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# Qatar University Research Magazine

issue no 9 - January 2018

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**QU LEADERS  
SPEAK ON  
RANKING**

**QU RESEARCH DEVELOPS DIAGNOSTIC  
TOOL TO OVERCOME BARRIERS IN  
COMPREHENDING ARABIC**



جامعة قطر  
QATAR UNIVERSITY

## Message from the VP

# Pioneering Research



### **Prof. Mariam Al Maadeed**

Vice President for Research and Graduate Studies  
Qatar University

Research, across all fields, remains at the very heart of QU policy aiming to achieve highly competitive regional and international standard. we are continuing to promote interdisciplinary, interactive, deliverable research aligned with university's plans and national priorities.

Our ongoing commitment is to improve research and graduate studies, open new horizons, provide most advanced technologies and infrastructure.

Qatar University is also strengthening, partnerships and cooperation with internal and external prestigious institutions and various stakeholders.

On May 2nd Qatar University will have the Research Forum & Exhibition 2018, titled, "Pioneering Research". This Forum will

enhance the research mission of building knowledge and encourage innovation. We look forward to welcome you at this annual event.

This issue of Qatar University Research Magazine contains many topics that show the strength of QU researchers and students. Our cover story is: QU Research develops diagnostic tools to overcome barriers in comprehending Arabic. This is an innovative and interdisciplinary approach to help Arabic speakers suffering from the aphasia.

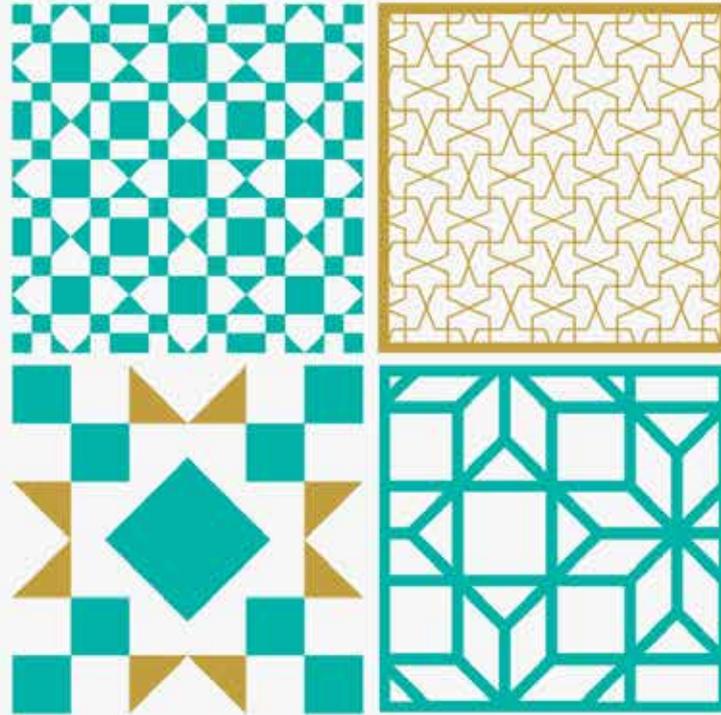
In the interview with researcher section, Dr. Talal Al Emadi is reporting about Challenges of publication an academic journal, where he shed the light on the bilingual law journal which gained. In the news section, QU & Ohio University are collaborating on a research project

about a drug for obesity. In student in the limelight, Students demonstrate capacity with project on "An enhanced adaptive steering algorithm for redirected walking in virtual environment". The magazine includes also several research articles and news.

Enjoy Reading the 9th Issue of Qatar University Research Magazine



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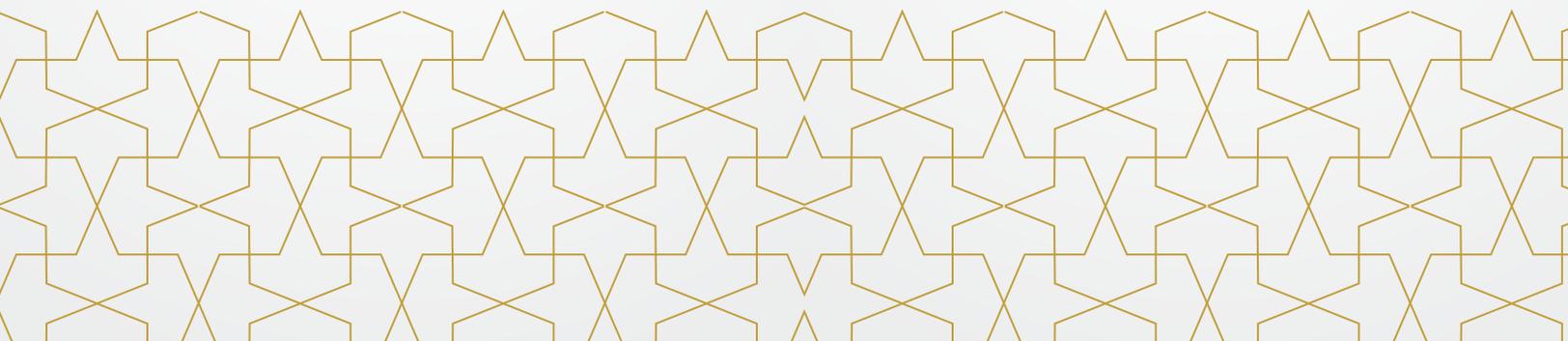


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**“Pioneering Research”**

1 & 2 May

Qatar University, Research Complex (H10),  
Foyer and Auditorium



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## Celebrating Excellence

# Belonging to formidable group influences work ethic, says Dr. Megreya



He was greatly influenced by the work ethics of the research group he was associated with during his PhD days at University of Glasgow in the UK. It was this relationship that made him to embrace hard work as a yardstick for success. For Dr. Ahmed Megreya, Associate Dean for Research & Graduate Studies, College of Education at Qatar University, the principle paid off as he received the QU Research Excellence Award for 2017 in the field of Social Sciences and Humanities. To him,

the QU Research Excellence Award is a highly prestigious and competitive award which he was really honored to receive.

### Goal setting as success point

“Setting long-term goals, resilience in the face of frustration, and persistence are the main strategies that have stood me out and enabled me to work hard and publish my research,” Dr. Megreya said.

As a PhD student he was associated with Prof Mike Burton’s group which researched on face recognition. This research group included several well-known scholars in the field of face recognition such as Markus Bindemann (now of University of Kent, UK), David White (University of New South Wales, Australia), and Catrina Havard (Open University, UK). He has been privileged to have published many papers with all of these well-known scholars. “Being a member of this face recognition group gave me an excellent opportunity to

develop my research skills which made me to have a positive impact on the group,” he said. According to him, some of his experiments using Egyptian participants provided good evidence that culture influences face recognition.

“Specifically”, he said “face recognition experiments in the UK consistently reported that external features (such as the hairs and ears) play the most important role for recognizing unfamiliar faces, while internal features (such as the eyes, nose etc) are important for recognizing familiar faces.” But he contrasted this and said the group’s studies revealed that this finding was not universal as Egyptians showed a robust internal-feature advantage for processing unfamiliar faces. This was attributed to the long-term experiences of Egyptians for individuating female faces with headscarves, which completely cover the external features, and “we called it “the headscarf effect,” he said.

### Focus

Dr. Megreya’s research focuses on cognitive science with emphases on visual processing and face recognition. He has international reputation in the field of experimental and cognitive psychology through his publications in high impact journals. “My work falls into several clear research strands focusing on person identification at passport control (face matching), eyewitness identification, criminal thinking, culture and cognition, cognitive emotion regulation, and psychopathy and personality disorders,” he says.

According to him, his work is characterized by comprehensive multi-experiment studies and has examined samples from a variety of populations, including Arabic and Western observers, adults and children, police officers and prisoners (thieves, drug dealers and murderers), including people with mental disorders (schizophrenics) and hearing disabilities. Dr. Megreya has also constructed an Egyptian face-matching database, which has been used for research by researchers in Europe and Australia, and in personnel selection in security settings.

With his colleague, Dr Asma Al-Attiyah, they worked with the Strategic Security Studies

“

Being a member of the group gave me excellent opportunity to develop my research skills”

“

My work falls into several clear research strands focusing on person identification”

Center of the Ministry of Interior in a research project examining how well border police offers could verify face identities from photographs.

In addition to the impact factors of the journals in which Dr. Megreya’s work has been published, the quality of his research can also be measured using a variety of

international standards. For example, Google Scholar reported 815 citations, with h-index of 13 and i-10index of 14. “I believe that this is an exceptional record for a researcher, especially in the social sciences and humanities,” he added.

### Awards

Dr. Megreya had previously won three highly prestigious awards. They are the State Incentive Award for Social Sciences (Psychology) from the Egyptian Cultural Ministry in July 2012; Qatar University Scientists 2015 Scopus Award in Humanities in April 2015; and Excellence Arab Researcher Award in the field of Social Sciences and Humanities (Cognitive Psychology) from Associations for Arab Universities in December 2015. As a lead Principal Investigator (PI), he had been awarded two research grants from the Qatar national Research Fund (Q NRF). The first one Undergraduate Research Experience Program (UREP) project entitled “Do Deaf individuals see better? Evidence from face and object identification tasks” while the second one entitled “Exploring new techniques for improving face matching” was a National Priorities Research Program (NPRP) project.

### Research cornerstone for development

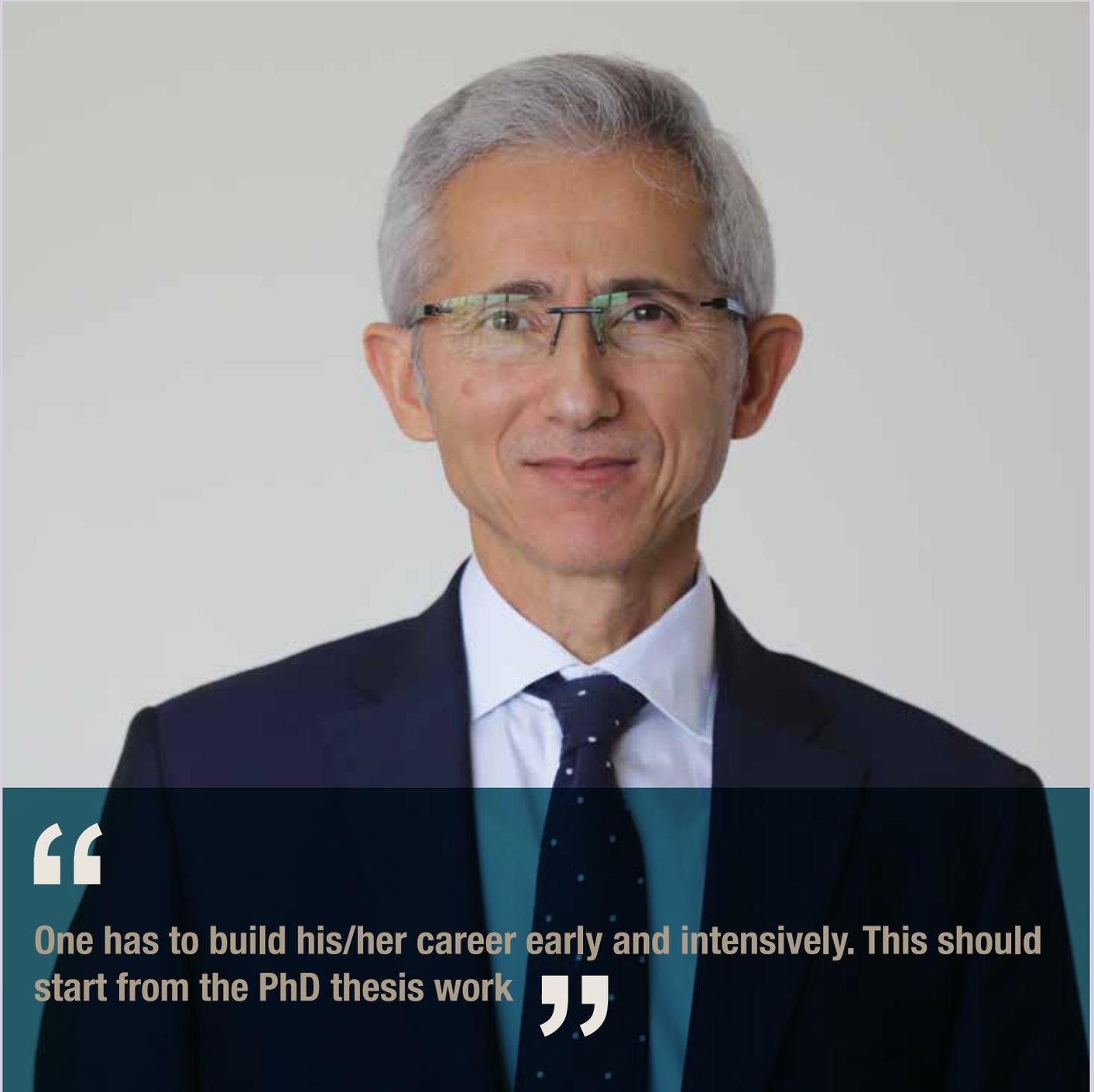
He believes that scientific research is the cornerstone for sustainable development. He said he has always been discussing this with his colleagues and students while drumming support for the Qatar National Vision 2030 which emphasizes the benefits of a research-based economy.

Dr. Megreya said Qatar University is an excellent environment for doing scientific research because of its vision to be a model national university in the region, recognized for high quality education and research. Consistent with this, he said a range of research grants, publication rewards, and research awards had been provided. In the College of Education for instance, he said the dean Dr. Ahmed Al-Amadi does his best to improve the quantity and quality of educational studies in Qatar. There are five research groups with Dr. Megreya leading one of them.

## Celebrating Excellence

# Hard work and Good scientific environment contribute to success

– Prof. Samir Jaoua



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One has to build his/her career early and intensively. This should start from the PhD thesis work

”

For Prof. Samir Jaoua of the Department of Biological & Environmental Sciences, College of Arts and Sciences, Qatar University winning the QU Research Excellence Award is like a sweet tonic. It will energize and spur him to aim for greater heights and achievements. He was conferred with the 2017 award in the Sciences and Engineering category. "I feel proud to have won the Qatar University 2017 Research Excellence Award. It's very motivating and encouraging for me," he said.

He believes that hard work and the overriding work environment are the main keys of success. He has had to work in several good universities, starting from Tunisia his home country, and so has a strong basis for his conviction. In all the places he has worked in France, Belgium, Germany and Switzerland, Prof. Jaoua said he was lucky to have worked with wonderful teams of graduate students and faculty members. But at Qatar University, he says it has been a very wonderful experience because "you find everything needed to conduct high level research. This is possible thanks to the continuous encouragement of the university, high quality of the research facilities; availability of funding, and skilled and collaborative faculty members." He considers graduate and undergraduate students as the heart of research because they are the key components.

For young academics and researchers, he has a word for them: time runs quickly. "One has to build his/her career early and intensively. This should start from the PhD thesis work," he admonishes. According to him, doing hard research work and publishing are key elements for the success of faculty members. This would in turn affect positively both the teaching quality and the international visibility of the faculty member as well as the ranking of the university, he added.

Speaking on his area of interest and what breakthroughs he has achieved, he said has with his research teams, students and collaborators been carrying out research activities using beneficial soil micro-organisms of biotechnological interest, covering microbial and other bioactive molecules and compounds that do not pollute the environment such as antibiotics,

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you find everything needed to conduct high level research. This is possible thanks to the continuous encouragement of the university”

bacteriocins, bio-fungicides, bio-insecticides, anti-oxidants; bio-degrade polluting molecules. "I have published results and findings covering the area of molecular biology, microbiology and biotechnology with particular respect to mycology, bacteriology, biotechnology, functional genomics, secondary metabolites and microbial ecology," he said.

Prof. Jaoua's research on mycobacteria, the source of secondary metabolites, has led to the realization that *Mycococcus xanthus* and *Sorangium cellulosum* are two bacteria producing several antibiotics and anti-fungal compounds. The mode of gene transfer to these two bacteria has been developed and allowed to explore the metabolic pathways of these molecules of pharmaceutical interest.

According to him, his exploration of *Bacillus thuringiensis*, the source of biological insecticides, allowed the setup of a bank of *Bacillus thuringiensis* insecticidal strains isolated from different countries mainly from Tunisia and Qatar, leading to the unveiling of genes encoding novel and

different insecticidal crystalliferous proteins, considered as very safe bio-insecticides acting specifically against insects and being very safe for men and animals and the environment.

He said at Qatar University his team has built is a bank of more than 600 *Bacillus thuringiensis* strains and that research on this has witnessed the participation of many students and collaborators from many countries. Among the most interesting bio-products, he said, are biological insecticides which are active particularly against disease vectors and therefore have a great impact on public health, biosafety and sustainable biodiversity.

Prof. Jaoua said: "With respect to fungicides and monitoring and control of mycotoxin-producing fungi, we have isolated and used different bacteria of *Bacillus thuringiensis*, *Bacillus subtilis*, and *Burkholderia*, for the evidence of different anti-fungal compounds including enzymes. Many bacterial strains have been used to conduct extensive studies on the identification and characterization of these biological control agents. A wide array of molecular and bio-sensing techniques was developed, in collaboration with research team from the university of Sassari (Italy), to achieve precise identification of filamentous fungi, with emphasis on mycotoxigenic relevant ones. In the case of Qatari hydrocarbon degrading bacteria, their isolation has allowed the investigation of their growth conditions and the evaluation of their hydrocarbon degradation potentialities."

What factors does Prof. Jaoua think may have influenced his nomination for the QU Research Excellence Award? He said his research activities in recent years have resulted into good quality journal publications as a result of continuous intensive research work and student and researcher supervision. Out of his 117 original research articles published in peer-reviewed journals with impact factors, 59 publications were published with Qatar University affiliation since September 2009. He was involved in the efforts that resulted in the development of the second PhD program in Qatar: the PhD in Biological and Environmental Sciences.

## News

# QU holds Innovation and Intellectual Property Awareness Day

## IP Day



Qatar University (QU) recently (September 14) held its Innovation and Intellectual Property (IP) Awareness Day. It was a day to promote and raise awareness about the protection of intellectual property in the university, especially among its researchers & innovators. The event was organized by the newly established Innovation and Intellectual Property (IIP) Office, an arm of the Research Planning & Development Office at QU. It was under the auspicious of Prof. Mariam Al-Maadeed, QU Vice President for Research and Graduate Studies. She stated that the newly established Office (QU-IIP Office) would advance QU research, inventions and IP profile, as it would seek to make research knowledge readily accessible

by the community, industry and researchers without them violating the laid down rules and regulations.

QU Director of Research Planning & Development Dr. Husam Younes said that: "Creativity generates new competitive opportunities for individual researchers in particular and the university in general. Supporting new innovative ideas and approaches will improve the regional economy that is based on innovation and knowledge. Moreover, it is crucial for solving many significant challenges such as health and environmental problems."

The event attracted presentations by

intellectual property experts from the university, public and private sectors, with Dr. Mohamed Salem Abou El Farag, the Manager of the new office, speaking about its roles and functions, particularly its role in promoting innovations and protecting all types of IP of QU and its members.

Among the other functions and duties of the QU-IIP Office, Dr. Abou El Farag mentioned its role in enhancing IP awareness among QU community, supporting IP enforcement, marketing QU IP rights, negotiating IP licensing agreements.

Topics discussed at the program included:

Copyright and the University: Protecting your Works by Dr. Mohamed Sayed Fares, College of Law, Qatar University.

Innovation and Intellectual Property in Small Businesses, by Dr. Arsalan Safari, Entrepreneurship Center, College of Business & Economics, Qatar University.

The Role of the Ministry of Economy & Commerce's Intellectual Property Awareness Administration, by Mr. Ahmed M. Al -Sulaiti, Head of Intellectual Property Awareness Administration, Ministry of Economy & Commerce.

The Role of the Ministry of Economy & Commerce's Intellectual Property Administration in obtaining Patents in Qatar, by Mrs. Nival Nabil, Legal Expert, the Ministry of Economy & Commerce.

Filing Patent Application and PCT, by Mr. Namir Bachir Sioufi, Patent Attorney, Saba & Co Intellectual Property.

## News

# Cyber Security Week



KINDI Center for Computing Research at Qatar University College of Engineering (QU-CENG) launched the Cyber Security Week, aimed to gather experts and researchers to exchange their expertise and ideas and provide solutions to the current challenges in the area of cyber security.

The opening session, which is themed “Cybersecurity and the Blockade: Threats and Opportunities”, was attended by QU President Dr Hassan Al Derham, Qatar Armed Forces Commander of Signal and Information Brigadier Abdul Aziz Falah Al-Dosari, Ministry of Transport and Communications Assistant Undersecretary Eng Khalid Sadiq al-Hashmi, Ministry of Foreign Affairs Information Technology Director Dr Saif Mohammed Al-Kuwari, Qatar National Research Fund (QNRF) Information and Communication Technology Programme Director Dr Munir Tag, Thales Critical Information Systems and Cyber Security Specialist Mr Baptiste Cazagou, and Tubitak representative Dr Devrim UNAL, as well as CENG faculty, staff and students.

The week covers various activities including a training session titled “Introduction to Secure Software Development” and training cybersecurity series on “Introduction to Web-Hacking”, “Web-Hacking Contest” and “Anti-Blockade Hackathon”.

In his speech at the opening ceremony, the President of Qatar University; Dr Hasan bin Rashid Al-Derham said: “This week comes as we are facing cyber security challenges at the level of governments, institutions and individuals, particularly the vital sectors such as financial, media energy and other sectors in this infinite cyberspace which is hackable and aiming at damaging public and governmental data, and here we must all intensify all efforts and cooperation in this area to prevent malevolent empowerment goals and maintain the integrity of community members and networks infrastructure and strengthen institutions with all the security and protection after the crime of piracy targeting Qatar News Agency «QNA» broadcasting false statements attributed to his Highness the Amir, the statements taken

by some countries to impose unjust blockade on Qatar.

He added: “Through this week, QU is supporting the vision of the National Cyber Security Strategy, which represents a roadmap to raise awareness of the importance of cybersecurity, and contributes to the preservation of the fundamental rights and values of Qatari society.”

During her speech, Dr Noora Fetais the Director of KINDI Center for Computing Research said: “Until recently, electronic-crimes were limited to individuals or small groups, but as Internet networks expanded, these crimes became more complex and widespread, causing significant damage to companies and institutions. Although there is an evolution in the systems of some institutions, they are not immune to cyber-attacks because of the development of mechanisms and methods of electronic hackers, and hence all institutions need to develop a plan for the development of their infrastructure to enhance cybersecurity.”



**Feature  
Story**

**QU research develops  
diagnostic tool to  
overcome barriers in  
comprehending Arabic**

In an innovative and interdisciplinary approach, Qatar University (QU) has embarked on a project to develop the first battery test to help Arabic speakers suffering from Aphasia. It aims to support Qatari nationals as well as native Arabic speakers of the region who are diagnosed with aphasia following strokes. The new tool is a first of its kind in Arabic based on the linguistic features of Arabic language.

Aphasia refers to the impairment of language production and comprehension which has severe impact on individuals' social life and relations with others. Having an accurate linguistic assessment tool is essential in the diagnosis of the disorder and hence on the treatment. The project is undertaken by a research group including Dr. Eiman Mustafawi, Assistant Professor Department of English Literature and Linguistics, College of Arts and Sciences, Qatar University. The research team has already collected normative data and developed the battery test. The team has piloted the test on patients from the Gulf who are living in the UK. Dr. Mustafawi feels that the projects is in line with the needs of the country and the region. It would lead to improving the diagnostic tools of aphasia cases, and therefore improve the health of such patients and thus contribute to the Human Pillar of Qatar National Vision 2030. The project is a collaborative work between QU (Dr. Mustafawi and Dr. Tariq Khwaileh) and Sheffield University in the UK (Dr. Ruth Herbert and Dr. David Howard) and funded by Qatar National Research Fund (QNRF) under its National Priorities Research Program (NPRP).

Meanwhile, Dr. Mustafawi has also embarked on another exciting project which is also funded by QNRF through the NPRP that examines the neurophysiological aspects of Arabic on the users. The project proposes to investigate the neurophysiological correlates of processing Arabic using event-related brain potentials. The project will look into the relation between the neurological wire of the brain and the structure of Arabic language and how the function differs

from that used with other languages with different structures.

Dr. Mustafawi, in this interaction, speaks about the projects and highlights how these are going to benefit the country and the region.

### 1. What is Aphasia and what is its impact on people living with it?

Aphasia is an acquired language disorder, resulting from damage to the cerebral cortex due to various factors resulting in a neurological insult. It can happen due to accidents or strokes and leads to language disturbances and comprehension, affecting spoken and written language. This might lead to substituting certain sounds in words and/or inability to combine words to form sentences. There can be misplacement of the sounds as well as wrong structure of sentences. It makes the brain areas responsible for language processing incapable of executing linguistic functions. The impact of this disorder on the individual's life may be extreme, resulting in employment loss, and difficulty maintaining personal relationships.

Clinical assessment materials for aphasia are available in many languages helping people overcome such language barriers. However, there is no such materials available for the Gulf Arabic speaking people. Therefore we thought of developing some kind of assistance for Gulf Arabic speaking people suffering from Aphasia.

An Aphasia battery test is like a diagnostic tool that helps a specialist identify the types of errors a person is making. This will help him in putting together a treatment program as effective intervention relies on accurate diagnosis through assessment. The damage could be anywhere in the brain and it might vary from a person to another as the brain damage could be at different parts of the brain on different people and it is important that we identify the extent of damage and which area of the brain is affected.

### 2. What is the need for developing a battery test for Aphasia for Gulf Arabic speaking people?

It is important to have a diagnostic tool that is tailored for each language because each

language has a different structure. Moreover, every language has several variants and so is Arabic. There are also several cultural implications because in each language one would expect everyone to understand the meaning of a word in a certain context. Some words are culturally related to the activities they conduct and may have different connotations in different societies. Certain words are very common in certain forms of a language or groups of people. The diagnostic tool will have questions that are related to the context of the language and everyone responding to that question is expected to know and respond to these questions as they are familiar with their language and culture.

Therefore, we need to have a diagnostic tool that is relevant to the type of Arabic used in the Gulf region. Linguistically informed clinical assessments for aphasia are not available for Arabic, though there are some translations and adaptations of English. Those tests are not linguistically driven by the structures of Arabic, but are modifications of non-Arabic tests. Since such a tool has been absent for the Gulf Arabic and other tests cannot be consistent with the structure of Arabic language, we thought of developing one. Whatever outcomes we derive at from this research, will be applicable to the entire Gulf region as the Arabic variant used in this region is more or less the same. So this research is to develop a diagnostic tool that can help people suffering from Aphasia specifically for Qatar and for the entire region.

### 3. What are the stages of the development of the program? Can you please explain the steps taken to develop the diagnostic tool?

The project consists of five major stages. They are the development of a normative database for Qatari or Gulf Arabic; development of the cognitive and language subtests; control data for each subtest; clinical trials of the battery and revision of the subtests in line with feedback from patients and clinicians. The resulting database and battery will be driven by linguistic features specific to the Arabic language and culture. The development of a normative database and an aphasia battery will provide an invaluable resource for clinicians and researchers in Qatar and the Arabic-speaking



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**An Aphasia battery test is like a diagnostic tool that helps a specialist identify the types of errors a person is making. This will help him in putting together a treatment program as effective intervention relies on accurate diagnosis through assessment.**

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world. It would further form an invaluable clinical resource for speech and language clinics in Europe and North America, which receive a substantial number of patients from the Gulf countries every year.

#### **4. What is the method you have adopted in developing the diagnostic tool?**

What we have done so far is collecting data from normal people from different generations and different age groups. Nearly 167 people have been participated so far to make sure that the words we use in our diagnostic tool, are familiar for normal people of all ages and all genres of people. We assume that normal people should know these words and if the patient does not comprehend these words, we can understand that there is something wrong with the comprehension of the person and we can focus on such people and help them overcome or manage the problem through the new tool. We have already completed this part of the evaluation.

#### **5. What is the progress of the project so far?**

Our goal has been to produce standardized and validated normative database and comprehensive aphasia battery test for Qatari/Gulf Arabic speakers with aphasia. The normative database has been successfully developed and submitted for publication in 'Journal Behavior Research Methods'. The development of the aphasia battery (GACAT-Gulf Arabic Comprehensive Aphasia Battery) has been completed and piloted with healthy speakers, and awaiting to be validated with patients with aphasia who are Qatari (Gulf) Arabic speakers. We still need to carry out reliability and validity statistical testing of the data collected from patients before we send it for publication.

The test was done on people from different countries in the Gulf as people suffering from this particular disorder are very few in Qatar. Now the data is being tested in different hospitals in the UK and it has been applied to different Gulf Arabic speaking patients. Now we are trying to collaborate with some hospitals in Kuwait. The application of the tools was done on people suffering from this problem. The results and outcomes of the research are expected to help the hospitals

to better diagnose the cases that they deal with Aphasia. To get credible results, the tool should be applied to maximum number of people. Once we have accurate conclusions, we can announce that the battery is ready to be used to treat such patients in any hospital.

#### **6. What is your study 'Neurophysiological investigations of Arabic'?**

This is a project that investigates how the brain processes different structures in the Arabic language using an innovative tool, electroencephalography (EEG). The objective is to identify the neural/brain correlates of the processing of these structures and draw connections with how linguistic theory describes such structures. Languages vary in terms of structures they present, and it is expected that this variation is reflected in how the brain processes them. We expect the way the brain responds to the Arabic linguistic features to be different from other languages. This is what we try to unravel through this exciting study.

#### **7. What are the areas of language the project is looking into and what are the major findings of the tests?**

We ran a number of tests recently and we will run more soon. We are examining how Arabic speakers process verb-subject agreement (number, gender and person). The tests so far have suggested that agreement in Arabic, unlike in other languages, may not be purely morphosyntactic and that word order may play a role in processing agreement. The results also revealed a striking difference between the violations with singular subjects and those with plural subjects, pointing towards a unique status of the plural in Arabic. Building on these results, we propose to study the processing of subject-verb, noun-adjective, and reflexive-antecedent agreements in healthy Arabic speakers.

#### **8. How are you running these tests and what are the facilities that you have developed in the University to conduct the tests?**

We built a lab from scratch. The lab, located in the Women's Building, is now equipped with an EEG, an electromagnetically shielded booth, and three computers.

We sent out an invitation to students to participate in the experiments. The participants had to be native Arabic speakers without any visual impairments. We had a lot of response. During the testing process, we collect the demographic information about the students.

An EEG can be used to help detect potential problems associated with this activity. The EEG tracks and records brain activity in response to linguistic stimuli. Small, flat metal discs, called electrodes, are placed in an elastic cap that is tightly put on the head of the participant.

The participants see a set of words or phrases depending on the type of the test. They have to read what they see silently and press buttons to indicate whether what they see is an acceptable Arabic structure or not. Brain activity is recorded as they perform this task. The time it takes each participant to make a decision may be also be recorded.

We designed a number of EEG studies including subject-verb agreement and Noun-Adjective agreement focusing on two almost linearly identical but structurally totally different Noun-Adjective structures in Arabic. Both ideas are novel and relevant to the theoretical research on Arabic syntax.

#### **9. What are the expected outcomes from these tests?**

We are at the exploration stage, as this research is fairly new in the area of Arabic, but it can have applications in classrooms and clinical settings. We could eventually be looking into problems faced by Arabic speakers and learners in several areas of language, such as different ways of making plural forms, and design possible teaching or rehabilitation strategies.

Ultimately the results will help imparting better knowledge for us as researchers, leading to better health conditions for the region's citizens, and better pedagogy for students for the subject of Arabic, which will all address the realization of the development of the Human Pillar, one of the major components of the Qatar National Vision 2030.

The research team is led by Dr. Ali Idrissi and it includes Dr. Tariq Khwaileh, both from the Department of English Literature and Linguistics, Qatar University.

## Interview with Researcher

# Challenges of publishing an academic journal

– Dr Talal Al-Emadi



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My work falls into several clear research strands focusing on person identification.

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Qatar University College of Law's International Review of Law (IRL) is coming out with a special issue of three reports produced by the students of TradeLab International Investment Law Clinic in the College in Fall 2016, led by Dr. Talal Al-Emadi, Dr. Francis Botchway, and Dr. Jon Truby.

The TradeLab clinic offers a unique opportunity to thoroughly analyze trade and investment law and jurisprudence through a combination of practice and theory. The students worked in small groups under the supervision of three professors, three mentors and three beneficiaries on specific legal questions related to trade and investment law coming from real "clients". Expert-led workshops on substantive topics related to the projects were organized while skill sessions were held to improve library research, legal writing and oral presentation skills.

In this interview, Dr. Talal Al-Emadi, editor-in-chief of IRL, speaks about the objectives of the journal, milestones so far recorded and some of the challenges. Excerpts...

### **What are the objectives of the International Review of Law (IRL)?**

As part of the efforts by Qatar University and the College of Law to attain high international reputation and ranking, we got commissioned to establish a bilingual (Arabic and English) law journal that will maintain the highest standards in academic publishing. Our aim is to disseminate academic legal knowledge around the world. We need to fulfil the goals of the University in internationalizing its research output and gaining international well-founded reputation that reflects the quality of education at Qatar University.

### **What are IRL's milestones to date?**

In 2012, the inaugural edition was published as the only open access bilingual law journal. Today, it is the flagship law journal in the Middle-East and North Africa. Given the rapidly increasing volume of papers submitted to the journal and its growing reputation, we felt it was necessary to have

a robust administrative structure for the journal – we are now a good size. We have received submissions from 53 countries. IRL quickly gained a competitive differentiated position among academic peer-reviewed journals in the Middle East as it is at the same time bilingual and following international standards of editorial and publishing. Now in its seventh year, we have published 15 online issues and more than 100 articles to date, including four special issues published on important topics on sovereign wealth funds, domestic violence, comparative law and international investment treaties. The journal is now in the leading author indexing services such as: Google Scholar, Microsoft Academic Search, EBSCO Discovery services, Primo (Ex Libris), Proquest, Summon (Serial Solutions), OCLC Worldcat Bielefeld Academic Search Engine (BASE), Crossref and Scirus. IRL was recently accepted for indexing in Westlaw International. We also signed publishing and distribution agreements with Westlaw Gulf, LexisNexis MiddleEast, AdvocatKhaj and HeinOnline. Finally, as we are keen to express impartiality and high ethical standards, it is now following and implementing the Committee on Publication Ethics (COPE) standards.

### **Do you accept students' research to be submitted for publication in IRL?**

Yes we do, and we encourage it in every way. We welcome selected and reworked parts of masters and doctoral theses, for example. We actually have just accepted a TradeLab legal clinic outcome (reports) to be published in a Special Issue. This Special Issue contains the product of three law undergraduate projects. The first project aimed to assist the Qatari Mission to the World Trade Organization (beneficiary) with the negotiation of export restrictions related to food and agricultural products. Under my supervision and Mengyi Wang's mentorship, students examined existing disciplines, evaluated current proposals, and tabled new negotiation proposals. The second project sought to answer whether Lebanon (beneficiary) should accede to the Extractive Industries Transparency Initiative. With the

supervision of Dr. Francis Botchway and Dani Kabbani's mentorship, students analyzed the costs, benefits, legal requirements, impacts, and alternatives of the accession. The third project assessed Qatar's technical compliance with the Financial Action Task Force's recommendations on anti-money laundering and counter-terrorism finance in advance of the 2017 Mutual Evaluation Report. At the request of the Rule of Law and Anti-Corruption Centre in Doha (beneficiary), Dr. Jon Truby (supervisor), Dr. Reem Al-Ansari and Ali Abbas (mentors) coached students to identify progress and potential legislative changes to ensure adequate compliance with the recommendations. This Special Issue is now in the process for production with our Publisher.

### **Is IRL collaborating with other publishers?**

Yes we are. We started IRL with Bloomsbury Qatar Foundation Publishing (BQFP) which was a joint venture owned by the Qatar Foundation and managed by Bloomsbury Publishing. BQFP became Hamad bin Khalifa University Press (HBKU Press) and so they have been our publisher to date.

### **As IRL's Editor-in-Chief, what are the challenges you face?**

I believe that maintaining a good reputation is the biggest challenge any journal faces. One aspect of keeping such a reputation, is, for example, when the editions of the journal are published on time – production is a very common problem each journal faces with its publisher so having a good publisher is a key to success, I believe. All in all, I strongly trust teamwork. If you feed the team with your challenges and you hear theirs, you can overcome many obstacles. As E-i-C, I don't conclude a single decision solely. I have an Associate E-i-C (Dr. Francis Botchway) and a Managing Editor (Sabine Saad Al-Awad, MBA) along with two Arabic Submission Coordinators (Dr. Mohammed Salem and Dr. Ahmed Samir). Together, we always include our collaborators to reach professional and fair solutions for the benefit of the journal.

**Our  
Exclusive**

# **QU leaders speak as University keeps making giant strides in ranking**



“

**Qatar University continues to serve as Qatar's primary institution of higher education and as the fastest-growing university in the region**

”

Qatar University (QU) was recently ranked 37# in the “QS Top 50 Under 2018 “50 ranking among the world’s leading young universities founded less than 50 years ago. By being named among the top young universities in the world, QU becomes the first in the Arab world and the Middle East region. In this edition, QU notched up 12 places from 49# in the “QS Top 50 Under 2017-2016 “50. The improvement was also the highest among all the top 50 universities, and thus QU became the “Fastest Rising Young University”. QU was established in 1977.

First published in 2012, the “QS Top 50 Under 50” celebrates the world’s leading young universities. Published annually, based on the latest edition of the QS World University Rankings, it has since 2015 doubled its range to include the “Next 50 Under 50”. It assesses universities’ performance across six indicators: academic reputation (%40), employer reputation (%10), research citations per faculty member (%20), faculty/student ratio (%20), proportion of international students (%5), and proportion of international faculty members (%5).

Some of QU’s leaders below speak on this achievement and the level the University would have achieved in the nearest future.

Commenting on this achievement, QU President Dr Hassan Al Derham said: “Since its inception in 1977, Qatar University continues to serve as Qatar’s primary institution of higher education and as the fastest-growing university for research in the region. This significant success highlights the reputation that Qatar University has built over the years and the University’s ongoing efforts to advance its positioning in the international arena among the top universities in the world. The “QS Top 50 Under 2018 “50 ranking shows an improvement of the University’s last year performance as it was ranked 49# in 2017-2016. It is also an indication of the University’s vision to be at the forefront of the leading institutions through the quality of academic programs and faculty expertise, the competencies of graduates, and the services it provides to the community, as well as the solid partnerships it has built with leading international institutions.”



Dr. Darwish Al Emadi, Chief Strategy & Development Officer

### Where do you see Qatar University in the next five years? What can be done to achieve this?

Qatar University is currently working on finalizing its strategy, which runs from January 2018 to the end of 2022.

This strategy focuses on the role of Qatar University as an essential catalyst for economic, scientific, social and cultural development in the State of Qatar. This requires focusing on the student as the focal point of the educational process and the various services offered by the university. Also, there is a focus in the research field on research related to the interest of the society and the industrial and economic sectors in the State of Qatar. One of the most important priorities of research in the next stage is to find solutions and alternatives to many of the challenges facing the Qatari society in many fields, whether economic, social, educational or others.

The university cannot play its assigned role without creating a stimulating student environment. Therefore, the new strategy focuses on finding the tools of student success and the greatest flexibility and programs in order to launch the capabilities of students achieving the basic goal of the University being a catalyst in the comprehensive development process witnessed by Qatar in the current or the next stages without compromising the quality of education and services offered by Qatar University.

Although the university is working hard to find serious opportunities for its students in order to develop the available potentials and capabilities to achieve those potentials to the

maximum, all this cannot be achieved without emphasizing the quality of education provided by Qatar University. Hence, QU gave great importance to the accreditation processes for all its academic and non-academic programs, believing that it is important to ensure the quality of education provided to the community, mainly represented by students.

Many of the academic programs at the university received accreditation from international agencies. The overall objective remains that all programs receive accreditation from specialized international bodies, where this process guarantees to a certain extent the quality of the offered programs and the fact that QU adopts the international standards in launching these programs.

One of the strategic objectives of the University is to serve the society in the best way possible by establishing the university as a home for experience in various fields. It goes without saying that the university has more than one thousand two hundred faculty members in all fields, and this human capital can be a key factor in the voluntary society if optimally used.

Since its inception, Qatar University aimed to communicate with the society and provide it with a variety of services, thus the importance of marketing the university as a home for expertise in social, political, economic, industrial, educational and other fields. This will help benefit the society by providing solutions to the problems and dilemmas facing the society in these fields, as well as providing a fertile environment for the exploitation of these experiences in order to benefit all sectors of society in the long run.



Cesar Wazen, Director of Scholarships & Partnerships Office

**Going forward, do you think QU is still a viable brand to industry and academic partners? What do you think should be done to ensure that more incentive inducing MoUs could be signed with partners?**

I like to point out also that there are two rankings that were recently issued: QS worldwide (we are 349) and THE worldwide (500-401).

“QU is still and will remain a viable brand to industry and academic partners due to the intensive research efforts that are ongoing since 2006 and the establishment of the Qatar National Research Fund. The efforts of Qatar to invest its wealth into education and research are finally bringing rewards in the most prestigious and comprehensive of ranking systems.

The fact is that the excellent score achieved by QU on the international collaboration indicator is the result of a strategy adopted by the State of Qatar (1st worldwide for the 3rd year in a row).”



Prof. Mariam Al Maadeed, VP of Research and Graduate Studies

**What strategic steps will be put in place to attract the right caliber of researchers who will come out with outstanding published research results that would generate credible points that would be taken into consideration during the next ranking exercise?**

There is no doubt that in today’s competitive research environment, skills and talent shortages require new staffing and retention strategies. Qatar University (QU),

as the leading national university in the State of Qatar, has embarked on a number of strategic initiatives to achieve such a goal. Internationalization or expanding collaborations is one of those strategies that QU is pursuing extensively to maintain its position as a well known international university that offers very good opportunities for doing advanced research to its faculty and collaborators. QU is also investing heavily in creating state of the art research facilities throughout its campus and facilitates access to such facilities by all researchers to help in achieving their research career ambitions and to give them the competitive tools on both the national and international arenas. QU is also actively engaging in strong partnerships with the local industry to initiate research projects that mainly address their needs and involve outstanding researchers from both sides.

QU is making a major investment to recruit outstanding post-doctoral fellows who are retained as permanent researchers following their success stories at QU. In addition, and to cultivate the next generation of QU researchers, rather than to work only with outstanding post-docs for a few years and then lose them, various strategies have been built to create high caliber graduate programs with generous student funding formulas to attract the brightest graduate students who will be the main core for future QU researchers.

QU is currently developing its Research Excellence Framework (REF) as part of its holistic research strategy. This REF encompasses generous funding schemes for high impact research activities. It also offers coaching, mentorship and development programs to give researchers community exposure to different competencies, supporting additional research and academic training, and giving opportunities for colleagues to collaborate on key projects. The number of national and international conferences, symposia and workshops at QU is increasing each year and the university is now well known internationally in that regard.

As part of its current strategy, QU is also developing and revising its research policies to make scientific research careers adequately attractive to the best young minds and to facilitate their career development and the materialization of their innovative ideas into registered intellectual properties and

successful technology transfer.

**Is QU ready to lead in research in the region?**

Definitely! QU is on the right track and possesses all the needed elements and infrastructure to achieve such an ambition. The university is now transforming to a new and important stage in its development. QU has prepared plans and adopted budgets to become a leading research university in the next five years, while continuing to develop and strengthen its undergraduate and graduate programs in all fields. QU witnessed the largest growth in the region with respect to high-quality research, as demonstrated by the advancement in university ranking achieved in the past couple of years. This transformation has led to heavily investing in innovation and technology to generate research of high impact on the national, regional and international levels.



Dr. Omar Al Ansari, Acting Vice President for Academic Affairs

**What is the implication of the ranking on the academic reputation of Qatar University? Is QU ready to face the challenges?**

QU has always perceived advancement in rankings as a by-product of its academic, research and community engagement excellence. It is the academic reputation that has an impact on the ranking and the challenge for us was to always try to reflect our good local and international reputation in the pertinent ranking indicator, by building a strong relation with ranking agencies, making QU an active contributor to global discussions on ranking criteria and quality of education.

## News

# QU unveils new internal research grants



Dr. Aimna Erbed - Director of Research Support

Qatar University through the Office of VP of Research and Graduate studies unveiled changes in QU's internal research grants. The event offered an opportunity for researchers and students to meet the University's Pre-Award team in the Research Support Office and know more about the different internal funding opportunities in Qatar University.

The new grants were announced on the occasion by QU VP Research and Graduate Studies Prof. Mariam Al-Maadeed. Outlining the guiding principles, Prof. Al-Maadeed said that the objective aligns with QU's research grand challenges and supports national research priorities, as well as encourages interdisciplinary research that engages multiple academic units (colleges, research centers, etc) with complementary backgrounds.

According to her, research outcomes and impact would be central in awarding grants while all efforts would be made to encourage participation of graduate and undergraduate students in research grants so as to have sustainable research and develop capacity in different critical areas.

Prof. Al-Maadeed also highlighted the National Research Capacity Building program. The program would offer a grant to financially support Qatari faculty develop their research profile upon arrival or when starting a new research direction. The program will also include workshops in writing funding proposals, developing research strategies and producing research publications. This program targets junior Qatar faculty members to ensure national capacity is developed in critical research areas.

Director of Research Support Office Dr. Aiman Erbad said there are five types of internal grants available at Qatar University depending on who is applying and the reason for the funding. He listed them as Seed Grant, Student Grant, Collaborative High Impact Grant, Concept Development Grant, and National Research Capacity Building Grant. He said there would also be special grants providing seed funding to encourage proposals in new research areas of national interest and of strategic importance, especially in entrepreneurship and social sciences.

The main research outcomes coming for these grants is ideas with commercial value and trained students/researchers. Research teams applying for large grants would include senior and junior faculty members, researchers, graduate and undergraduate students from different disciplines (colleges, departments, centers) to help in tackling issues in an interdisciplinary comprehensive manner and ensure capacity development. For students trained in funded projects, the focus would be to enhance their research skills and expose them to innovative projects that align with their graduation projects, theses, and senior design courses.

To ensure impact, the research problems addressed should align with national research priorities guided by the country needs. Industry will be involved in setting the priorities and engaged as partners in the research activities. The grants will be performance-driven with clear outcomes in sight. QU developed the concept development grant to accelerate innovation and enable researchers to take their ideas to the next step and develop concepts that have commercial potential.

## Research Issue

# Strategizing In Higher Education

**Dr. Hadeel Al-Khateeb**  
(Assistant professor , College of Education)



### Introduction

The term “strategy” is derived from the Greek lexicon *strategos*, which denotes the art of troop leader, command, and generalship. Although the term can be traced to ancient military times and linked at the beginning of the 20th century with corporate management, strategizing has become a dominant discourse for decision-making in Higher Education and has been embraced both as a concept and a system in universities worldwide.

The emergence of strategy as a discourse in Higher Education coincided with the rise of neoliberalism as an economic ideology. Neoliberalism promulgates the tenets of open market, economical diversities and liberal economy through policies such as free trade, tax reduction, and minimizing of the role of the state. Consequently, the role of the state in allocating financial resources for public services has

dramatically decreased. In such situations, strategizing has been introduced in Higher Education as a solution for developing a proactive stance in the era of changing demands and declining resources. In short, although Higher Education institutions have successfully functioned for centuries without strategic plans, the neoliberal conditions under which higher educational institutions operate has increased demands for accountability and with this demand universities now emulate elements of the corporation and businesses. In this article<sup>1</sup>, I discuss the ways through which the discourse of strategy in Higher Education reconstructs identities and reclaims subjectivities in a neoliberal era. In specific, I examine how the identities of staff, faculty and students and the roles of curriculum and research have been altered and reconstructed for the sake of coping in difficult economic times.

### University policy makers as philanthropy receivers and revenue generators

To make up for the decrease in funds, Higher Education policy makers made a maneuver and turned into two alternative financial resources. These are: philanthropy and revenue generation. To secure philanthropy, many universities worldwide launched fundraising campaigns. Oxford University admits “at a time of major change for

1. This article is an executive summary of a research study through which I utilized Critical Discourse Analysis (CDA) to analyze 10 universities’ strategic plans published online in order to (1) examine the ideological implications of strategy discourse in Higher Education, and (2) scrutinize the emerging of new identities and subjectivities in higher education strategy discourse.

UK higher education funding, the role of philanthropy is vitally important” (Oxford University Strategic Plan 15 :2018-2013). For this purpose, the university has launched Oxford Thinking Campaign, which is well advertised on its website. A video titled: What Does A Gift To Oxford Mean encourages donors to be generous and gives them multiple choices as to how to give Oxford a “gift.” A donor has the many choices of giving to a specific college or making a gift from outside the UK or even leave a gift in his or her will. In October 2012, Oxford Thinking Campaign announced a revised goal of 3£ billion (Oxford University website). Likewise, the University of Toronto, has launched a fundraising campaign with a goal of raising 2\$ billion. Displaying a buying cart logo on it’s website, the university gives the donors the options as to where they like their “gift” to go by indicating: “You can select where you would like your gift to go using the three options. You can add as many gifts as you like to your cart” (Toronto University website).

Congruent with the focus of philanthropy as a financial resource, a distinctive maneuvering shift in Higher Education strategic planning occurred regarding the focus on revenue generation. Universities worldwide started to develop “synergistic partnerships with industry, businesses, and agencies” (Old Dominion University Strategic Plan -2014 7 :2019). The aim is to “inward investment to both start up and scale up new ventures”, “expand research and business incubation” and “intensify spin-out activities.” Among the ways to achieve this is “licensing of intellectual property” and “invest in estate” (Oxford University Strategic Plan :2018-2013 18). Even universities in rich countries are no exception to this situation. In it’s own words, Qatar University argues:

“Qatar University had actually begun experiencing a decline in financial allocation from the government even prior to the global downturn in oil prices in 2014. With the downturn in oil prices, the need for a rebalancing of expenses has taken on a greater meaning for all state-funded institutions region-wide. Qatar University is expected to do more and better with less by developing and pursuing an Economic Sustainability Model that can reduce QU’s

reliance on government funds and that can eventually lead to QU’s financial sufficiency and sustainability in pursuing economic growth and excellence” (White Paper -2017 22 :2019).

Both the maneuvering tactics of securing philanthropy and generating revenues led to “a growing number of trustees and regents with a knowledge of or experience in business” (Pusser, Slaughter and Thomas 2006). Swapping educational theories, to manage Higher Education institutions, policy makers started to rely on theoretical elements of Monetarism, Human Capital Theory, and Transaction Cost Economics. Behind the focus on philanthropy and revenue generation as alternative financial resources in Higher Education is a growing importance of economic efficiency, which provided the “neoliberal” rationale to hire more part-time and adjunct faculty as the coming section explains.

### Higher Education Faculty as Entrepreneur Partners

In regard to faculty, two main views are emphasized in Higher Education strategy discourse globally. First, universities accentuate the role of the faculty not as educators but rather as entrepreneur partners. To illustrate, in the name of revenue generation, Dalhousie University’s website calls companies seeking researchers to consider its Industry Liaison and Innovation (ILI) program that “manages and facilitates collaborations between companies and university researchers, commercializes research and assists in the creation of spin-off ventures.” The ILI mission according to the university’s strategic plan is to “help companies find and develop relationships with researchers and assists in the creation of spin-off ventures.” In parallel, University of Limerick’s website offers a link through which corporates can “Find an Expert” among its faculty to carry out joint research projects. The university praises its faculty for having “ a strong track record in translating their fundamental knowledge and expertise into solutions for a range of industrial challenges.” This has restricted the role of faculty - to a certain extent - to merely “inform and advise a wide range of organizations” that

include “industry, government agencies, non-governmental organizations, and community groups locally, nationally, and globally” through “collaborative research, translational activities, consulting, licensing, spin-out companies, and commercial ventures” (Oxford University Strategic Plan 2018-2013).

Second, a manifest tendency of cost effectiveness in a neoliberal era has led to an increased number of hiring part-time and adjunct faculties. To illustrate, in its strategic plan, Old Dominion University gives details about the number of its staff, explaining that out of 3.300 people, the university has 800 full-time professors and nearly 600 part-time instructors. The basic concern behind such nearly close figures is twofold. Firstly, part-time instructors are marginalized as they do not have input into the governance of an institution and they are not eligible to participate in the planning and implementation of the curriculum. Secondly, part-time instructors have no employment security. The critical point here is that such attempts to naturalize the tenure-track recruitment system lack humanism. This often, though not always, seems “to further strengthen the power position of the managers at the expense of those who are managed” (Vaara and Laine 311 :2206).

### Students as Homo oeconomicus

One can argue that students’ role as reconstructed in Higher Education strategy discourse is passive and submissive. College education is endorsed as a private good to be purchased by students who are considered as homo oeconomicus; rational economic actors whose behaviors, both economic and non-economic, are determined by a cost/benefit analysis (Lemke 2001). To illustrate, Dalhousie University’s website reminds potential students that “the decision to attend university is a big investment” and offer them with online calculator to calculate tuition fees, living expenses and start planning the budget” of joining the university. This customer orientation approach has redefined the relationship between students and university. Astin (1998) noticed that students, to an increasing extent, start to focus on the extrinsic outcomes of higher education, while they lessen their focus on the intrinsic

rewards of the college experience. A manifest tendency of directing the students' attention to the extrinsic outcomes of higher education; employment, can be found in the Cooperative Education (Co-op) concept which is a structured method that provides academic credit for job experience related to students' majors. To illustrate, Dalhousie University strategic plan discusses offering students a Co-op through which "students can alternate semesters of academic study with semesters of full-time, paid employment in positions related to their discipline/career interests" which can happen "anywhere around the world." The University argues that through Co-op, students have an opportunity to "uncover strengths, interests and career goals, apply confidently for employment upon graduation and earn a paycheck." Although I am familiar with the concept of Critical Pedagogy that directs Co-op education, I argue that there is a need to build clear educational guidelines for the process so that the rationale behind it is not limited to employment and earning a paycheck.

### Pathways to Market

Strategy discourse in Higher Education has been working on the vocationalization of the curriculum to focus on marketable technologies. For many universities around the world, job training and career development define curriculum outcomes. For instance Aalto University strategic plan 2020-2016 stresses, "Entrepreneurial education is offered for all students" through "restructuring the university's Bachelor's curricula." Based on this, Higher Education curriculum is explicitly structured to meet the needs of capital.

Moreover, the fruits of research are no longer integral parts of the "general quest for knowledge" (Kezar 2004) rather they are seen as "intellectual capital" that should be sold in an open market. The precise goal of research becomes to maximize revenue generation and thus, Higher Education institutions increasingly focus on applied research with the explicit goal of commercializing the

research products (Slaughter and Rhoades 2004). To illustrate, the university of Calgary argues, "Federal Budget 2012 emphasizes enhancing the collaborative nature between industry and research with an aim to foster commercialization, job creation, and other economic drivers." While Cambridge English dictionary defines "research" as a "detailed study of a subject, especially in order to discover (new) information or reach a (new) understanding" and defines a "researcher" as "someone whose job is to study a subject carefully, especially in order to discover new information or understand the subject better", Calgary University adds the element of "funding" to the general understanding of what research is. For the university, research means, "an undertaking intended to extend knowledge through disciplined inquiry or systematic investigation. The conduct of Research includes applying for and managing funds, collecting and analyzing data, and disseminating results" (Calgary University Research Integrity Policy: 2).

### Curriculum and Research as

### Conclusion



This article captures an essential part of what universities under the neoliberal regime are. In current days, higher educational institutions' role can be briefed as:

“In the first place, a university is a significant economic entity in its own right. It contributes to its regional economy as an employer of staff and a purchaser of goods and services... Secondly, a university attracts investment into its region. Proximity to a university that produces high-quality, work-ready graduates and has a strong research base is a compelling attraction for employers, especially those engaged in high-value, knowledge-intensive activities. Finally, a less tangible, but nonetheless real, benefit is the sense of vibrancy that a university brings to its region. The presence of a university enhances the region's reputation and strengthens the regional brand by, for example, recruiting students and staff to the region from Ireland and abroad” (Limerick University Strategic Plan: 15)

As above extract indicates, in a neoliberal era, Higher Education strategy discourse faithfully relates to the modernist project, which is characterized by a specific kind of instrumental rationalism that calls for maximizing the performance of one's own organization in global markets. As such, people working in the organizations and recourses should be mobilized for the greater common cause. Such instrumentality is achieved through reconstructing the identity of Higher Education policy makers as “revenue generators”, faculty as “entrepreneur partners”, students as “customers” and altering the role of research as an “intellectual capital.” However, the challenge as described by Harvard President Drew Faust is,

“When we define higher education's role principally as driving economic development and solving society's most urgent problems, we risk losing sight of broader questions, of the kinds of inquiry that enable the critical stance, that build the humane perspective, that foster the restless skepticism and unbounded curiosity from which our profoundest understandings so often emerge.”



## My work falls into several clear research strands focusing on person identification.”

By and large, strategy discourse in Higher Education does not reflect upon the social morality aspects of the modernisation agenda it calls for. A critical perspective of Higher Education strategy discourse is needed to investigate why strategy rather than something else should direct Higher Education policymaking, why top management should be considered as the privileged actor, and what are the implications of strategy discourse on Higher Education personnel and students.

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## News

# QU and Ohio University collaborate on drug for obesity



**Dr. Ahmed Malki**  
Associate Dean for Academic Affairs, in the College of Health Sciences

To contend with the upswing in the cases of obesity in Qatar and the region and possibly come out with a drug, the College of Health Sciences at Qatar University is collaborating with Edison Institute of Biotechnology at Ohio University in the United States on a research project.

Currently, the project team is performing complete toxicity profiles in rabbits and finalizing the preclinical phases (in vivo studies) before proceeding to the clinical phase. The two institutions are collaborating in all experiments, including interpretation of results.

It was based on the project that Dr. Ahmed Malki, Associate Dean for Academic Affairs, in the College of Health Sciences at QU won the best poster award at the Qatar University Annual Research Forum in 2016.

Dr. Malki said that obesity has become a serious worldwide epidemic with the trend becoming more worrisome in many Arab

countries, including Qatar.

Obesity is closely associated with type 2 diabetes (T2D) through its contribution to insulin resistance as most people with T2D are either overweight or obese. Although lifestyle changes such as more physical activities and healthy and calorie-restricted diet are absolutely required for stopping obesity and T2D epidemics, anti-diabetes and anti-obesity therapeutics are also necessary for more effectively reducing morbidity and mortality of the diseases, Dr. Malki said.

He added that natural dietary compounds can significantly contribute to the therapeutic approach. "The aim of this study is to identify novel and nontoxic drug that can reduce adipogenesis and contribute to treatment of obesity and type II diabetes mellitus," he further said.

He said that they had previously reported that a natural plant insulin mimetic compound -penta-galloyl-glucose (PGG), a hydrolysable

tannin or polyphenol, binds to insulin receptor (IR), activates IR-mediated glucose transport signaling pathway, and reduces blood glucose levels of diabetes and obese mice.

To investigate the anti-obesity potential and effects of PGG on adipogenesis, the compound was studied in both animals and 3T-3L1 preadipocytes. "Here, we report that, in vivo, daily oral administration of PGG at 10 mg/kg significantly reduced levels of blood glucose, triglyceride, and insulin in high fat diet-induced diabetic/obese mice. We found out for the first time that PGG suppressed levels of either protein or gene expression of key positive adipogenic factors mTOR, PPAR and C/EBP and augmented the negative factor Pref1-, respectively," Dr. Malki said.

"In summary, all of these results demonstrate that PGG is anti-diabetic, triglyceride-lowering, as well as adipogenesis-modulating, warranting further studies for its anti-diabetes and anti-obesity therapeutic potentials, particularly in animal models.

Dr. Malki said that in the last decade, the number and type of T2D treatments have increased, and they are not fully effective in reducing blood glucose levels and maintaining at normal levels. "Major concern is the side effects. There is, therefore, urgency to discover novel agents with improved efficacy and lower side effects. Our novel derivative did not show any toxicity in adipocytes and it significantly reduced body weight and blood glucose levels in obese mice. Most importantly, we have identified the mechanism of action and most of the key molecular targets of our drug."

Dr. Malki attributed the success of the project so far to the collaboration between Qatar University and Ohio University.

## News

# NPRP project looks into development of treatment strategies for TBI

A multi-disciplinary research project is ongoing to come up with essential tools that would help clinicians understand better traumatic Brain injury (TBI) and lead to the development of suitable therapeutic treatment strategies that would improve functional outcomes after TBI. These would also assist in identifying early image markers that inform on further development of TBI. The National Priorities Research Program (NPRP) research project is titled “Characterization of physiological, structural and biomolecular changes in brain tissue underlying functional impairment after experimental traumatic brain injury”.

The research is being led by a multi-disciplinary international team of researchers, including Dr. Amjad Shraim (PI), Associate Professor of Analytical Chemistry, College of Arts and Sciences at Qatar University; Dr. Mohamed Ali (Co-Lead PI), Qatar Biomedical Research Institute, Hamad Bin Khalifa University, Qatar Foundation; Dr. Erwin Blezer, (Lead PI), University Medical Center Utrecht in the Netherlands; Prof. Jaana Suhonen (PI), Al Ahli Hospital, Qatar; Dr. Sebnem Garip (PI), Faculty of Medicine, Istanbul Kemerburgaz University, Turkey; Prof. Feride Severcan (PI), Department of Biological Sciences, Middle East Technical University, Turkey); Prof. Donald McNaughton (PI), School of Chemistry, Monash University, Australia; Dr. Rick Dijkhuizen (PI), Image Sciences Institute, University Medical Center Utrecht, the Netherlands; and Dr. Willem Otte (PI), University Medical Center Utrecht, the Netherlands.

According to Dr. Shraim, Traumatic Brain Injury (TBI) is damage to the brain caused by an external force such as sudden acceleration or deceleration, blast waves or crush, and



**Dr. Amjad Shraim**  
Associate Professor of Analytical  
Chemistry, College of Arts and  
Sciences

penetration by a projectile. He said activities or incidents that could inflict TBI include fall from certain height, traffic accidents, wars, and some types of sports. “TBI is a critical public health issue that affects more than 10 million people annually worldwide. It is a major cause of death and disability in many parts of the world and it is expected to surpass many diseases that cause mortality and morbidity by year 2020,” he further said.

He added that recent reports from Qatar indicated a substantial increase in the incidence of TBI across all ages with the motor vehicle accidents and falls from height as the major causes. He said that the severity of TBIs range from mild to severe depending on the extent of the impact and could result in short, long term, or permanent disabilities.

Dr. Shraim said TBI is usually accompanied with progressive physiological changes that may affect anatomical and functional

connectivity in the brain, which consequently determines some functional outcomes, for example, diffuse axonal injury (DAI). Investigating such outcomes along with characterizing the extent and progression of various types of brain injuries and their effects on brain connectivity is expected to provide some sort of accurate diagnosis, outcome prediction as well as treatment selection and monitoring of TBI.

The study will further aim to characterize the development of diffuse axonal injury and its effect on functional connectivity at a whole-brain level, from acute to chronic stages after mild and severe TBI. It is in its purview to elucidate the cellular, biomolecular and structural mechanisms that underlie changes in diffuse axonal injury at various stages at different degrees of TBI, and also identify early image markers that predict the development of diffuse axonal injury and tissue restoration, and their effects on functional outcome at different grades of TBI.

The part of the project that is conducted at Qatar University includes analyses of brain tissue samples using Fourier transform infrared spectroscopy (FT-IR), Laser Ablation – Inductively Coupled Plasma – Mass Spectrometry (LA-ICP-MS) and Transmission Electron Microscopy (TIM) analytical instruments.

Dr. Shraim said his research interests are closely aligned to the realization of Qatar’s national research strategy and research priorities. They include: assessment of environmental and industrial pollution and investigating their effects on public health and development of analytical protocols for the speciation and analysis of toxic chemical pollutants in environmental and biological matrices.

**Research  
Success story**

**QU professor greening  
Doha's landscape for  
increased food security  
and sustainability**



“

**Countries in the Arabian Gulf region have challenges with food security with a dependency on foreign imports that reach 90%. Increasing local production of food through the design of more resilient and regenerative architectural and urban systems is both a priority and a possibility for Qatar.**”

**DR. GRICHTING**

Dr. Anna Grichting Solder, Assistant Professor at Qatar University, is a Swiss architect, urbanist, and musician who graduated with a Ph.D. in urbanism from Harvard University. She is assistant professor in architecture and urban design and has previously taught at the universities of Geneva and Harvard. Dr. Grichting has put her hand to some of the world's most pressing problems from conflict resolution to environmental sustainability. She has transformed landscapes in conflict zones to try and build bridges and foster peace and in urban environments to solve problems of food security and sustainability. She began her research and projects on the Berlin Wall in 1989, just before it came down, and has more recently worked on the UN buffer zone in Cyprus and an Ecological Peace Park in the Korean Demilitarized Zone (DMZ). Her research has explored the landscapes of conflict in Israel/Palestine, the Mexican-US border, India-Pakistan and the Iron Curtain Green Belt that stretched across the European continent. Dr. Grichting is currently setting her hands to challenges closer to home here in Qatar. She is working to revolutionize the landscape and sustainability of cities in the Gulf Region starting with Doha, working on Food Urbanism, Urban Forestry, Blue Urbanism and ecological approaches to build more resilient cities. Since arriving at Qatar University, she also identified other important topics for research in Qatar such as Transit Orient Design, the Urban Legacies of Mega Events, Corniche Landscape typologies and ecologies, and Public Art and Public Space, which have resulted in conference and journal papers and student research. She is also working on designing for biodiversity and endangered species, which includes a master plan for Al Fuwairit Hawksbill Nesting Eco Beach, in collaboration with the Environmental Science Center at Qatar University.

### Transforming Doha's landscape

The climate in the Gulf is harsh with long and hot summers with temperatures above 40 degree Celsius and almost no rainfall. This creates a dry and desert-like landscape with barely any naturally growing plant life. However, this can all change according to Dr. Grichting. By adopting her tried and tested

methods, desolate sandy environments can be transformed into green havens of plants and trees. The creativity does not stop there, however, as Dr. Grichting hopes to transform rooftops into gardens and walkways into growing spaces for food-producing crops and trees. At the same time, working with her master students at Qatar University, Dr. Grichting wants to use these innovative ideas to educate the public on how to boost sustainability and protect the environment as well as solve important national issues such as food security. This needs to be addressed in an integrated way that considers the Food-Water-Energy nexus to create resilient systems.

Residential homes in Qatar commonly have flat roofs. These can be transformed into lush green gardens that are also productive and make use of existing materials by recycling waste. Wastewater from general home usage (such as used bath water or from washing machines) can be channeled up to the roof to water plants and vegetables. Kitchen food waste can be stored in compost units and used as valuable fertilizer. Additionally, rooftops of shopping malls can also implement these regenerative systems, producing food, recycling water and organic waste, reducing food miles as well as capturing CO2 and reducing the Urban Heat Island effect. These are all methods that are already being successfully implemented worldwide, says Dr. Grichting, and the information is available to make it work. What is important though is that the load-bearing potential of the roof is calculated so as not to cause damage or a serious accident by putting too greater weight on the roof! The waterproofing of the house in question is also important.

There has been some skepticism towards her ideas because generally composting is not practiced in Qatar and it can be smelly. Additionally, it might be difficult to grow vegetables all year round and the general population needs to get behind the idea to make it work, which can be challenging. However, special composting drums that prevent bad smells are available and Dr. Grichting argues that growing periods do not have to be throughout the whole 12 months of

the year to still be effective. One of the most important factors is awareness and a drive to solve the nation's challenges. If more people become aware of the possibilities and how they can be practically implemented there is real scope for solving the sustainability and environmental problems we face as a regional and global community in Qatar.

Dr. Grichting argues that we need to look at homes as systems where water, for example, is utilized to its maximum effect and waste is minimized. Clean water must be pumped to houses and then wastewater must be pumped away. This requires energy. If wastewater is recycled from the kitchen to the garden then less water is needed to be pumped to the house and next to no water needs to be pumped away; saving energy, costs and valuable resources like water. On an institutional level, there has also been progress. Dr. Grichting has developed and piloted the concept of the 'Edible Campus' at Qatar University that utilizes many of these ideas.

### Edible Campus at Qatar University

Being situated in an arid and desert geography, the State of Qatar and most countries of the GCC have limited land and water resources. Countries in the Arabian Gulf region have challenges with food security with a dependency on foreign imports that range from %80 to %90. Food security is on the political agenda in the region as countries are exposed to risks in the availability and affordability of food as well as fluctuating prices. Innovation in the production and supply of food is therefore of the utmost importance. Universities pose excellent sites for innovation in such areas because they act as key hubs for spreading knowledge and training highly skilled individuals to meet the unique challenges of the Gulf.

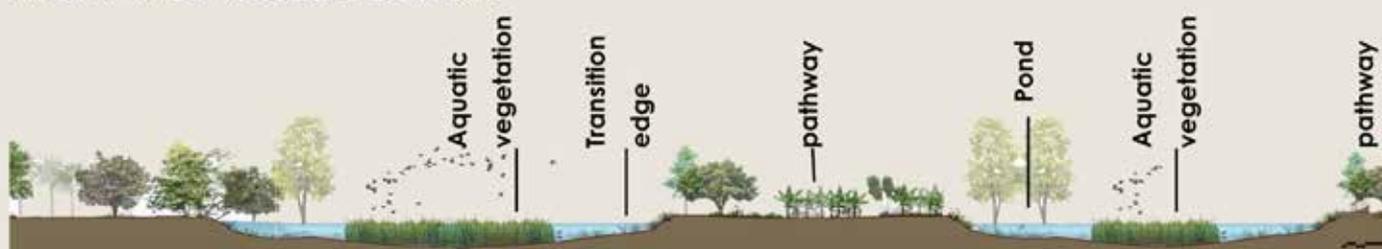
QU Campus with Green and Productive Rooftops using Regenerative Systems designed by undergraduate students.

Dr. Grichting has drawn up a proposal to improve the sustainability and resource efficiency at Qatar University based on an existing concept called the Edible Campus.

## Biodiversity hotspot proposal



### Noth Wet-lands section



### Future Campus Biodiversity habitat

This concept involves constructing spaces to grow food within the University grounds. Decorative landscapes, rooftops, and unused land can be transformed into productive landscapes by growing food and medicinal plants on those sites. These projects have been described by Dr. Grichting in a number of academic articles and newspaper features and she organized an exhibition and workshop on “Landscape for Food Security and Biodiversity” at the College of Engineering, sponsored by the Swiss Embassy and local Swiss and Qatari companies, where she brought specialists on green roofs and biodiversity from Switzerland and the UK. So information on how to implement them is available. The primary purpose of the Edible Campus is to provide healthy and sustainable food but it also serves to educate university staff and students about the production of food and the resources involved. Growing food on campus reduces the energy that is required to bring food from distant agricultural farms to the consumers (the food print). Alongside this, it can facilitate more efficient resource use and recycling.

Dr. Grichting also organized a workshop on composting on the QU campus, as part of a

conference on Sustainable Urbanism: New Directions funded by the Qatar National Research Fund (QNRF) last year. Led by Nance Klehm, a soil specialist from the United States who was one of the conference speakers, the workshop entitled “Soul to Soil, From Waste To Fertility: Building Soil Fertility With Compost” brought together students, certified permaculturists, QU gardeners and landscape planners, school children and teachers as well as professionals, to build a composting pit at Qatar University. This system is now being used by the University to recycle organic waste and create fertile compost for the University.

Such food producing crops and plant life can still provide other urban and climatic needs such as shade. For example, edible walkways can be created using fruit trees. Food production using the techniques of permaculture can also be adapted to increase biodiversity across campus by selecting plants that attract a variety of insect and animal species. Of course, all the methods adopted will need to be carefully designed to be suitable for the dry and hot climate of the Gulf region. Dr. Grichting has drawn up proposals for such projects in

her research and implemented them in a variety of contexts. For example, an edible boulevard and edible rooftop garden are being implemented at Qatar University’s campus at the College of Engineering. She also develops this research with her students and has collaborated with the Environmental Science Center on the edible garden project, conducting soil samples with the students and selecting the appropriate species according to the climate and orientation.

Biodiversity is also an important consideration in sustainable and resilient landscaping and urban development. Therefore it is important to select plantings wisely and to eliminate the use of chemicals in order to foster the presence of a maximum diversity of beneficial species in the landscapes.

Alongside her work on sustainability and the national challenges facing the State of Qatar, Dr. Grichting has been involved in intriguing projects to bring peace to areas previously plagued by violent conflict. She uses her skills in urban planning and architecture to use open spaces and landscapes as tools to bring people together for sustainable peace where previously there had been conflict and war,

such as in Cyprus.

## Peacebuilding in Cyprus

Dr. Grichting has focused on border territories between warring nations or ethnic groups that often become environmental havens of biodiversity because of human inactivity (people are not able to build developments on them due to the conflict). These border territories are known as ‘green lines’.

## What is a ‘green line’?

The term ‘green line’ can refer to a band of land that is preserved from residential or commercial building construction work so as to maintain the landscape and scenery. In conflict terminology ‘green line’ has been used to refer to the military dividing line that separates two warring territories. The first reference has been attributed to the demarcation line between the German Army in Italy during World War II. Later it was also used to refer to the armistice line between Israel and the Arab nations in 1949 as well as the disputed border between India and Pakistan. The ‘green line’ in Cyprus signifies the derelict strip of land controlled by the UN as a buffer zone since the cease-fire in 1974. In contemporary questions of landscape or nature reserves, such spaces have been recognized as ecologically valuable and useful for sustaining biodiversity in a world where this is becoming increasingly important.

## Bringing life to the dead zone in Cyprus

As Dr. Grichting has noted in her research, the environmental wastelands that occur as a result of demilitarized zones have huge potential for peacebuilding. It may seem unfeasible to bring together two conflicting parties when territory is disputed. Often this land is the reason for aggravation due to contestations over limited water, land and potential wealth generating resources. However, because of the mutual interest in preserving green zones for recreational use and protecting wildlife, there is great potential. Especially as such preservation projects, unlike resource exploitation, often require long-term solutions, mutual

cooperation, non-governmental involvement and ignore political divisions. Dr. Grichting has mentioned that “The unexpected natural developments that emerge in the confined areas of boundaries and buffer zones have resulted in these liminal landscapes [borders or boundaries of mutual interest for both sides] being recognized as unique reserves of biodiversity, as backbones for sustainable development and as potential catalysts for peace.”

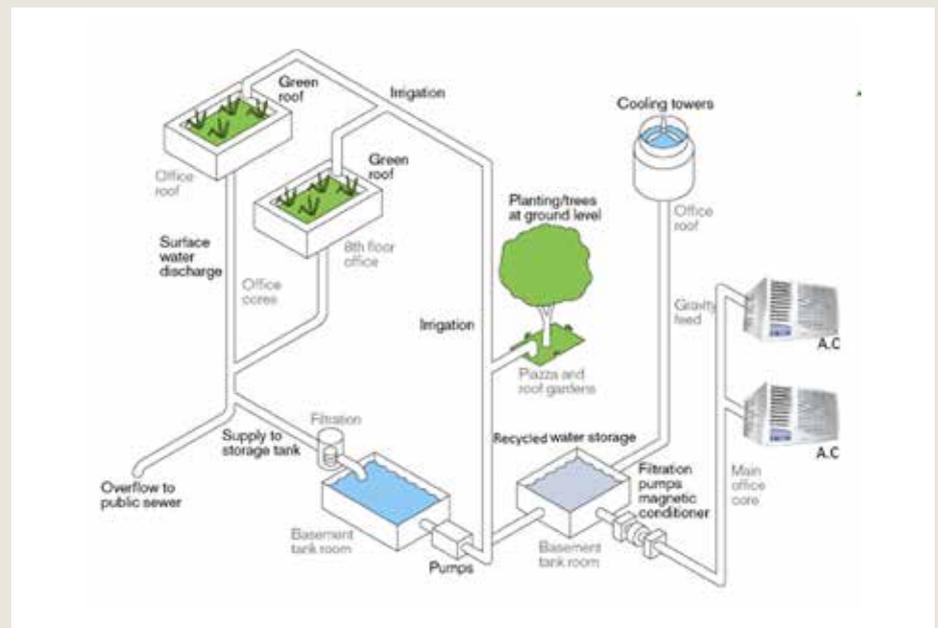
## The green line in Cyprus

In Cyprus, the green line has come to be known as the Buffer Zone, Dead Zone or ‘No-man’s’ land. The green line cuts through the center of the capital city Nicosia. It contains landmines and other pollution alongside other traumatic memories of its bloody past. However, it has also remained undeveloped by inhabitants thereby creating a nature reserve similar to the Demilitarized Zone in Korea which has come to be known as a Garden of Eden. This dividing line between North and South Korea, stretching a width of four kilometers, now hosts a rich array of endangered animal and plant life. Dr. Grichting has identified the same potential in green line in Cyprus.

Dr. Grichting argues that the ecological and peacebuilding potential of the green line in Cyprus is something both governmental

and non-governmental bodies in the country should recognize and include in any future projects. She has suggested therefore that the vision for the Green Line in Cyprus should include policies and planning that serve the Cypriot communities in the face of growing environmental threats, diminishing resources, increased cooperation between the two communities alongside collaboration with regional and global actors where needed. The aim of Dr. Grichting’s project is to utilize the current environmental initiatives dealing with biodiversity, resource scarcity, and pollution to establish the foundations for a sustainable future development of the Green Line that also fosters peaceful relations between the two Cypriot communities. She has just published a book with co-editor Dr. Michelle Zebich Know, on the Social Ecology of Border Landscapes, which brings together leading scholars on border studies, and discusses the link between the ecologies and the communities living along the borders.

As has been described, Dr. Anna Grichting has brought fresh ideas to the big challenges facing Qatar, the Gulf region, and the world. Through imagination and innovation alongside practical experience and workable models already implemented, her research and projects represent exciting developments taking place at Qatar University. We look forward to seeing where Dr. Grichting takes her projects next and what she sets her sights on in the future



## News

# Tissue Engineering and Stem Cells technologies:

Dr. Hussyien Yalcin



Qatar University Biomedical Research Center, QU-Health and Qatar National Research Fund in Qatar Foundation organized a CPD accredited workshop entitled “Tissue Engineering and Stem Cell Technologies” . Over 150 participants attended the workshop from many disciplines including healthcare practitioners, academicians, students, researchers, and pharmacists. The scope of the workshop is Tissue Engineering and Stem Cell Technologies. This is a very popular area of research with the potential to cure serious diseases including cardiovascular, orthopedic and neuronal disorders. The workshop was organized as one hour lectures delivered from local and international experts in the field. These experts explained the participants their area of research relevant to stem cells and latest findings from their laboratories. In this event, Qatar University has teamed up with many reputable academic institutions to deliver a CPD activity for a variety of healthcare professionals. The two-day course intended to provide the participants with comprehensive knowledge on the topic of Tissue Engineering and Stem Cell

Technologies .

Prof. Asma Al-Thani - the director of the biomedical research center at Qatar University- said that topics discussed in the workshop reflect the higher education support in striving for new technologies and keeping abreast of developments in the medical field in Qatar.

The CPD coordinator at Qatar University ; Dr. Hiba Bawadi said that this workshop responds to the need raised by health care practitioners for continuous education in recent technologies in medicine.

Assistant Professor of Metabolic Diseases, Cardiovascular Research, Huseyin Yalcin added that regenerative medicine is a very popular field of research for generation of live tissue replacements that have the potential to cure today’s many serious health conditions. We expect to see tissue engineered, stem cell seeded products in clinical practice in the near future.

## Participating institutions included:

- Qatar University, Biomedical Research Center
- Sidra Medical and Research Center, Stem Cell Core Facility
- Weill Cornell Medical College in Qatar, Stem Cell Core Facility
- Qatar Anti Doping Lab, Stem Cell Research Laboratory
- Qatar Biomedical Research Institute, Diabetes Center
- Hamad Bin Khalifa University, Environmental Sustainability Division
- Cornell University (USA), Department of Biomedical Engineering
- Middle East Technical University (Turkey), Center of Excellence in Biomaterials and Tissue Engineering
- Ankara University (Turkey), Stem Cell Institute
- Izmir Institute of Technology (Turkey), Department of Bioengineering
- University of Nizwa (Oman), Laboratory for Stem Cell Research & Regenerative Medicine,
- American University of Beirut (Lebanon), Faculty of Medicine

The event program has been accredited by Qatar Council of Health Practitioners Department as a CPD activity and the attendees of the complete program earned 12 Credit Units

## News

# Research on water-pipe smoking & cell-phone radiofrequency at Qatar University

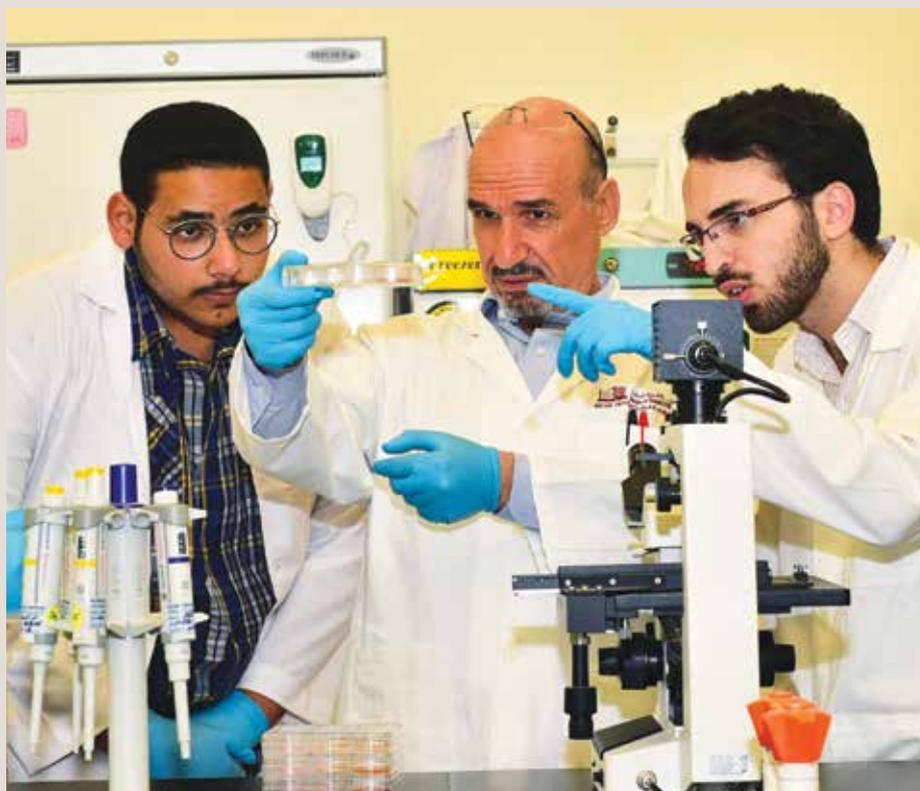
**Dr. Ala-Eddin Al Moustafa**

College of Medicine & the Biomedical Research Centre of Qatar university

Due to the potential impact of water-pipe smoking on women's health especially during pregnancy, and since it is the most common tobacco use in the Middle-East region; we decided to elucidate the outcome of WPS on the early stage of the embryo using the chicken embryo model. Thus, in my laboratory at the College of Medicine and the Biomedical Research Centre, we were able to demonstrate, for the first time, that WPS inhibits angiogenesis (blood vessel development) of the chorioallantoic membrane (CAM) and in the embryos in comparison with their matched controls (Figure 1). In addition, WPS-exposed embryos show slight reduction in their sizes. We also reported that around %80 of WPS-exposed embryos die before ten days of incubation. This work was recently published in the *Nicotine & Tobacco Research Journal of Oxford Academic group* (Ashour et al., 2017). On the other hand, and to continue our research on WPS and women's health, we recently investigated the effect of WPS on breast cancer development. Our data pointed out, also for the first time, that WPS can play an important role in the progression of this malignancy. These results will be submitted soon for publication. The work of this project is conducted by a group of three students from the College of Medicine.

In summary, our data on WPS imply that exposure to smoke from water-pipe (directly or indirectly) could have a dramatic effect on pregnant women as well as breast cancer patients.

On the other hand, widespread use of cell-phones globally has inspired several researchers to explore its effect on human health. Their studies pointed to a



possible association between cell-phone radiofrequency and increased risk of head and brain cancers. However, the outcome of cell-phone RF on head and neck (HN) cancer progression is not clear. Thus, in my lab we examined the effect of cell-phone RF on HN cancer progression using CAM and human HN cancer cell line models. We found that cell-phone RF enhances blood vessel development which is an important element in cancer progression and metastasis. Meanwhile, our data showed that cell-phone RF can stimulate cell invasion and colony formation of HN cancer cells (Figure 2). These data suggest that cell-phone use in HN cancer patients could have a critical effect on their cancer

progression. Data of this investigation was recently submitted for publication which is presently under revision. This work was also conducted by three students from the college of Medicine.

In conclusion, we firmly believe that research in these areas will have an important impact on human health in our community.

### **Acknowledgment:**

My lab research is fully supported by Qatar University grants.

## Student in the limelight

# Students demonstrate capacity with project on “An Enhanced Adaptive Steering Algorithm for Redirected Walking in Virtual Environment”



In Qatar University, students are known to take up research challenges or projects to prove their mettle. Three final year students of Computer science and Engineering Mohsen Yousef Kanani, Yousif Abdulla AlJabir and Salem Ghanim Al-Ghanim demonstrated just that with their project on “An Enhanced Adaptive Steering Algorithm for Redirected Walking in Virtual Environment”. Funded with a grant from the Qatar National Research Fund (QNRF) Undergraduate Research Experience Program (UREP), the students were third place winners in the Senior Project Design Awards by Qatar University. They were supervised by Dr. Osama Halabi, Assistant Professor, Department of Computer Science and Engineering, College of Engineering, Qatar University.

### What is it about?

In the course of the project, it became evident that in Virtual Reality (VR) systems, the solution of redirected walking (RDW) which was introduced by S. Razzaque in 2001 allow users to walk in a larger Virtual Environment (VE) within a limited tracking area. The way redirected walking works is simply by applying various distortions, like rotating the VE at a certain rate, that will let the user follow a certain path in the real world, different from what he sees through Head Mounted Display (HMD) screens. For instance, the user may move in a circular path in the tracking space while he is moving in a straight path in the VE. The user believes that he is really walking in a straight path, not a circular one. For this technique to be efficient the applied distortions must be subtle to prevent the user from noticing these distortions and to feel more natural.

The efficiency of redirected walking algorithms are measured by two important factors: Simulation sickness, and Sense of presence. It is trivial that VR systems may cause dizziness to many users in normal conditions. Therefore, applying RDW distortions to the VE makes this problem more dramatic. To get through this, the students used a well-defined questionnaire called Simulation Sickness Questionnaire (SSQ) developed by R.S. Kennedy in 1993, to assess this factor. This questionnaire is used in most VR experiments done for research papers



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Working on  
such a frontier  
technology is  
still limited to  
big institutes  
and the future is  
promising.”  
– Dr. Halabi

to estimate the VR sickness. On the other hand, the sense of presence is another major factor that is considered while evaluating VR systems. It gives the impression of “how much the user got immersed” in the VE. The Presence Questionnaire developed by M. Slater in 2000 was used in the project to estimate the sense of presence.

The current algorithms that proved to be effective for certain circumstances are Zig-Zag algorithm, Steer-to-Orbit (S2O), and Steer-to-Center (S2C). They all work in the

same manner, although the steering target varies; where the steering target is the next point in the tracking space that the user must reach. In their research, the group developed two novel approaches for RDW: a Hypotrochoid algorithm, and a Guidance system for VEs. The first approach is based on Hypotrochoid equations to generate the steering target points. The properties of the Hypotrochoid equations gave them the flexibility to control and generate points that follow a certain pattern and end up with a unique shape, such as a rose shape path. The second approach is based on a human avatar placed in front of the user in the VE to guide the user to the desired steering target point.

For both methods, they tested the impact of each method in terms of simulation sickness and the sense of presence in comparison to two of the current algorithms, S2O and S2C. The experiment was testing each algorithm in two different VE types; indoor and outdoor VE; and in addition, the effect of the existence of the guidance avatar in terms of sense of presence. For the sense of presence, results showed that Hypotrochoid algorithm perform better than S2O and S2C algorithms for outdoor VE, and no significant difference for the indoor VE. Moreover, the SSQ results showed a noticeable improvement in reducing the simulation sickness compared to S2O and S2C by %64.67 and %76.9 respectively. Whilst the guidance system improved the sense of presence for all the algorithms by %, %18.7 %21.22 and %4.12 for Hypotrochoid, S2O, and S2C algorithm respectively.

### Reflections on the project and its relevance

The students enthused that Virtual Reality (VR) systems are transferring the technology into a new era where it immerses the users in a virtual space known as Virtual Environment (VE), placing the user in an imaginary human-designed VE displayed in the Head Mounted Display (HMD). The advancement in technology has also allowed real walking in such VEs. The first device released with user position tracking was by HTC, the device is known as HTC Vive. It tracks the user position in the real space and simulates it to the VE displayed on HMD's screens. However, the limitations in the Vive, as they found out,



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I am very grateful for the lessons it provided to aid me in my future professional life.”

– Yousif



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If we were working on it full-time without the stress of studying, we could build a useful framework that would serve our community in virtual reality.”

– Salem



“

The research-based project has added to us the skills required to pursue higher education degrees.”

– Mohsen

are still restricting the application of VR technology, because the area covered by the HTC sensors are limited to 4x4 meters. Which means the user may walk freely in only a room-scaled area. This restriction does not allow walking in a VE larger than the tracking space. "In our project, we were aiming to allow larger VE with such limited space without losing the user experience. Therefore, we designed a novel algorithm that is based on the concept of redirected walking. This concept applies various types of distortions to the VE to steer the user from leaving the tracking space," they said. "For example, the user will walk in the real space in a circular path within the tracking space, and what he sees in the HMD screens is that he is walking in a straight path. We used hypotrochoid equations to generate the paths for the user to follow."

### How was it working in a team?

Working as a team offered them bonding and a good experience, and provided them insight of what will be applicable in the workplace. "We learned how to distribute the tasks among us depending on our skills. Working in a team requires lot of time management skills alongside with stress management where we had to remain calm in the most stressful times," they responded.

### Message for Qatar youth

For Qatar youth, the message is that working in virtual reality projects is the trend in the technology sector worldwide. The future of VR is very promising in the coming years, hence, "we recommend all the youth to invest on such projects; especially those who are interested in gaming and computer graphics."

### Contribution to QNV 2030

Looking into the future towards meeting national objectives, it is important to note that Virtual Reality systems can be the root of interactive multimedia systems. "By improving this technology, we are encouraging the enhancement and use of VR to prepare for a more advanced educational systems, which is part of what the Qatar National Vision 2030 advocates when it

stated: "Qatar is establishing advanced educational and health systems, as well as increasing the effective participation of Qataris in the labor force."

### How did it feel winning the award?

It was a great honor for the students when they won the 3rd place in the Senior Design Awards among all senior projects of the Computer Science Department in Qatar University. That was the result of the hard work which they invested in during the days and nights over the graduation semester. "Winning the award motivated us to take the project a further step forward to apply for international conferences and publication in journals," they said.

### What import for Qatar and the community?

The applications of this algorithm vary depending on the context of the VE itself. Agencies in Qatar, for example, may make use of this algorithm to develop virtual tours to support tourism in the country. Also, the medical sector may set up virtual training sessions for surgeons by simulating surgeries that will reduce the cost, and risk of such training.

### Challenges encountered

To achieve their goal, the students had to work with the state-of-art technology in virtual reality and read about the recent advancement in the field of redirected walking to be able to find a new algorithm that can perform better than the state-of-art algorithms. They had to work with hypotrochoid equations to generate the steering target point for the specified shape. Also, testing the algorithm and choosing the shape was tricky as they had to perform many tests on themselves in a very tight time constraint. Afterwards, the most challenging part was when they had to start surveying on volunteers. "To get enough number of volunteers needed lot of communication and convincing. Moreover, managing the surveying process itself needs a decent strategy to avoid losing the data, or missing something in the survey," they added.

Dr. Halabi who supervised the students is pleased with their achievement and success, pointing out that they were very motivated and interested in working with virtual reality technology. "They were able to quickly understand the state-of-art HMD and master the related development tools. They took the project to the next stage from application to innovation in which they invented a new algorithm for redirected walking that proved to perform better than well-established algorithms. Working on such a frontier technology is still limited to big institutes and the future is promising. The students had an excellent opportunity for exposure to new topics not covered in the curriculum that could be beneficial for their professional development," he said.

The students also reflected on their success and achievement and gave indication of what it would contribute to their future aspirations.

Mohsen said: "Achieving this project and winning in the Senior project awards was a great honor for us all. Also, the lessons we learned from it are tremendous. For example, the algorithm is based on a mathematical model, hence, we had to apply what we had learned from Mathematics courses in the University. Moreover, the experience we had by working on a new VR system adds a big advantage to our list of experiences in the field of Computer Graphics. In addition, the research-based project we made has added the skills required for me to pursue higher education degrees."

Salem said: "The project helped me set my goals for the future. I am very proud of what we delivered and I think that if we were working on it full-time without the stress of studying, or without the restriction of the senior project, we could build a useful framework that would serve our community in virtual reality."

Yousif said: "Working on this project showed me the great potentials of virtual reality and the future it has in its different applications. I am very grateful to have had this opportunity to work on a wonderful project with the help and support of wonderful people and for the lessons, it provided to aid me in my future professional life."

## News

# QU achieves big win in NPRP 10th cycle and UREP 21st cycle

## NPRP Projects



Qatar University (QU) was awarded the largest number of grants in the 10th cycle of National Priorities Research Program (NPRP), a flagship program of Qatar National Research Fund (QNRF).

29 proposals out of a total of 85 submissions have achieved awards, translating to %34 of the total awarded proposals -- the highest among awarded institutes in Qatar. The 29 proposals cover the areas of translational research, experimental development, and applied research. These include 19 proposals by the College of Engineering (CENG), four proposals by the College of Arts and Sciences (CAS), three proposals by the Center for Advanced Materials (CAM), two proposals by the College of Business and Economics (CBE), and one proposal by the Biomedical Research

Center (BRC).

Additionally, QU was awarded USD513,195 for 25 proposals in the 21st cycle of QNRF's Undergraduate Research Experience Program (UREP). The awarded proposals cover various areas such as natural sciences, engineering and technology, medical and health sciences, and social sciences and humanities. A total of 54 researchers and staff and 111 students across QU colleges and centers are engaged in these proposals.

Commenting on this achievement, QU Vice President for Research and Graduate Studies Prof Mariam Al-Maadeed noted that QU is very active in addressing the research areas of the Qatar National Research Strategy. She said: "I congratulate our faculty and

students for this great achievement. This proves that the University is moving in the right direction through its research by tackling topics of national priorities. This is also a step towards the realization of the vision of His Highness the Emir Sheikh Tamim bin Hamad Al Thani who, in his latest address to the nation, expressed the need to develop academic institutes and to focus on research and innovation. I am thankful to QNRF for recognizing the true talents of our faculty and students."

Director of Research Support at Qatar University Dr Aiman Erbad said: "QU has nine colleges and five main research centers that tackle issues of national priority and train the new generation of researchers to help Qatar to fulfill the goals of Qatar National Vision 2030.

The Qatar National Research Fund has been supportive of QU throughout the development of its research infrastructure and the achievement of cutting-edge research."

He added: "QU has managed to build a large research network with collaborators from different parts of the world. The NPRP's 10th cycle has more focused research priorities and encourages the co-funding of industrial partners to help increase the research impact. Critical areas such as cyber security, diabetes, oils and gas, and entrepreneurship are part of the new research priorities."

Over the past years, QU has achieved a steady progress in its research activities and the number of grants awarded by various entities. Over the last five years, QU's research program has witnessed a tremendous growth with the faculty output being doubled between 2017-2013.