

RESAPP HEALTH LTD

SMARTPHONE APP HELPS DOCTORS AND PATIENTS BREATHE EASY

Simple and inexpensive new smartphone technology can instantly and accurately identify respiratory diseases such as asthma, pneumonia, bronchiolitis, croup and chronic obstructive pulmonary disease (COPD).

The University of Queensland innovation – ResAppDx – simply records a patient’s cough on a smartphone and analyses it, using algorithms, to diagnose which respiratory disease the sound most closely resembles.

The technology’s accuracy approaches that of a hospital-based diagnosis and it only requires a standard smartphone microphone; no need for hardware, accessories, sensor attachments or a network connection.

Easy-to-use, it has the potential to provide doctors – and almost every home and village in the world – with the means to be a powerful tool to quickly diagnose and manage these potentially life-threatening diseases.

Developed by Associate Professor Udantha Abeyratne and his team from UQ’s School of Information Technology and Electrical Engineering, (working with a team of biomedical engineers, paediatricians and respiratory physicians), it can also analyse other measurements and symptoms such as fever and runny nose.

Back in 2009, Associate Professor Abeyratne and his team were developing sound analysis technology to detect respiratory conditions such as sleep apnoea.



UQ Innovator(s):
Associate Professor Udantha Abeyratne

UQ Faculty or Institute:
Faculty of Engineering, Architecture & Information Technology

UniQuest IP Position:
Licensed to ResApp Health Ltd

UQ Research Strength:
Information Systems and Computational Science

ASSOCIATE PROFESSOR UDANTHA ABEYRATNE

UniQuest – Australia’s leading university commercialisation entity and UQ’s main commercialisation company – recognised the potential of Associate Professor Abeyratne’s research, as did the Bill and Melinda Gates Foundation which selected it for funding as part of its global initiative to reduce the one million deaths each year of children in the developing world from pneumonia.

This strong support enabled Associate Professor Abeyratne’s team to further develop the technology to create the respiratory disease diagnostic tool.

In 2014, UniQuest licensed the technology, resulting in the creation of company, ResApp Health Ltd, which was listed on the Australian Stock Exchange in 2015 and went on to raise more than \$AUD16 million to fund the technology’s development.

GLOBAL INTEREST, GLOBAL IMPACT

Diagnosis of respiratory disease is the world’s most common outcome from a visit to the doctor accounting for more than 700 million consultations a year.

Pneumonia kills one child in the world every 30 seconds and is also one of the three major diseases of the elderly. COPD is the third-leading cause of death worldwide after heart disease and cancer. Bronchiolitis is the leading cause of hospitalization of infants under six months and asthma affects 10% of the world population.

These conditions are currently diagnosed using stethoscope, respiratory laboratory tests, imaging (x-ray, CT), blood and/or sputum tests, which are time consuming, expensive and are not available for long-term monitoring or immediate decision-making in the doctor’s consultation room.

ResAppDx was shown to be more than 90% accurate in detecting respiratory diseases.

Recognising the potential to significantly improve healthcare on a global scale, UniQuest licensed the technology in September 2014.

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The result was the creation of ResApp Health Ltd to commercialise this versatile, affordable, clinically-validated and regulatory-approved diagnostic and management tool on a smartphone.

With the support of UniQuest, this digital healthcare solution has attracted global interest and won many innovation awards.

Since listing on the Australian Stock Exchange in mid-2015, ResApp has raised more than \$AUD16 million to fund the technology's development.

ResApp undertook clinical studies in hospitals in Perth and Brisbane, Australia, between 2013 and 2016, providing analysis of more than 1000 patients enrolled in paediatric and adult studies. Preliminary trials demonstrated high accuracy in identifying adult and paediatric respiratory diseases such as bronchiolitis and pneumonia.

ResApp continues to evaluate the clinical utility of the technology and is enrolling more than 1100 patients up to the age of 12 in a paediatric US FDA registration study that involves three US hospitals – Massachusetts General Hospital, Cleveland Clinic and Texas Children's Hospital.

In the US alone, telehealth is the second fastest growing industry, with a predicted value of \$US12 billion.

THE JOURNEY SO FAR

- 2009**
 - Associate Professor Abeyratne and his team develop sound analysis technology to detect sleep apnoea
 - Associate Professor Abeyratne receives a Grand Challenges in Global Health Exploration grant from The Bill & Melinda Gates Foundation to develop cough analysis technology targeting pneumonia diagnosis.
- 2013**
 - Clinical studies in Australian hospitals begin.
- 2014**
 - UniQuest licenses the technology, resulting in the creation of company, ResApp Health Ltd.
- 2015/
2016**
 - ResApp Health Limited lists on the Australian Stock Exchange, raises more than \$AUD16 million to fund the technology develop.
 - Received People's Choice Award for Most Promising Childhood Pneumonia Innovation received at Pneumonia Innovations Summit, New York.
 - Awarded 'Best Tech IPO/Venture Capital Raising' in the 2016 Talent Unleashed Awards for both the Asia Pacific Division and in the Global Grand Finals.
- 2016**
 - Named Australian Emerging Company of the Year – Johnson & Johnson Innovation Industry Excellence Award
 - Received Innovation Excellence Award at the Tech23 2016 Awards Ceremony.
 - Engineers Australia named Associate Professor Abeyratne one of Australia's Most Innovative Engineers.
 - Just Actions (New York) and StopPneumonia.org named Associate Professor Abeyratne one of the 30 Hidden Heroes Fighting a Silent Killer (pneumonia) in the world.
- 2017**
 - Partnered with Doctors Without Borders/Médecins San Frontières, developing a clinical study in a low-income rural population.



With the current global boom in telehealth, the potential of Resapp's technology is unlimited.

At the same time, COPD alone is the third-leading cause of death worldwide (after heart disease and cancer). Early intervention has the potential to significantly improve health outcomes and reduce the economic impact of these diseases.

ResApp's technology provides unprecedented opportunities to diagnose and monitor respiratory diseases: from emergency medicine in hospitals, screening in airports, remote healthcare in developing countries, telehealth applications, in elderly care, and home-based personalized management of chronic diseases such as COPD and asthma.

PARTNER WITH UNIQUEST

UniQuest is Australia's leading university commercialising entity, specialising in global technology transfer and facilitating business access to the world-class expertise, intellectual property and facilities at Australia's The University of Queensland. We provide access to more than 7000 researchers pushing the frontiers of science to develop innovative solutions to local and global challenges.

OUR TRACK RECORD

- We enter into more than 400 research contracts a year, many of them with repeat clients from industry.
- We have created more than 70 companies from our intellectual property portfolio.
- Together with our start-ups, we have raised more than \$AUD1 billion to take university technologies to market.
- UQ technologies licensed by us – including UQ's cervical cancer vaccine technology and image technology in magnetic resonance imaging machines – have resulted in an estimated \$AUD15.5 billion in combined net sales of final products.

If you would like to know more about this story or research offerings through UniQuest:

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