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## GULF TIMES

## A ray of hope as world continues to battle Covid-19

What if testing for the novel coronavirus (Covid-19) can be done with a breath analyser type device? It would usher in sweeping changes to the current testing regime which involves nasopharyngeal swabs for accurate results. It is a not very comfortable experience and the swabs are subjected to a reverse transcription polymerase chain reaction (RT-PCR) test, the most accurate method available for the detection of the Covid-19 virus.

A latest report published by American Chemical Society details a non-invasive approach in detecting and following-up individuals who are at-risk or have an existing Covid-19 infection, with a potential ability to serve as an epidemic control tool. The proposed method uses a developed breath device comprised of a nanomaterial-based hybrid sensors array with multiplexed detection capabilities that can detect disease-specific biomarkers from exhaled breath, thus enabling rapid and accurate diagnosis.

An exploratory clinical study with this approach was examined in Wuhan, China during March 2020 by an international research group of 22 scientists. The study cohort included 49 confirmed Covid-19 patients, 58 healthy controls and 33 non-Covid lung infection controls. When applicable, positive Covid-19 patients were sampled twice: during the active disease, and after recovery.

Discriminant analysis of the obtained signals from the nanomaterial-based sensors achieved very good test discriminations between the different groups. The training and test set data exhibited, respectively, 94% and 76% accuracy in differentiating patients from controls as well as 90% and 95% accuracy in differentiating between patients with Covid-19 and patients with other lung infections.

### Loss of the sense of smell is associated with Covid-19, generally in the absence of other nasal symptoms

While further validation studies are needed, the results may serve as a base for technology that would lead to a reduction in number of unneeded confirmatory tests and lower the burden on the hospitals, while allowing individuals a screening solution that can be performed in Point-of-Care facilities. The proposed method can be considered as a platform that could be applied for any other disease infection with proper modifications to the artificial intelligence and would therefore be available to serve as a diagnostic tool in case of a new disease outbreak.

Meanwhile, scientists at Johns Hopkins Medicine, experimenting with a small number of human cell samples, report that the "hook" of cells used by the novel coronavirus to latch onto and infect cells is up to 700 times more prevalent in the olfactory supporting cells lining the inside of the upper part of the nose than in the lining cells of the rest of the nose and windpipe that leads to the lungs. These supporting cells are necessary for the function/development of odour-sensing cells.

The findings, from a preliminary study of cells lining both the nose and trachea, could advance the search for the best target for topical or local antiviral drugs to treat Covid-19, and offers further clues into why people with the virus sometimes lose their sense of smell.

A summary of the findings appears in a letter published last week in the European Respiratory Journal. "Loss of the sense of smell is associated with Covid-19, generally in the absence of other nasal symptoms, and our research may advance the search for a definitive reason for how and why that happens, and where we might best direct some treatments," says Andrew Lane, MD, professor of otolaryngology-head and neck surgery, and director of the Division of Rhinology and Skull Base Surgery at the Johns Hopkins University School of Medicine. All these developments provide a ray of hope even as the world continues to battle Covid-19 for eight straight months of 2020.

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## How QF's business accelerator programme boosted one idea to become a technological reality

**"Look at the glass half-full - that is the entrepreneurial spirit," says co-founder of Qatari start-up Thakaa Technologies**

Doha

**A** Qatari entrepreneur has successfully launched his company and has hailed the backing he received from Qatar Science and Technology Park's highly-acclaimed flagship accelerator programme – XLR8.

Abdulrahman Saleh Khamis, along with co-founder and Chief Growth Officer, Abdul Ali, set up Thakaa Technologies with a vision to solve the community's problems through technology; and the drive to seek further support for their idea encouraged Khamis and Ali to participate in Qatar Science and Technology Park's (QSTP's) XLR8 programme, which took place from February to April last year.

Khamis was part of the eighth cycle of XLR8 programme which included contestants from season 11 of Qatar Foundation's (QF's) hugely popular edutainment TV show Stars of Science – where he was one of the finalists. Khamis went on to co-found, and become the Chief Executive Officer of Thakaa Technologies, a Qatari-based Internet of Things (IoT) hardware start-up that specialises in the design and manufacture of smart and innovative hardware products.

Founded earlier this year, Thakaa Technologies' design capabilities range from creating sensors to developing software and integrating it with hardware. Its main activities are research and development, product development, and technical consulting.

"We were thankful for the opportunity to be part of XLR8, as it gave us insights into the early stages of developing a start-up. It was especially helpful when we needed to lay down our thoughts into the Business Model Canvas and validate our idea with a minimum viable product. Learning how to create a prototype in the most cost-effective manner was also tremendously important."

"While everything we learned during the programme was beneficial, what was instrumental was learning how to validate the idea with potential customers and receiving their feedback as early and as often as possible to improve the product", said Khamis.

XLR8 is a unique and intensive 10-week programme that helps promising innovators and entrepreneurs determine if their tech-based ideas



have commercial viability by giving them the tools they need to assess market fit, customer traction, and investor awareness. Since its inception in 2008, XLR8 has inspired over 300 budding entrepreneurs to pursue their ambitions.

Thakaa Technologies has recently incubated at QSTP's Free Zone, a part of Qatar Foundation Research Development and Innovation, and now has the opportunity to enjoy the numerous benefits associated with that, including access to QSTP's expert mentorship, subsidised business support services, state-of-the-art prototyping facilities, and networking events.

Khamis also highlighted the support he received from all of XLR8's mentors, particularly appreciating the lead instructor, Mohamed Zebian, QSTP Programme Manager – Acceleration. "Mr Zebian was great at explaining the small details at every step of the product development, especially since he had worked on his own start-up before, so he was speaking from experience. This was very helpful for a start-up like ours, which came into the programme with just an idea and needed guidance from A to Z," he said.

Using their learnings from the programme, Thakaa Technologies has been developing their first product, 'Sajdah,' the world's first smart educational prayer rug, set to be launched in the local market soon.

The rug aims to benefit Muslims of all ages when it comes to their daily routine of regular prayers. It enables its users to learn prayers, maintain correct postures, and memorise sections of the Holy Qur'an. The special mat uses cutting-edge technology to monitor users' movements, when to say the appropriate prayers, and in which posture. Accompanied by an application on a user's smartphone,

Sajdah is also useful for experienced Muslims who want to read verses from The Qur'an which they have not memorised when saying their prayers.

Reflecting on his experience in the XLR8 programme, Khamis said: "XLR8 is one of the best programmes available in Qatar to take entrepreneurs with technology-based ideas to the next level and help them take their first steps into becoming a business. My advice to young innovators with dreams of making it big is to apply for the next cycle of XLR8 programmes. Do not wait. This is the right time to start a business around technology."

"Despite all the issues surrounding the pandemic, don't give up. It's not easy to start a business, let alone drive it to success, but as a start-up, you should always be flexible and be able to adapt to difficult situations. Look at the glass half-full, not half-empty. That is the entrepreneurial spirit," he added.

For more information about Sajdah, please visit the official website [www.getsjdah.com](http://getsajdah.com)

### Qatar Science & Technology Park

Qatar Science & Technology Park (QSTP), part of Qatar Foundation Research, Development, and Innovation (QF RDI), is a Free Zone, accelerator, and incubator for tech-product development in Qatar. The park fosters an innovation and entrepreneurship ecosystem in Qatar that works to accelerate commercialisation of market-ready technologies to realise Qatar's national diversification drive.

QSTP's focus ranges across four overarching themes, comprising Energy, Environment, Health Sciences, and Information & Communication Technologies, in line with the Qatar National Research Strategy announced in 2012.

Located in Qatar Foundation's Educa-

tion City, QSTP has access to the vital resources of a cluster of leading research universities. Members of QSTP's Free Zone include SMEs, international corporations, and research institutions. They are collectively committed to investing in new technology development programmes, creating intellectual property, enhancing technology management skills, and developing innovative new products. QSTP supports QF RDI's economic and human development objectives for Qatar and is increasingly recognised as an international hub for applied research, innovation, incubation, and entrepreneurship.

For more information, please visit the QSTP website at [www.qstp.org.qa](http://www.qstp.org.qa)

### Qatar Foundation Research, Development and Innovation (QF RDI)

The Qatar Foundation Research, Development, and Innovation (QF RDI) division's role is to play an integral part in identifying and addressing challenges and opportunities across ICT, energy, environment, and healthcare, in alignment with Qatar's national RDI strategy and priorities. QF RDI is at the forefront of Qatar's innovation and entrepreneurship ecosystem, accelerating economic development through supporting the commercialisation of market-ready technologies and facilitating the creation of new high-tech products and services.

QF RDI is responsible for translating Qatar's national RDI strategy into specific initiatives and actions for Qatar Foundation's (QF) RDI entities. It also directs their efforts in relation to economic value creation, knowledge transfer, and the establishment of mutually-beneficial national and international RDI partnerships. To ensure these efforts deliver maximum impact, the QF Vice-President for Research, Development, and Innovation plans, co-ordinates, and oversees all RDI-related activities across QF.

### Qatar Foundation Unlocking Human Potential

Qatar Foundation for Education, Science and Community Development (QF) is a non-profit organisation that supports Qatar on its journey to becoming a diversified and sustainable economy. QF strives to serve the people of Qatar and beyond by providing specialised programmes across its innovation-focused ecosystem of education, research and development, and community development.

QF was founded in 1995 by His Highness Sheikh Hamad bin Khalifa al-Thani, the Father Amir, and Her Highness Sheikha Moza bint Nasser,

who shared the vision to provide Qatar with quality education. Today, QF's world-class education system offers lifelong learning opportunities to communi-

ty members as young as six months through to doctoral level, enabling graduates to thrive in a global environment and contribute to the nation's development.

QF is also creating a multidisciplinary innovation hub in Qatar, where homegrown researchers are working to address local and global challenges. By promoting a culture of lifelong learning and fostering social engagement through programs that embody Qatari culture, QF is committed to empowering the local community and contributing to a better world for all.

For a complete list of QF's initiatives and projects, please visit: [www.qf.org.qa](http://www.qf.org.qa) For any media inquiries, please contact: [press@qf.org.qa](mailto:press@qf.org.qa)

