QMB Innovation Centre
QUEEN MARY BIOENTERPRISES

Discovery

Q4 2014

NEWS, VIEWS AND EVENTS AT QMB

IN THIS ISSUE

MEDIWISE ON THE CUSP

There are many potential discoveries in modern medicine that have the ability to change the way we treat and manage disease, and Mediwise's medical devices have the potential to do just that.

The Company is developing a series of wireless medical devices including a non-invasive blood glucose monitor, GlucoWise, which is considered to be the first of its kind. This has huge benefits for people with diabetes as it will eliminate the need to draw blood in order to measure blood glucose levels. Their non-invasive blood glucose monitor, with acceptable accuracy, will revolutionise how diabetes is managed.

Matthew Khoory, MediWise's Managing Director

MediWise started four years ago when three engineers combined their expertise in metamaterials, radio wave imaging and on-body medical sensors, to create a new generation of medical technology. Matthew Khoory, MediWise's Managing Director, joined from GE Healthcare where he spent 10 years in business development, risk management, finance and business analysis, developing novel solutions for public and private health systems around the world. With his experience in medical devices and background in medical imaging, Matthew has been involved with MediWise from the very beginning and his leadership has helped in the advancement of the technology.

We caught up with Matthew to talk about GlucoWise and to hear how he made the transition from a healthcare behemoth to a business start-up.

"The transition's been great. We have a fantastic group of very accomplished scientists who are taking this journey with us. The technology had reached the right stage for me to come on-board full time, and I recognised the benefits that it could bring to health care systems globally. The main difference between the corporate and entrepreneurial world is, a start-up gives you the opportunity to try new things all the time because there is less of a process, we all make decisions more quickly and thrive on the fast pace. To see something grow from infancy and to be part of it from the beginning is a great position to be in," said Matthew.

The company is also creating a novel imaging system for detecting early stage breast cancer. Current mammography techniques are widely viewed as uncomfortable, while the ionising effects of the x-rays can damage living cells. MediWise's system uses low-energy waves to image breast tissue in a way to eliminate the need for uncomfortable breast compression or harmful radiation.

MediWise's patented technology analyses molecular data from the human body by combining three key components: first the metamaterial thin-films which enable harmless radio-waves to safely pass through the skin; secondly, the identification of the exact frequency at which the radio-waves trigger the molecules that are being targeted so they can be detected by the sensors; and thirdly, proprietary algorithms to translate raw data into accurate readings or images that are delivered to user interfaces.

Continued on page 3

EDITOR'S WELCOME

Welcome to the latest QMB Newsletter, a bumper edition which really showcases why Queen Mary BioEnterprises is such a vital hub for scientific innovation and a centre of excellence.

It's certainly been a busy six months, not least for our tenants who continue to go from strength to strength. In this issue, Mediwise's Managing Director, Matthew Khoory, gives us an insightful interview about the developments being made with their non-invasive blood glucose monitor, which include starting human trials in March 2015, while Retroscreen Chief Executive, Kym Denny, tells us more about the Company's rebranding to HVivo and what 2015 holds for them.

Elsewhere, we talk to Davidson Ateh, the Chief Executive of BioMoti, about the help his company has received from UK Trade and Investments (UKTI) in forging links overseas, including a recent one-day Bootcamp for the US Bioscience Industry.

In other news, ADC Therapeutics has announced a raft of new hires which, although largely in Switzerland, highlights the fact the company is developing some incredibly ground-breaking treatments for cancer using Antibody Drug Conjugates (ADC).

We also have a round-up of the news from our sister organisation, Queen Mary Innovation Ltd (QMI), about what's been happening in the world of Technology Transfer.

For more updates and the latest news from QMB, including Dr Ramsay Richmond's life sciences sector blog, please visit our website. And we're eager to hear your perspective, too, so please share your feedback in the comments section on our website, or join the conversation on our Twitter page.

I hope we see you at our Christmas Party on December 11th but if we don't see you, may I wish you a Merry Christmas, a happy holiday and an enterprising New Year.

Nastaran

Mediwise on the Cusp ... from page 2

"There are many companies that have been trying to develop a non-invasive glucose monitor and hundreds of millions, if not billions of dollars have been spent on trying to develop this elusive bit of kit. However MediWise is the first company to solve the fundamental problem of getting radio waves at a certain frequency to penetrate the skin and use them in a meaningful, clinical way," said Matthew.

The team has met with clinicians and diabetes groups since the beginning of the design process, creating a network that is helping them understand what it means to live with diabetes, whether it's providing market data, or seeking feedback to support the best possible ergonomic and user-friendly design. Indeed, GlucoWise is currently entering into its first human trials.

The GlucoWise monitor has overcome not only the pain factor but the inconvenience that people with diabetes face when they need to measure their blood glucose levels. Based on user feedback this was one of the biggest problems.

"If I were to take an existing glucose test now, I would have to wash my hands, get the reading kit out and pierce the skin, which isn't the best thing to do if you're in a restaurant, playing sport or generally on the go. Current methods are inconvenient, painful and expensive. Our glucose monitor solves all of these issues," said Matthew.

This brings us to the other issue: cost. Today, glucose monitors are practically given away because companies make their money on the test strips. So for someone who is testing themselves four times a day, it costs the health care system, whether it's the individual, NHS, an insurance company or a combination, upwards of £500 a year per person. Over the lifetime of someone with diabetes, that's a significant cost. Globally, it equates to an $8 to $10 billion market, and that's just for the test strips.

GlucoWise does not require any consumables such as test strips so it can be used as many times a day as the user wants and it will be same price. It is expected that the device will last 3 years and be priced to breakeven with existing testing methods over this period. It could potentially be made more affordable through a monthly payment plan similar to how most mobile phones are sold today.

In terms of the patient, research has shown that convenience and cost has a direct influence on how many times a person tests themselves. In theory, the more they test, the better they are able to manage their condition.

"It will take some time to get through the proper regulatory processes, so most likely it's going to be a few years before this is commercially available in Europe. We are designing a highly technical system that will change people's lives. Other companies have tried to put things out there too fast but for us it is not about speed to market, it is the about the quality of the product," said Matthew.

MediWise gears up for first human trials of its non-invasive Glucose Monitor

MediWise is gearing up for its first human trials for its non-invasive glucose monitor, GlucoWise, in March of 2015, at the University of Westminster.

GlucoWise, a first of its kind glucose monitor, safely detects the concentration of glucose in the blood stream without having to draw a blood sample. The monitor works by gently cradling the skin between the thumb and the index finger. Once the monitor is in place, the user simply presses the end of the monitor to begin. After a few seconds an accurate reading of the user's current blood glucose levels is displayed on the device.

Victoria-Alice Porter, a BioMedical Scientist and MediWise's Chief Operating Officer, is designing the trials which will involve a controlled study of approximately 20 healthy subjects. The trials will compare the accuracy of Mediwise's non-invasive glucose measurement method against the traditional finger prick monitors, as well as the highest accuracy lab based method available.

GlucoWise's unique approach uses physics, specifically electromagnetic sensing, to see through the skin and measure the level of glucose present in the blood without having to actually extract blood from the body. This breakthrough innovation is possible by integrating metamaterials, designed by the scientists at MediWise, into the device.

"This human trial is our first opportunity to externally publicise, through sound scientific data, that our technology works in humans. Over the last eighteen months an extensive amount of evaluation data, through simulated tests, has been collected and analysed but these trials represent a major milestone to prove the success of the technology", said Matthew Khoory, MediWise's Managing Director.

MediWise is currently raising funds from investors to start production of the clinical prototype devices, which will be used for a follow-on clinical validation study involving between 100-200 participants.

A DEFINING YEAR FOR RETROSCREEN

RETROSCREEN VIROLOGY®
CONQUERING VIRAL DISEASE

This year is shaping up to be a defining year for Retroscreen Virology Group plc, and 2015 looks like it could be pretty exciting too.

Not only did the Company raise £33.6 million as part of a successful City fundraising, but it also announced its intention to change its name to hVIVO plc.

Kym Denny, Retroscreen's CEO

Retroscreen is changing its name to hVIVO plc to reflect the Company's proprietary technology platform which uses human models of disease to discover and study new drugs and diagnostics. The name change will take effect in due course and is in line with the Company's expanded vision for the business, said Kym Denny, Retroscreen's Chief Executive.

"*Retroscreen is embarking on the next stage of its exciting journey, broadening the hVIVO platform to discover novel biomarkers that will enable the next generation of therapeutic and diagnostic products. As our business focus expands, we look forward to adopting our new company name and branding as hVIVO plc, which fully embraces the power of our human models of disease,*" said Kym.

Kym said she expects strong progress with the new model development programme and in-house R&D programmes over the next 24 months. The Company's goal is to calibrate hVIVO in both asthma and Chronic Obstructive Pulmonary Disease (COPD) models, while elucidating a circuit plan for at least one target disease with the subsequent discovery of a first candidate biomarker. Once identified, the Company intends to meet with regulators, including the FDA, to determine the most appropriate development pathway.

"This will allow us to start the clinical validation of our first biomarker while seeking a collaboration or partnership for product development and commercialisation. In parallel, we continue to perform well with our product validation services to clients and we are excited to be expanding our offering into new disease areas, with our asthma model progressing well in development.

Since the end of the first half, the Company has announced its involvement in landmark studies for Gilead Sciences Inc. and Alios BioPharma Inc. in RSV infection, highlighting the power of hVIVO in product validation. Retroscreen was able to deliver dose-ranging and proof of concept results for both products in only six months and ten months respectively, demonstrating the power of its hVIVO human models of disease.

"*This highlights hVIVO's ability to surpass field-based studies in producing clean compelling data in an accelerated timeframe, with the ability to gain product insights not normally available until pivotal field-based studies, through targeted subject recruitment and defined timing of infection. The ability to accelerate the development of new drugs underpins our expansion into new disease models, including asthma and COPD,*" said Kym.

The Company's pipeline for product validation services to its clients continues to show good growth, with the overall value increasing by 83% compared to this time last year. A number of the opportunities in its 2015 pipeline are for products in the flu and RSV space which experienced drug development delays in 2014.

In addition to commencing conversations with its clients for its new asthma model, the Company has also developed new ways in which its clients can harvest the benefits of its hVIVO platform. For example, it recently launched a new hVIVO OTC (Over the Counter) model, which aims to secure higher value performance claims for OTC cold and flu products.

"*As we diversify into new disease areas and continue to evolve exciting and beneficial ways for our clients to leverage our platform - including our biomarker capabilities - we expect to work more closely, and more broadly, with our clients than ever before,*" said Kym.

In September the Company reported revenue for the six months ended 30 June 2014 of £15 million versus £12 million for the same period last year, while gross profit came in at £4.8 million and gross margin at 32.1% compared with £3.4 million and 28.3% in 2013.

The Company also raised £33.6 million before expenses, with net proceeds of approximately £32.8 million. Kym said the funds will be used to accelerate its biomarker discovery programme in flu and asthma, refine its asthma model for product validation use, initiate COPD model development as the second airways disease opportunity and broaden the Company's challenge agent repertoire.

Kym said: "*We are at an exciting inflection point for Retroscreen where, having established and proven the hVIVO Human Challenge Model with our clients over the past couple of years, we now have the capability, capacity and funds to build on this and accelerate Retroscreen's own R&D programme, leveraging our hVIVO platform as a powerful tool in biomarker discovery and in the development of new disease models.*"

New hires at ADC Therapeutics

ADC Therapeutics has expanded its team as the Company's first ADCs enter clinical development.

New team members include:

- Dr Jay Feingold joins as Chief Medical Officer and Head of Oncology Clinical Development. Dr Feingold has more than 25 years of industry, academic and medical experience and was most recently Vice President, US Medical Affairs and Chairman Global Medical Affairs Oversight Committee at Daiichi Sankyo. Prior to this, he served as Vice President of Clinical Development, Global Therapy Area Director, Oncology, at Wyeth.
- Dr Michael Mulkerrin joins as Head of CMC (Chemistry Manufacturing and Control). Dr Mulkerrin has more than 20 years of industry experience in biologics manufacturing, most recently as Vice President, Process Development and Manufacturing at OncoMed and has had prior senior roles at Abgenix, Amgen and Genentech.
- Dr Simon Chivers joins as Head of Toxicology. Dr Chivers has more than 15 years of industry experience, most recently as Global Head Biologics Safety Assessment and Executive Director at Novartis and has had prior senior roles at AstraZeneca, Syngenta and Quintiles.
- Dr Lisa Skelton joins as Senior Project Manager for ADCT's lead program ADCT-301 which is scheduled to enter clinical development in early 2015. Dr Skelton has over 20 years of industry experience, most recently as Associate Director, Programme Management at Norgine and Senior Program Manager at Amgen.
- Dr Karin Havenith joins as Senior Bioanalytical Scientist to head ADCT's bioanalytical group. Dr Havenith was Principal Scientist at J&J Janssen Crucell and Principal Scientist at Genmab where she specialised in the development of bioanalytical assays for antibody therapeutics.
- Dr Francesca Zammarchi joins the scientific team as Cancer Biologist, having spent eight years as a Research Associate in the Molecular Pharmacology and Chemistry Department of Memorial Sloan Kettering Cancer Center, New York.
- Ms. Dulce Gonçalves joins to serve as Corporate Counsel. Ms Gonçalves has over 12 years' experience in pharmaceutical law and was most recently Senior Legal Counsel, Global Product Strategy and Commercialization, at Novartis.
- Mr. Stéphane Henchoz joins as Director of Finance, bringing more than 20 years pharmaceutical industry finance experience, most recently working at Merck Serono.

Michael Forer, Chief Executive Officer of ADC Therapeutics, said: *"The quality of individuals and depth of experience that we have been able to attract demonstrates the significant potential for our PBD-based ADCs. This expansion underlines the progress we have made since the Company was established in early 2012. We continue to advance our pipeline of programmes into clinical development with our lead program ADCT-301, scheduled to enter clinical development in early 2015."*

Dr. Peter B. Corr, Chairman of the Board and co-founder and Managing General Partner of ADCT's founding majority investor, Auven Therapeutics, added *"ADCs are an important class of the next-generation of cancer drugs, and with our best-in-class PBD warheads and linkers these agents should have a profound impact for patients with cancer. With the addition over the last year of AstraZeneca, as both an investor in and corporate partner of ADCT, the Company is well funded, and with these new personnel, now has a world class team in place to support our plan of having multiple proprietary ADCs in clinical development over the coming two years."*

London Specialist Pharmacy says adiós to Carla Peraferrer Hereu

Carla Peraferrer Hereu, second pharmacist at London Specialist Pharmacy, is leaving the company at the end of the year to return to her native Spain.

Carla came to the UK to learn English and to experience the hustle and bustle of life in London but has decided to return to her home city of Barcelona. After nearly four years in the UK, Carla will take up a new role as a lab pharmacist at a compounding pharmacy and start a Masters degree in Cosmetics and Dermatology.

Carla joined London Specialist Pharmacy in 2011 as a technician before being promoted to the role of second pharmacist after six months.

"I've really enjoyed my time in London and working at London Specialist Pharmacy. It's been an absolute privilege to work with Sam, Marion and team, and I am extremely proud of what we've accomplished over the last four years. I wish the team all the best in the years to come," said Carla.

Sam Gluck, London Specialist Pharmacy's manager, said: *"Carla has been a great addition to the team and we greatly appreciate the expertise she has provided over the past three years. We wish her every success for the future."*

BIOMOTI TAKES THE HIGH ROAD TO SUCCESS

Building a business of any size can be a long hard slog, either at home or abroad, but there's a raft of international resources available, including government grants and free impartial advice, that can make it happen.

BioMoti is definitely taking the high road to success. Over the last 18 months Davidson Ateh, BioMoti's CEO, has been to the US three times and China twice, and it's not just for the air miles.

BioMoti is seeking to transform the treatment of cancer through the targeted delivery of therapeutics to the intracellular space of cancer cells using Oncojans™, a new class of therapeutic micro-particles that target and gain entry to the interior of cancer cells where they slowly release drugs at the point of need whilst sparing healthy tissue. The Oncojans™ platform is compatible with a range of drug classes from small molecule therapeutics to larger biologicals.

As the company gears up for its first pre-clinical trials, Davidson has travelled the globe forging links with potential investors, exhibiting at international trade shows and demonstrating the company's readiness, all with the help of the UK government and innovative partnership programmes. To help get the message out and to test new markets, BioMoti took advantage of the UK Trade & Investment (UKTI) Passport to Export Scheme which assesses SMEs' readiness to trade overseas.

The scheme offers 12-months of on-going support and gives SMEs the opportunity to understand the stages of export in relation to their own business and develop a focused action plan. The business receives an in-depth capability assessment and face-to-face training with export professionals. The assessment and skills-based programme provides new and inexperienced exporters with the training, planning and on-going support they need to succeed overseas.

"We really benefited from the UKTI's Passport to Export scheme, which offered essential guidance from a network of contacts on a route into the US market," said Davidson.

UKTI provide local delivery of services and act as a conduit for various overseas teams while providing free impartial international business advice. Chris Parsons is an International Trade Advisor for UKTI London Region, a joint initiative between the Department for Business, Innovation & Skills and the Foreign & Commonwealth Office, specialising in helping companies enter overseas markets.

"It can be difficult when you start to expand a business overseas. Knowing which countries to target, finding the best route to market and how best to promote the business, finding local partners, understanding the local business culture, getting paid, and deciding how to fund the export development activity. UKTI can help you to address these kinds of issues and more," said Chris.

Davidson said: *"The expert advisory support from Chris, who acted as a sounding board offering one-to-one assistance and advice, has been invaluable."*

Taking part in overseas exhibitions is also an effective way for a company to test new markets, attract customers, appoint agents or distributors and make sales.

The Tradeshow Access Programme (TAP) is aimed at new exporters who need assistance in using exhibitions as a key tool in their trade development plans. Around 300 overseas exhibitions organised by Accredited Trade Organisations (ATOs) are supported by UKTI. Eligible companies also receive

Continued on page 7

BioMoti wins UKTI PharmaVentures Pitch Competition. From Left to Right Chris Parsons UKTI, Davidson Ateh, Fintan Walton and Adrian Dawkes from PharmaVentures

BioMoti Takes the High Road to Success ... from page 6

assistance from an ATO to optimise their effectiveness at the show. Grants range from £1,500 to £3,000. Companies are eligible to claim for up to 12 grants but six of them have to be in a country that is on a list of high growth markets.

Courtesy of the UKTI's TAP Grant, BioMoti attended both the Biotech Showcase in San Francisco January 2014 and BioPharm America in Boston in September 2014, events aimed at providing private and public biotechnology and life sciences companies with an opportunity to present to, and meet with, investors and pharmaceutical executives.

"The UKTI's TAP grant was perfect for us. It's designed to enable companies to take part in overseas exhibitions as part of an organised group or independently to help them research their chosen market," said Davidson.

BioMoti has also taken part in two open innovation programmes, both at Guangzhou's Biotech Island, which have been organised between the University of Bradford and China, aimed at fostering collaboration and promoting cooperation between the two countries.

Bradford University has been running a collaborative research and technology development programme across China for the past seven years, forging formal links with more than 50 Chinese institutions and securing more than £15 million of collaborative funding in China and in the UK. Six previous workshops have led to 22 funded projects, with others in the pipeline.

The most recent workshop brought together Chinese companies and academic scientists with leading European researchers and entrepreneurs to look at ways of creating 'drug delivery' solutions to ensure that medicines perform better in patients suffering from cardiovascular and metabolic diseases and cancer. The event allowed participants time to explore ideas, visit development and production facilities and define new collaborative projects aimed at boosting patients' health.

Twelve European entrepreneurial scientists from industry and academia met 12 Chinese scientists to generate ideas for new technologies, products and start-up companies which will be funded by the provincial government in Guangzhou. The companies chosen work together through a carefully facilitated process, with full translation support, to define potential projects which can be expected to deliver some form of financial return within three to four years.

"It was a fantastic opportunity to create meaningful links and generate value through innovation with China. The programme is a model of excellence in international collaboration in technology development and transfer," said Davidson.

If you think the UK Government's Passport to Export service or the UKTI's TAP grant could help you, then check out the following links:

- **Passport-to-Export Service**
- **Tradeshow Access Programme**

Other schemes include:

- **Export Marketing Research Scheme**

BioMoti wins PharmaVentures pitching competition at UKTI Bootcamp

BioMoti recently attended UK Trade & Investment's (UKTI) one-day bootcamp on how to secure business in the US Bioscience Sector, and ended up winning a pitching competition held by PharmaVentures.

The event on November 18 was held in partnership between the Mayor of London and UKTI to give London-based SMEs working in the bioscience sector, and employing less than 250 people, a better understanding about how to engage with the US bioscience sector. With over 47,000 bioscience establishments, the US is seen as the industry's powerhouse and the market to break into.

With introductions from Chris Parsons, International Trade Advisor at UKTI London, and a welcome address from Kit Malthouse, the Deputy Mayor of London for Business and Enterprise, delegates heard from, amongst others, John Clerici and Dr Jennifer Schneider, founding Principles at Washington-based business management consultants Tiber Creek Partners, who gave an overview on the non-dilutive funding available in the US.

There was also US-based international law firm Fried Frank, and Allyson Stewart-Allen from International Marketing Partners and the author of 'Working with Americans' who talked about the different working business cultures between the US and the UK, and Fintan Walton, CEO and Founder of PharmaVentures, one of the world's leading specialist pharmaceutical and biotechnology corporate advisory services.

During a session on pitching and communication by Fintan Walton, four companies pitched their ideas to the assembled audience who then voted to decide which one was the best.

"I wanted to present an easy to understand pitch that wasn't overloaded with data, which went down well, and I got some great feedback on a number of improvements I could make. From the pitch session I learnt how important it is to have a coherent story, be clear and light on the technical stuff, at least in the first pitch, and talk about the benefits rather than features in order to get your USP clear in the investor's mind," said Davidson.

QMI ROUND-UP

It's been a busy six months at QMI, the technology transfer arm of Queen Mary University of London (QMUL), which saw the successful launch of a new app game, the sale of a molecular programme to Pfizer, and Royal recognition at Buckingham Palace.

Graeme Brown, Director of Technology Transfer at QMUL and Executive Director at QMI

Graeme Brown, Director of Technology Transfer at QMUL and Executive Director at QMI, talks about some of the highlights.

MRC Technology Sells its Melanocortin Receptors Programme to Pfizer Inc

In June, QMUL benefited from the sale of its stake in a collaborative project with MRC Technology, a technology transfer organisation, after it sold its Melanocortin Receptors (MCRs) programme to Pfizer Inc.

Located in the central nervous system, periphery and immune cells, these small molecules came to the attention of MRC Technology through Mauro Perretti, Professor of Immunopharmacology at QMUL. MRC Technology ran a screening programme in collaboration with QMUL.

The undisclosed financial consideration received by MRC Technology from this transaction with Pfizer will be shared with QMUL's William Harvey Research Institute, of which Professor Perretti is Co-Director.

"As an academic pharmacologist, it is truly rewarding to see more than a decade's work lead to a fascinating collaboration with MRC Technology and to this agreement with Pfizer. This is truly within the translational spirit of the research conducted at QMUL," said Professor Perretti.

As MRC Technology runs a not-for-profit collaborative model, revenue from this transaction will be reinvested to support other collaborative programmes within its drug discovery labs.

"We believe MCRs have significant therapeutic potential and we are delighted to have completed this transaction with Pfizer. This transaction and similar ones will enable MRC Technology to reinvest in its drug discovery programmes focused on areas of unmet medical need," said Professor Justin Bryans, Director of Drug Discovery at MRC Technology.

Tim Rolph, Vice President and Chief Scientific Officer of Cardiovascular, Metabolic & Endocrine Disease Research at Pfizer Inc, added: *"We are pleased to have acquired novel early-stage compounds discovered by MRC Technology. Through research and development efforts, we hope to identify a potential new medicine to treat those who are genetically susceptible to certain diseases and associated morbidities."*

Royal recognition for QMI entrepreneur

Also in June, Dr Joshua Reiss, co-founder of QMI portfolio company MixGenius, and a QMUL scientist, attended a prestigious reception hosted by Her Majesty the Queen at Buckingham Palace to recognise the growing potential of UK tech start-ups. The Royal reception showcased products from over 350 of the UK's most successful and promising companies and organisations like Raspberry pi, Bristol OC Robotics and Intelligent Textiles.

Dr Reiss said: *"I was honoured to be invited to Buckingham Palace. It was thrilling and inspiring to meet Her Majesty the Queen, HRH Prince Philip, and Prince William, the Duke of Cambridge. I was especially impressed by the Royal Family's keen interest in, and support for, the UK technology industry."*

MixGenius secured 1.5 million Canadian dollars in September 2013 to accelerate its capacity to support musicians to achieve professional sound quality without using a sound engineer. More recently, they have secured additional funding and launched LandR, an online automatic music mastering service, which has gained over 10,000 users in the first three months.

The financial boost from venture capitalists and Angel investors has helped to grow the company and there are now 30 staff based in their offices in Montreal, including three graduates from QMUL.

Research from Queen Mary University was originally supported by Queen Mary Innovation Ltd, TandemLaunch Technologies, which acts as an incubator for early-stage technologies, the Royal Academy of Engineering, and a grant from the European Commission called DigiBIC.

New app game launched: Icon Do Better

In July, QMI helped to launch a new app called **Icon Do Better**, a modern take on the old gaming classic Tetris which combines the teamwork of Minecraft.

For players who miss the 1980s and remember their first home computer gaming experiences, the screen replicates the retro feel of those early games. Tilting the screen shows the chunky pixels flicker and blur as if they're floating in the thick glass of an old low resolution screen.

Developed by Ed Burton, an artist and researcher at QMUL, the challenge is to clear your screen by stacking matching sets of icons. The twist is that, to delete them you need to contribute the design for a new matching icon, so every person playing worldwide is making and matching icons with you.

Barts Health NHS Trust and Queen Mary Innovation Host Innovation Week

Barts Health NHS Trust and Queen Mary Innovation (QMI) recently hosted its Annual Innovation Week, which brought together NHS innovators and entrepreneurs to hear from experts in digital health about how turned their ideas into commercial reality.

The event, which ran from September 30 to October 2, heard from innovative companies like HealthBox, Our Mobile Health, Eva Diagnostics, Nucleobase, Geneix, Baby 2 body, medDigital and Simprints who described how their companies gained commercial success.

"*While we often hear about successful digital and app-based companies, the fact is that many new start-ups fail. By bringing in successful companies such as this to share their knowledge, we hope that any potential entrepreneurs can learn some useful advice on not only how to build value in a new company but also to avoid some of the numerous pitfalls and address challenges along the way,*" said Michele Hill-Perkins, Head of Technology Transfer (Biopharma) at QMI.

In addition to hearing from companies involved in digital health, the audience also got to hear from crowdfunding companies such as Hubbub and CrowdCube, who gave talks about how to run a crowdfunding campaign.

"*Securing funding for health innovations is proving increasingly difficult. However, for projects requiring a relatively small amount of funding, which can be quickly brought to market, crowdfunding can provide a viable option for entrepreneurs,*" said QMI's Natasa Levicar.

The week ended with the Innovation in Healthcare Awards which were held at Barts' Pathology Museum and included presentations from two successful entrepreneurs who have been involved in launching a number of start-up companies.

Dr Vishal Gulati, Venture Partner at DFJ Esprit and Chairman of the Digital Health Forum, spoke about digital health from an investor's perspective, and Dr Rowan Gardner, founder of BioLauncher and RowAnalytics, talked about digital health from a patient's perspective.

The winners of the Service Improvement Award went to Ceri Davies, John Robson, Zaheer Ahmed, and Simon Woldman for a Heart Failure Application Tool that enables GPs and their staff to identify patients with heart failure. Meanwhile, the Dragon's Den Style Award went to Johann Grundlingh and Ali Refson for a handheld device to resolve abnormal heart rhythms.

Gerry Leonard, Director of Research Development at Barts Health, said: "*The awards were a fantastic success, and show just how effective the NHS can be in developing innovative new products and technologies which can make a real difference to patient care.*"

Commenting on the game, Ed said: "*Tetris has long been a classic, while Minecraft has had a huge impact as part of a new wave of games that encourage collaborative play. What we wanted to do was combine the aspects of both games, in a retro style, which will appeal to both a new generation of gamers and those of us who grew up in the early days of computing with Spectrums and Commodore computers. The launch of this game is particularly timely as it is the thirty year anniversary of Tetris, and we hope this can become the Tetris of the Instagram generation.*"

While you're basking in the warm glow of gaming nostalgia, the game also has a serious side. The app was developed as part of CHI+MED, an EPSRC funded initiative to help improve the safety of interactive medical devices.

Peter McOwan, VP Public Engagement and Student Enterprise at QMUL and a researcher on CHI+MED, said: "*Gamification and crowdsourcing are increasingly being used to help solve difficult problems. With this app, not only do we have a fantastic game, but also a novel way to collect information on how players match and create their new icons, the results of which could help make the icons on future device interfaces easier for humans to understand.*"

Adam Daykin, Head of Technology Transfer, Technology and Engineering at Queen Mary Innovation, added: "*Apps are becoming an increasingly significant global business, and the combination of art and technology, as a way of creating both a compelling game experience, and helping drive important underlying research is an area where QMUL arguably leads the way.*"

Icon Do Better is now available from the Apple Store and can be downloaded at QApps or the Apple App Store.
A demonstration video can be found here.

Available on the App Store

ANNUAL REVIEW: A BUMPER YEAR FOR DEALS AND NEAR MISSES

Despite some the near misses, 2014 is shaping up to be a massive year for pharma, biotech and medtech deals, showing that consolidation and mergers, rather than IPOs, is the name of the game.

At the time of writing, and according to the most recent data from Mergermarket, the financial analysis company, there have been 869 deals worth $354.3 billion, the most it has seen, by value, since 2001.

This is attributed to, at the last count, the eight megadeals this year – representative of the mass consolidation going on in the industry – which alone accounted for $220.3 billion.

Though Mergermarket predicts the market for mergers to remain strong in Q4 2014 and beyond, the IPO market is likely to be barren. Despite inversion being a driver for M&A deals, deals like the potential AstraZeneca-Pfizer merger died on the vine due to "too strong a tax inversion strategy rhetoric," the report said.

The chances of Pfizer reviving its pursuit of AstraZeneca has been greatly diminished after the collapse of AbbVie's £54 billion acquisition of Shire. Pfizer, the biggest US drugmaker, is now free to make a new approach for AstraZeneca after a mandatory cooling-off period ended following its failed £69.4b billion bid in May. However, such a move is thought to be less likely after AbbVie, another US drugmaker, backed away from its deal with Shire because of a White House clampdown on foreign takeovers that allow American companies to cut their US tax bills.

Pfizer and AbbVie are among more than a dozen American companies that have sought deals this year as they try to shift their tax domicile overseas to escape the 35% US corporate tax rate – the highest in the developed world. Pfizer had hoped to cut its average tax rate from 27% to 21% by buying AstraZeneca and moving to the UK. However, the US Treasury's clampdown has made it harder for companies to use inversions to shield offshore cash from US taxes.

Indeed, the chances of Pfizer approaching Actavis, the Dublin-based generic and speciality drugmaker, which has been touted as an alternative potential target for the US company, has also been reduced.

With the abundance of M&A announcements in the pharma, medical & biotech industry this year, the industry has seen its highest total deal value with a record $352.5 billion, already over double 2013's total.

The big ticket inversion deals in the pharma, medical & biotech sector resulted in $278.9 billion worth of cross-border deals – over three times higher than the whole of 2013. Indeed, inversion deals from the US prompted 77% of pharma, medical & biotech activity to come from foreign bidders. As a result, the sector reached its highest ever value with a record $155.6 billion.

In Europe, pharma, medical & biotech M&A is also seen as a major objective for European bidders who are increasingly looking outside of the region, with $74.6 billion, up almost four times above 2013's annual total and 19.7% higher than the peak in 2009.

Outbound deals valued at $257.3 billion up to the end of Q3 reached the second highest annual value on record after 2007, partly driven by the activity of German companies producing a record high value for the country's outbound activity outside of Europe at $67.5 billion. It was also the first time the country registered outbound values higher than $30 billion as companies gained access to the US market, including Merck's $16.2 billion acquisition of Sigma-Aldrich Corporation.

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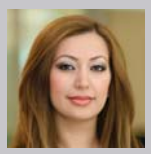

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