anic text. Among the most prominent features of the book is its attempt to extrapolate the epistemological foundations of contemporary studies of the Quranic text, in particular; hermeneutics and deconstruction, which tend to position the Qur’anic text and eliminate its holy aspect, according to Arkoun, Abed Al-Jabri, and Nasr Abu Zayd.

In his book, “The Peaceful Settlement of International Disputes,” Prof. Dr. Ibrahim Al-Anani, Professor of Public International Law at Qatar University, sheds light upon one of the most significant contemporary legal issues. In fact, he thoroughly explained this principle as confirmed and assured by international conventions, foremost of which is the United Nations Charter. The author provides an evaluative analysis in order to define the concept of international conflicts in international jurisprudence and work. The book also illustrates means of settling disputes with non-binding solutions through political approaches; including negotiations, mediation, and reconciliation and resolution efforts. These approaches are stated taking into consideration the legal provisions regulating them, their procedures, their practical applications, and the extent of their implementation concerning the recent Gulf crisis.

In supporting Open Access, QU Press was able to implement it via an outstanding book, and an important subject for the region, in English titled “A Practical Guide to Upstream Petroleum Granting Instruments” by Dr. Peter Roberts, in which he presents a practical guide to the different agreement forms and the granting instruments in the energy field.

As a university press, QU Press pays special attention to the university teaching books in various specializations, as it is currently preparing to publish four specialized teaching books, namely, “Sports Law: General Theory, and Interpretation of Sports Legislation in the State of Qatar,” and the book, “International Organizations: History, Politics, Economics, Law, Management.” In addition, the book titled, “Cost Accounting and Management”, followed by “Structural Analysis and Selected Topics” book.

QU Press Translation Projects

QU Press has prepared a few translation projects and in a variety of fields. The first project translated is a book titled “Qatar and the Gulf Crisis” issued by Hurst & Co. Publishers Ltd, and written by Kristian Ulrichsen. QU Press has been granted the rights to translate and publish it in Arabic. It is the first documented in-depth study of the international confrontation led by the four countries towards the State of Qatar. It monitors the backgrounds, scopes, implications and impacts, based on reports and analysis related to the developments of the blockade, and based on regional geopolitical issues. The study formulated the confrontation in terms of its impact on Western interests, and the author focuses on the political acumen of the Qatari leadership in managing and facing the crisis. As the FIFA World Cup Qatar 2022 countdown draws closer, the need for an understanding of Qatar’s ongoing crisis increases.



Latest publications of Qatar University Press

Therefore, QU Press considered the necessity and importance of presenting this book to the Arab reader, and it will be published in December 2020, coinciding with the Qatar National Day celebrations.

The Press is also preparing to publish the translation of a book published by Springer Publishing in late 2019 entitled, “War and Its Ideologies: A Social-Semiotic Theory and Description” by Annabelle Lukin. It is going to be translated by Dr. Ashraf Abdel Fattah, a specialist in the field of translation of humanities and social sciences.

Additionally, QU Press published Arabic and Russian translations of the book “Open a GLAM Lab”, which was published in English on open access by the end of 2019, and it was the outcome of continuous efforts by many academic institutions and centers. “Innovation Laboratories in Cultural Institutions” was chosen as a title for the Arabic version.

QU Press e-Platform

QU Press is preparing to launch its electronic platform on the international information network, due to the features and privileges the platform provides, in line with the vision and mission of the press; being a leading publisher of peer-reviewed scholarly research. With regards to books, the e-platform acts as a register of publishing requests, allowing authors to easily track and follow up on their requests. The platform also facilitates the editing process and procedures; starting from submission to evaluation and review, as well as the availability of electronic archiving, needed to maintain publications on a long-

term basis. The new platform also allows displaying books in both Arabic and English languages, with its specific bibliographic data, which would enable indexing in international digital repositories such as WorldCat, Crossref, JSTOR, ProQuest, and others, in order to add books in their databases for advanced search, thus improving the chances of citing them. The platform also contributes to locating sites for the sale and distribution of the Press's publications, whether in print or digital formats.

As for scientific and scholarly journals, the platform allows displaying the journals issued under the umbrella of the QU Press, with their structure, content, and appropriate features that facilitate their long-term indexing. Authors can submit their articles to the e-platform through individual accounts so that all submissions and review dates are kept under one account. The platform also facilitates editing and publishing, as it is built with editing and production features, such as generating an accurate Similarity Report using iThenticate plagiarism checker software to verify the authenticity of the work, recording a Digital Object Identifier (DOI), and automatic support for metadata export.

These features allow QU Press Journals to automatically transfer their metadata to external indexing and archiving repositories such as Pubmed and Medline for Biomedical Sciences, in addition to the Directory of Open Access Journals (DOAJ), Google Scholar/Analytics Engine and many more. Consequently, scholarly journals and articles at Qatar University will be available, easy to track and download, which will improve the chances of citation.

With respect to marketing and sales, the e-platform publishes all news, activities and events related to QU Press through automatic links to the QU Press's social media accounts and channels. It can also display promotional photos and videos when publishing books and articles. Moreover, the platform is a one-stop e-commerce solution for selling and distributing books, providing print-on-demand services both locally and internationally.

From a technical perspective, the e-platform will have the feature of tracking visitors and browsers, and calculating their numbers, in addition to calculating the number of articles and books that have been downloaded and displayed. It also guarantees safety, security and archiving of information, in line with the General Data Protection Regulation (GDPR).

QU Press Recent Events

Despite the circumstances that the whole world witnessed, QU Press community involving was through the launch of the "Book Cover Design Competition", which received participation and

response from local and international designers, with the participation of nearly 30 contestants. The winner was Latifa Al-Sulaiti, a student from Virginia Commonwealth University in Qatar.

The Press also participated in several international virtual talks and exhibitions, including the Virtual Arab Book Fair in Europe, in addition to participating in the Copenhagen International Arab Book Fair, in its second edition, which began on October 5, where it attracted all interested Arabs and others in Europe; and was an opportunity to view the QU Press books and publications directly through the exhibition's virtual platform. The participation included virtual talks with the Press's authors.

Via virtual participations, QU Press held, in cooperation with the Qatari Forum for Authors, a videoconferencing in which authors discussed their published works. Dr. Nabil Darwish, Head of Production Section, moderated one of the Press's latest scholarly publications, namely the "DNA paternity testing and disclosure of its incidental results: New Fiqhi Perspectives" with the author Prof. Ayman Saleh.

It is also worth noting that QU Press is preparing to participate in the "Ibn al-Rayb Cultural Street" event in Katara Cultural Village, which would involve the participation of all publishing presses and Qatari libraries to display and sell books. This will be announced as soon as the date of the event is confirmed.



QU Press is preparing to participate in the "Ibn al-Rayb Cultural Street" event in Katara Cultural Village

QU Press Publications List

No.	Book title	Authors
1	Qatar and the Gulf Crisis (Translation to Arabic)	Kristian Ulrichsen Translated by QU Press Edited by Alreem Al- Adba
2	Qatar on the Arabian Gulf: A Search for Lost Times in Ancient History	Muhammad Hareb Farzat
3	The Principle of Abuse of Rights in International Law: The Gulf Crisis as an Example – An Empirical Study	Group of Researchers from Ibn Khaldon Center for Humanities and Social Sciences
4	A Practical Guide to Upstream Petroleum Granting Instruments	Peter Roberts
5	The Peaceful Settlement of International Disputes	Ibrahim Al-Anani
6	The Eloquence of Quranic Miracles and the Limits of Interpretation	Jamila Bekouch
7	DNA paternity testing and disclosure of its incidental results: New Fiqhi Perspectives	Ayman Saleh
8	Sports Law: General Theory, and Interpretation of Sports Legislation in ,the State of Qatar	Abdelnaser Zeyad Hayajneh
9	International Organizations: History, Politics, Economics, Law, Management	Muhammad Al-Musfir, Dina Mohamed
10	Cost Accounting and Management	Osama A. Mansour, Ghassan H. Mardini, Fathia Lahyani
11	Structural Analysis and Selected Topics	Mohammed Al-Ansari
12	The Role of Water and Landscape in the Occupation of Qatar	Philip Macumber
13	(Non-verbal communication in the Qatari culture (English translation	Montasir Al-Hamad Translated by Alreem Al-Adba
14	(Non-verbal communication in the Qatari culture (Russian translation	Montasir Fayez Al-Hamad
15	Open a GLAM Lab	Aisha Al-Abdalla & others
16	Innovation Laboratories in Cultural Institutions - Open a GLAM Lab ((Arabic translation	Aisha Al-Abdalla & others
17	Откройте GLAM-лабораторию - Open a GLAM Lab (Russian (translation	Aisha Al-Abdalla & others
18	Majales Al Nour	,Mohammed Aieash Ibrahim Al-Ansari, Mohamed Al-Musleh, Waleed Al-Husseini
19	(Non-verbal communication in the Qatari culture (Russian translation	Montasir Fayez Al-Hamad
20	Television news report	Fayez Shaheen
21	Narrative patterns and functions in ancient Arabic narration	Alaa Abdelmonem Ibrahim
22	The Arab media and public opinion industry during the Arab Spring revolutions	Abdelsalam Razzak
23	Project management and factors of success	Abdullah Al-Swidi, Asmaa Abdel-Wase, Ahmed Mehrez