

Qatar Foundation champions next generation of scientists on Qatar National Day

Doha, 17 December 2013 – As Qatar Foundation for Education, Science and Community Development unites in commemorating the country's rich history, it also embraces Qatar's bright future by acknowledging the achievements and creative contributions of its men and women. Since its founding in 1995, Qatar Foundation has championed the role of youth in sustaining a prosperous society and economy by initiating a host of research-based programmes to inspire the next generation of scientists, researchers and academics.

Through the aspirations of young Qataris and their outstanding accomplishments, Qatar Foundation pays tribute to the noble values espoused by the nation's leadership, as reflected in Qatar National Vision 2030. His Highness the Father Amir Sheikh Hamad Bin Khalifa Al Thani expressed his utmost confidence in the vast potential of youth to advance the goals of the nation through their commitment to lifelong learning, perseverance, and hard work.

Under the steadfast guidance and support of Her Highness Sheikha Moza bint Nasser, Chairperson of Qatar Foundation, and His Highness Sheikh Tamim Bin Hamad Al Thani, Amir of Qatar, innovative and technological progress is underway and the nation has built a solid foundation to advance towards a knowledge-based economy.

To honour the vision of the nation's wise leaders, Qatar Foundation continues to invest in the most up-to-date fields, training, research and development (R&D), so as to ensure the effective participation and tangible contribution of its youth.

Quest for Scientific Discovery

Engineer Saad Al Muhannadi, President of Qatar Foundation, underscored the organisation's mission to equip nationals with the necessary education and practical skills to compete successfully in the global economy.

"Nations across the world are recognised for their scholars. The scientific advancement that a country attains is a true testament to its growth and this demonstrates its quest to provide the highest standard of living to all its citizens. As we commemorate Qatar National Day, we also celebrate the great successes that our nation has achieved over the past year. Scientific endeavour is at the heart of our mission and it's an indicator of Qatar Foundation's efforts to fulfil the objectives of Qatar National Vision 2030," he said.

He also emphasised the role of Qatar Foundation Research and Development (QF R&D) and its affiliated centres in creating the most effective solutions to the grand research challenges that the nation faces.

"Qatar National Day is an opportunity for us all to reflect upon Qatar Foundation's contributions to the country's vision and to appreciate its commitment to help the nation transform into a knowledge-based economy. The field of scientific research stands at the forefront of various

initiatives, activities, and educational programmes provided by and supported by Qatar Foundation. We are aware that the future of every country rests upon a solid foundation of research, which can bring about sustainable solutions to any challenges that it may face.”

Engineer Al Muhannadi added, “With the wise support of the country’s leadership, Qatar Foundation will continue to invest in scientific advances for the State of Qatar, with the aim of encouraging youth to acquire the necessary expertise, as they pave the way to becoming the next generation of scientists. Today is yet another opportunity to showcase the important role of science and research in achieving a sustainable future for the country’s nationals and its wider community.”

Setting the Foundations

Research is a critical pillar of Qatar National Vision 2030. In 2007, Qatar Foundation established a research division with the aim of developing a flourishing scientific community in Qatar. Since then, Qatar has continued to grow into a leading centre for research and development excellence and innovation with a number of progressive research programmes, including Qatar Science Leadership Program (QSLP) and the Qatar Foundation Annual Research Conference (QF-ARC).

Mr Faisal M. Alsuwaidi, President of Qatar Foundation Research and Development, emphasises the importance of creating a vibrant research culture for talented students to develop their capabilities, alongside experts scientists from all parts of the world. He also shed light on the importance of providing funding for R&D to ensure that home-grown innovations are commercialised and used.

He said, “We are creating a high-quality research environment that we believe will attract both world-class scientists from abroad and young Qataris. Our various science research training programmes will provide more opportunities for our young talent and, hopefully, will attract the very best students to pursue research careers. I believe we are creating a top-notch and supportive research environment and culture here in Qatar that will attract the highest calibre of scientists today and into the future.

“Everything we do to promote awareness of science and attract interest in scientific research and the advances that it brings to human societies will increase the levels of motivation and engagement. We want our next generation to be excited about entering science and math fields. We want to attract the best, brightest, and most creative people into Qatar’s R&D enterprise.”

With an approach centred on developing human capital and enhancing the well-being of the population, QF R&D covers a full spectrum of programmes targeted at various age groups. Mr Alsuwaidi explained that research training programmes have been established to familiarise schoolchildren at all ages from elementary to secondary school with science and technology fields, and to encourage them to pursue their studies in these areas.

“Our Research Institutes have strong internship programs, in addition to having research graduate students who work in the institutes with our research scientists and who are formally enrolled at the Master’s and Doctoral level in local and overseas universities,” he said. “With the support of the Supreme Education Council we are also helping school teachers in Qatar to teach science in ways that are as interesting and exciting as possible, helping both teachers and students to understand the delight of discovery.”

Funding Progress

The government of Qatar has dedicated 2.8 percent of the country’s GDP to research initiatives and Qatar Foundation is taking a lead. The organisation has been heavily involved in the development of

the Qatar National Research Strategy (QNRS), which was launched in October 2012, and marks a significant milestone on the journey to realising Qatar National Vision 2030.

With the aim of building a collaborative research culture, the strategy was the culmination of a wide-ranging consultation with numerous national stakeholders and partners and focuses on key research pillars, including energy and environment, computer sciences and ICT, healthcare, social sciences, humanities, and the arts. Established seven years ago, Qatar National Research Fund (QNRF), a key constituent of QF R&D, has joined this effort by helping to pave the road for the growth of a comprehensive research infrastructure and culture.

Dr Abdulnasser A. Al-Ansari, QNRF's Deputy Executive Director, highlighted that as the sole funding agency in Qatar, QNRF has been a key agent for change in the field of research, both locally and internationally.

"Compared to many established international funding agencies, QNRF is still a young organisation. That being said, we had a herculean task at the onset and we have achieved tremendous success in a span of seven years. We are now running six funding programmes that cater to all levels of researchers, both local and international," said Dr Al-Ansari. "With an increased number of applicants for QNRF grants there is also a clear indication of increase in the number of interested Qatari youth. Through programmes targeted towards youth, we want to promote 'Learning by Doing' and a 'Hands-On' approach in research."

According to Dr Al-Ansari, QNRF has received over 5,500 research proposals across its various programmes over a span of seven years, out of which almost 1,500 were funded. While in terms of participation, QNRF has worked with almost 7,500 researchers from all levels, ranging from secondary school students to post-doctoral fellows and specialised scientists.

"It is also worth noting that increased participation cannot be taken as a standalone factor while commenting on the popularity of QNRF's programmes. The quality of research we have received over the years has also improved substantially. QNRF has always maintained that the projects we fund go through a stringent peer-review process and are of international standards," he explains.

"The number of publications from the researchers we fund has increased tremendously. Our researchers have published over 250 papers in 2012 alone, and that number has been increasing exponentially, year on year. Some of the projects we have funded have also gone on to win international recognition further demonstrating our commitment to excellence."

Noor Al-Merekhi, Manager of the National Priority Research Program (NPRP) at QNRF said, "Various programmes were designed and launched to address Qatar's need of becoming a knowledge-based economy, one of these successful programs, which I am proud to be the manager of, is the National Priority Research Program. NPRP is QNRF's flagship funding programme and the primary means by which QNRF seeks to support the mission of the Qatar National Research Strategy and key national priority needs through research and grant funding."

Al-Merekhi explained that the main goal is to build human capacity with emphasis on developing national capabilities in research. She pointed out that the investment in human capital is reaping positive results

"There is an increasing interest amongst Qatar's students and young researchers towards our different programmes, starting from the Secondary School Researcher Experience Program (SSREP), which is targeted at secondary school students and ending with the more seasoned researchers

through NPRP,” she said. “One of QNRF’s successful programmes that supports undergraduates students, and is also the first programme that QNRF launched, is the Undergraduate Research Experience Program (UREP). Through UREP, a wide array of research opportunities has been created for undergraduates, which are aimed at developing student capabilities in science and research.”

According to Al-Merekhi, about 1,700 proposals have been submitted to date by undergraduate students and approximately 700 projects have been awarded grants by QNRF. UREP has also witnessed high levels of participation from Qatari females, with over 500 young women applying for grants. This programme, which is currently in its 15th cycle, allows undergraduates to gain experience in research, and provides students with ‘hands-on’ experience in conducting original research under faculty mentorship.

Al-Merekhi concludes, “Before QNRF’s establishment there weren’t any research offices established in any of the academic institutions, now and after six years we have more than 70 approved research offices inside Qatar spanning from academic institutions, industry, ministries, private organizations, and non-governmental organisations. This can only indicate the extent of our investment in establishing research culture.”

Citizen Science

Qatar Biobank, a centre within Qatar Biomedical Research Institute (QBRI), serves as a platform and driver of vital health research through its collection of samples and information on health and lifestyle from large numbers of the Qatari population. The creation of Qatar Biobank, a member of Qatar Foundation, supports Qatar National Research Strategy and is a step towards engaging the wider community and achieving the country’s objectives.

Dr Asma Ali Althani, Board Vice Chairperson and Consultant at Qatar Biobank, stressed the importance of medical research to help prevent and improve treatment of prevalent diseases that affect the community, such as diabetes, cardiovascular disease, and cancer. Through the knowledge and information collected at Qatar Biobank, scientists over the next few years will be able to gain unique insights into the causes of diseases that affect the Qatari population.

Dr Althani said, “Qatar Biobank is helping Qatar Foundation improve the health of future generations in Qatar, by facilitating biomedical research, which will focus on tackling long-term health issues that prevail both in Qatar and around the world. As a relatively small country, Qatar offers researchers from around the world an unrivalled opportunity to analyse medical data and trends. Qatar Biobank will help the Arab world grow its own expertise to support medical health locally, which will help reverse importing expertise from abroad.”

According to Dr Althani, most of the present medical treatments have been developed through the study of Western populations and there has been a lack of large-scale biomedical research based on populations in the Arab world. Rather than see patients travelling abroad for specialised treatments, Qatar Biobank is aimed at driving research to develop tailored healthcare and personalised medicines at home. The knowledge and information collected by Qatar Biobank facilitates research at QBRI, as well as other medical facilities in Qatar.

“Through our recruitment approach, Qatar Biobank aims to provide a model for public involvement in biomedical research. By inviting the public to contribute, it empowers the local community to take on an active role as ‘citizen scientists’, helping to shape the health of future generations,” said Dr Althani. “Qatar Biobank aims to raise the Arab world’s profile in the field of biomedical research. As such, our team of scientists works to high standards and drives new national and international benchmarks for the collection, storage, provision and use of samples for research.”

Making a Difference

On its journey towards scientific innovation, Qatar Foundation has seen bright, young Qataris commit to making a difference as they prove their determination to advance the nation's mandate and leave a positive mark on their community.

One such example is Tareq Al-Ansari, an exemplary Qatari, who earned a Bachelor of Engineering in Mechanical Engineering from University College London in 2008 and went on to gain worthwhile experience in his field by working at Qatar Petroleum. Two years later, Tareq decided to get more involved in research, innovation and sustainable development, and enrolled in QSLP.

Established by Qatar Foundation Research and Development in 2008, QSLP has become one of the most effective resources for producing scientific talent to support the country's national research agenda. The programme has helped many promising researchers to pursue careers in a variety of highly specialised scientific fields, including stem cell research, biomedicine, environmental sustainability and biostatistics.

The 26-year-old recounts, "In 2010, I saw an advertisement by the Qatar Science Leadership Program in the newspaper. I got in touch with Qatar Foundation and was contacted by Dr Ayman Bassil, Head of Research Training and Development at Qatar Foundation's Research Division. I told him that I have a strong passion for sustainability and that I wanted it to be the focus of my career. He advised me to apply to universities and I applied to the University of Cambridge for the MPhil in Engineering for Sustainable Development. There, I learned about water engineering, renewable energy, green buildings, environmental engineering and process systems."

Although Tareq developed an early interest in sustainability by reading about the subject, he is very grateful that Qatar Foundation and QSLP have provided him with the necessary opportunities to acquire knowledge that supplements his passion. After completing his Master's degree at the University of Cambridge, the high-achieving student continued on the path to success by earning a place in Imperial College London's doctorate programme.

He explains, "My PhD is about 'Understanding Relationships between Energy, Water and Food'. There is a lot happening in all three sectors in Qatar, and my knowledge and experience allows me to add value. For my research, I make models about the environmental impact of resource consumption, whether it is in energy, water or food. It is important to understand that these resources that we have are not isolated, but that they are all interlinked and if you change one of them, the others change as well. There is an overall impact on the environment and this is what my model quantifies."

Tareq urges nationals to join QSLP and is eager to share his ideas with youth who want to pursue similar interests. He hopes to make a difference in his community by passing knowledge onto others, so as to spark new ideas.

He says, "I have managed to convince a few people to join QSLP and I simply tell them that science and research will give you the freedom to think and innovate. I don't think money is the main driver of researchers. A researcher will go into the field with the frame of mind that he or she wants to make a difference to the community and they want to develop something unique – that is the frame of mind we go into R&D with."

At this year's Annual Research Conference, Tareq was awarded third place in the Energy and Environment sector for his poster presentation on 'The Sustainability Assessment of the Energy, Water and Food Nexus.' He hopes to one day have his own a research group at Qatar Foundation and says it will probably be within the energy and environment institute.

He concludes, "National Day is a great day to showcase the country's pride. The country has come a long way and I think we are making very smart and strategic decisions, and I truly believe that Qatar will be an even more prosperous nation in fifty years' time. One that is self-sufficient and sustainable."

National Pride

Mohammed Al-Khori, 25, a Senior Research Analyst at Qatar Environment and Energy Research Institute (QEERI), echoes similar sentiments and explains that on Qatar National Day, the community should reflect on the past and how far they have come.

"As a child, the Qatar that I remember 15 years ago is completely different to the Qatar that I see today. The level of progress and development has been staggering and I think that is due to His Highness the Father Amir Sheikh Hamad Bin Khalifa Al Thani because he had the vision to transform the nation and help it compete on the international scale. He also expanded the educational opportunities for people, and with Her Highness Sheikha Moza bint Nasser improved the educational system in Qatar and introduced world-class universities," says Mohammed.

"We should look at what we have accomplished in the years gone by, and what goals we need to work on for the coming years, both personally, and as a society. It is day in which we can feel proud as a nation of how far we have come, but it is also about looking to build on the progress we have made."

In 2010, Mohammed earned a Bachelor of Science in Mechanical Engineering from Texas A&M University at Qatar. After graduation, he felt it was important to gain practical experience and hone his interpersonal skills by working in the oil and gas industry for two years, before joining Qatar Science Leadership Program and pursuing his research interest in energy studies at QEERI.

He explains, "I have been working on a project on the policy and economics of solar power generation and desalination in Qatar. In the last few years, solar energy for power generation and water desalination has been the local buzzword, but exactly how economically feasible is it? That is what I wanted to find out, because ultimately business is what drives new endeavours forward and we need to understand whether it will compete with natural gas or work in-tandem with natural gas to provide energy for Qatar."

The intelligent researcher says he appreciates having been given the chance to pursue his area of interest and to take part in finding solutions to Qatar's grand research challenges.

"I think there are going to be more scientists in the coming decade. If I look at myself and my Texas A&M peers, I see a lot of young Qataris pursuing the more challenging scientific degrees which bodes well for Qatar's future. I think we always need more engineers and more scientists, so I think the rate of young scientists will also be increasing because the support is there to develop their talent. But what is important to remember is that a degree should not be an end goal, it should be a tool in which you can apply your knowledge and help Qatar fulfil its 2030 National Vision," says Mohammed.

The patriotic Qatari adds, “It is really exciting, I am passionate about doing something for my country and providing sustainable solutions and making a difference for the future of Qatar – this is something that has been driving me the whole time.”

A Real-World Context

Hessa Darwish, 24, is another outstanding member of Qatar Environment and Energy Research Institute. The capable student, who completes her postgraduate studies in 2014, is currently enrolled at Columbia University in the U.S. and is working towards earning a Master of Science in Earth and Environmental Engineering, with a concentration in Sustainable Energy.

Hessa received a Bachelor of Science in Engineering (BSE) degree in Chemical and Biomolecular Engineering from the University of Pennsylvania in 2011. After completing her undergraduate degree, Hessa joined QEERI with the aim of completing a six-month internship.

She says, “I joined QEERI in October 2011 for a six-month internship. My experience was truly unique because as a fresh graduate you rarely get an opportunity to work very closely on projects with esteemed scientists such as those in QEERI. Many of the projects we worked on focused on targeting real world environmental problems. One particular project that I worked on was ‘Air Quality’ in Qatar, and I had the opportunity to work closely with the Ministry of Environment. Working with policy and decision-makers was a truly remarkable experience because I got to see the implementation of our work in a real world context.”

Hessa explains that she became inspired and interested in sustainable development when she read Qatar National Vision 2030.

“Qatar is facing major environmental challenges that must be properly resolved. These include two major topics: reducing carbon footprint and protecting its natural environment specifically in relation to the scarce water sources. This requires increasing energy efficiency or introducing innovative and sustainable methods of energy. In order to advance this development we need to restructure the way we perceive things currently. If we are to provide a better living environment for Qatar’s growing population, research and development in the energy and environment field is essential,” she says.

Hessa believes that at present there are no obstacles for women to be a part of R&D efforts and to pursue their ambitions. She points out that the quality of research and innovations developed by all nationals has improved over the past few years.

“There are currently more females graduating with higher degrees than males in Qatar and especially in QSLP. This demonstrates a growing interest in pursuing R&D among young Qatari females,” she says. “We are fortunate enough to have access to a plethora of resources such as world-class institutions. As young Qataris whether in Doha or abroad pursue graduate degrees, it is only natural that the quality of research will advance.”

In just a short span of time, Qatar Foundation has cemented its role as an extraordinary agent for advancement in the field of science and research, both in Qatar and internationally, as it empowers and champions nationals of all ages to innovate and discover. With so many success stories, Qatar Foundation’s commitment to diversifying the nation’s economy continues to progress steadily within a real-world R&D environment that thrives upon excellence and collaboration.

Qatar National Day 2013 – Student boxes

1.

My name is **Ahmad Sami Abushaikha**. I am currently enrolled in Qatar Science Leadership Program's Research Scientist Track. I will be completing a PhD in Petroleum Engineering from Imperial College London this month (December 2013).

Can you tell us how your research will help advance Qatar?

My research is focused on the development of a new numerical method for numerical modelling of fluid flow in hydrocarbon reservoirs. These methods provide energy companies such as Qatar Petroleum with computational tools (software) to accurately predict the performance and efficiently manage the hydrocarbons production of their fields.

What does Qatar National Day mean to you?

It is a day of unification, solidarity, and independence. I hope to provide my country with world-class research and innovative ideas to assist in transforming its economy into a knowledge based-economy.

2.

My name is **Sara Ali Abdulla**. I joined the Research Scientist Track at QSLP after completing my undergraduate degree in 2010. I am currently studying for a PhD in Clinical Neurosciences at the University of Cambridge in the UK and I expect to graduate in 2015.

Can you tell us how your research will help advance Qatar?

I decided to focus my area of research towards the health sector, and in specific, looking at the use of stem cells as a platform for future therapeutics. I hope to incorporate what I learn at Cambridge University towards building a strong research foundation, dedicated to stem cell research, in Qatar. I especially hope to bring awareness to the importance of stem cell research in the field of neuroscience and neuro-related diseases/conditions, as stem cells offer tremendous promise for treatments.

What does Qatar National Day mean to you?

National day to me is a reminder of our heritage and how far Qatar has progressed. More importantly it rekindles each year the bond we have towards our prosperous country. Qatar is a developing country, and is currently heading in the right direction. Investing in research is not a luxury but a necessity. I believe that research is the bridge that links global knowledge with local needs. It plays a crucial role in a country's ability to grow and progress. Through my research, and through the awareness of the importance of research, I hope that I can contribute in establishing a level of innovation and creativity among our society that contributes into developing our country further. It all starts with having a clear and determined vision.

3.

My name is **Haya Al-Muhannadi**. I am a Trainee Public Relations Officer at Qatar National Research Fund (QNRF). I have been working in the public relations department at QNRF for six months now.

Can you tell us about the focus of your work?

By joining the PR team at QNRF, I am able to put my theoretical knowledge to practice as my undergraduate degree was in public relations. As QNRF's activities revolve around research, it gives

me an opportunity to contribute towards Qatar's National Vision. Our aim is to get more Qataris interested in research and to share details about the opportunities that QNRF offers with the wider public.

What does Qatar National Day mean to you?

It is the base, where our grandfathers stood side by side to create the foundation of Qatar and to lead to its success. It confirms our identity, history, originality and unity. We are all part of Qatar and we all join hands together to achieve our duty and to seek the best for our country by continuing what our ancestors started.

-ENDS-

Qatar Science Leadership Program

In line with Qatar National Vision 2030, Qatar Foundation has pioneered a programme that aims to lead Qataris into a knowledge-based society. QSLP is a unique programme that aims to help nationals build prestigious and rewarding careers in the fields of science and research, with guaranteed placements at Qatar Foundation and its centres. From undergraduate to postdoctoral studies, QSLP offers a full spectrum of opportunities to carve out a career in a wide range of sciences pertinent to Qatar's national research agenda.

Targeting talented young Qataris with a desire to excel, QSLP is a career-development programme that was established in 2008 jointly between Qatar Foundation's Research Division and its partners. It is aimed at building the human capacity needed to make Qatar a leader in innovative research. Unlike other career-development programmes, QSLP participants have the option of choosing one of four tracks based on their preferences and qualifications.

For more information, visit: <http://www.qf-research-division.org/qsip/>

Qatar National Research Fund (QNRF)

Qatar National Research Fund aims to advance knowledge and education by supporting original, competitively selected research in all fields of sciences. QNRF invests in the four pillars of the Qatar National Research Strategy (QNRS), namely Energy and environment, Computer science and ICT, Health, Social sciences, Arts and Humanities. QNRF provides opportunities for researchers at all levels, from students to professionals, whether in the academic, public or private sectors.

For more information, visit: <http://www.qnrf.org/>

Qatar Environment and Energy Research Institute (QEERI)

The Qatar Environment and Energy Research Institute plays a key role in supporting two of Qatar's grand challenges: energy security and water security. QEERI's vision is to ensure sustainable development and management of Qatar's energy and natural resources, preserving the quality of life of future generations and making Qatar a leader in cutting-edge research.

For more information, visit: <http://www.qeeri.org.qa/home>