

The future of UK drug discovery investment



Keith Powell

Keith Powell has extensive experience managing successful biotech companies and securing funding. He is currently chairman of Domainex, Canbex and BioMoti and has recently joined the Mayor's Science and Technology Advisory Panel. Here he examines the current state of UK healthcare investment and gives his recipe for future success.

SPRING 2013, and somewhat confused: while we've seen the FTSE reach a five-year high this year, what is happening in the world of biotechnology? Are investors coming back in? Will drug discovery be something a UK investor will support?

Healthcare investment is a difficult art, not least because the sector is very complex. In the past five years we have seen investors move out of early-stage drug discovery and into late-stage, then medtech, diagnostics, nursing care, etc. And yet what investment managers fail to mention is that often these alternative 'less

risky' plays find it hard to penetrate markets such as the NHS. The sales effort required can also eat into profit so that the time to exit is longer than expected and the returns will never match those of a successful drug discovery venture.

Pharmaceutical companies have cut and downsized to a great extent, leaving a yawning gap at the early stage of research, and pipelines look thin. Meanwhile, the deluge of data from genomics is opening up new drug targets in oncology, inflammation and many other therapeutic areas. There has... **Continued on page 3.**

WELCOME

We lead this issue with an interview with Keith Powell, recently-appointed member of Boris Johnson's Science and Technology Advisory Panel. Keith gives an appraisal of the UK's biotech sector before looking to the US and beyond to examine future opportunities and challenges. He also offers a ten-point recipe for how the UK can progress and compete in the international arena.

We explore opportunities in the US market in an article spotlighting two British LBIC clients that have found success in the US. The issue also includes an interview with Ricky Martin, winner of *The Apprentice* and a recent addition to our Business Support Network, who outlines threats facing the life sciences industry while also looking to a potential area of growth.



Paula Burton
Editor

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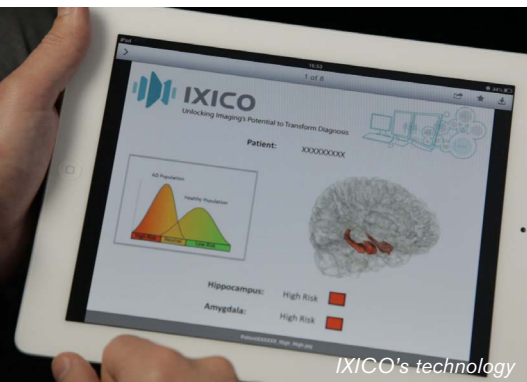
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IXICO awarded Biomedical Catalyst grant for new high-tech early dementia assessment service

MEDICAL imaging company IXICO is working in partnership with Cambridge Cognition to trial a new community-based dementia-diagnosis service. It combines quantitative brain image analysis technology developed by IXICO with Cambridge Cognition's CANTAB cognitive testing platform. The project aims to demonstrate that time to diagnosis can be cut by an average of 15 months. Faster treatment and support for patients could add 18 months to independent living.



Domainex launches Discovery STAR Award to support translational research

DOMAINEX has launched a Discovery STAR Award scheme to support academic groups at the early stages of drug discovery. Domainex will provide drug discovery advice and services, such as virtual hit screening using their LeadBuilder platform. This assistance should prepare the projects for applications to larger funding schemes. Domainex plans to run the scheme every six months.



Microsens gains FDA approval for innovative tuberculosis diagnosis kit

MICROSENS Medtech has received FDA approval for its TB-Beads kit, providing a novel and improved method for tuberculosis diagnosis that can be implemented in high-TB-burden, poorer communities.

The technology uses magnetic beads that bind to the TB in a sample, allowing the TB to be extracted using a magnet. This increases the sensitivity of diagnosis by up to 40 per cent. The method does not require electricity or refrigeration and does not use expensive reagents and equipment.

ProtAffin is joint winner of EuropaBio's Most Innovative Biotech SME award 2012

PROTAFFIN has been announced joint winner of EuropaBio's 'Most Innovative Biotech SME' award. ProtAffin received the prize for their progress in developing more effective therapies for key global diseases with major unmet needs, such as chronic obstructive pulmonary disorder. Global Bioenergies were joint winners.

Immune Targeting Systems making significant progress in the development of T-cell vaccines

IMMUNE Targeting Systems has completed two positive Phase I and one Phase IIa clinical trials of its Flunisyn vaccine, which stimulates production of T-cells that recognise and destroy influenza-infected cells. The vaccine is applicable to multiple influenza strains. Recently ITS has been awarded two grants to advance the development of a therapeutic Hepatitis B vaccine and a cancer vaccine for solid tumours.

PolyTherics expands London operations

POLYTHERICS has nearly doubled its floor space at LBIC and has recruited seven additional scientists due to rapidly increasing interest in its novel antibody-drug conjugate (ADC) linker technology, ThioBridge. ADCs combine the targeting power of antibodies to deliver cytotoxic agents directly to a tumour. ThioBridge works by linking the drug component of the ADC to the antibody or other targeting molecule at a specific site in its structure.

LBIC welcomes the companies listed below, who have joined the Centre over the past six months:

- Applied Exomics
- Eventum Partners
- Inspirex
- KBK
- Life Science Ventures
- Oxford Labs
- Poiesis
- Retroscreen Virology
- SEEK

Continued from front page

never been a better time to discover new therapies for hard-to-treat diseases but there is a paucity of companies ready to develop and exploit these inventions. It is time for a rethink.

Predictions for the USA life science sector

In his February issue of the Burrill Report, G. Steven Burrill predicted that, in the USA, traditional venture investors will move on from start-ups, leaving angel, corporate venture, disease advocacy groups and philanthropic organisations to fill the gap. Burrill states that, to get funding, companies will need to exhibit:

- A clear path to market
- Ability to get paid for their products
- A way to demonstrate value to customers or payers
- An exit opportunity for their investors

The rest of the world sees the attraction of biotechnology

From traditional biotechnology centres like Germany and France to the BRIC countries, governments are recognising the benefits of a thriving drug discovery industry – the world is increasingly going to compete in this area.

Burrill predicts that investors in emerging markets will become more prominent and mergers and acquisitions in the USA will increase by at least 20 per cent, with an emphasis on drug companies with access to Latin America, the Middle East and southeast Asia. Discovery collaborations will continue to be the focus of pharmaceutical companies' partnering efforts, says Burrill, to reduce costs and increase innovation.

The UK has significant advantages but we need to ensure we don't watch while others catch up and overtake.

So what should we in the UK do now?

It would be great to see the UK really pull together a strategy to grow and develop an industry based on the undisputed quality research in the country. The TSB Biomedical Catalyst funding and the Wellcome Trust provide some of the way forward.

We need to see a coordinated and determined effort to grow things from here. My ten-point recipe would be:

1. Double or triple the size of the Biomedical Catalyst funding
2. Simplify the tax rules for genuine investment in innovation, e.g. make a private investment to match fund a

TSB-funded project tax-free

3. Create an Enterprise Investment Fund for drug discovery
4. Provide funding support to incubators in order to provide facilities for biotech companies at lower cost
5. Concentrate life science research efforts around existing major clusters such as the London, Oxford, Cambridge triangle to avoid dilution of funding
6. Fund appropriate Agbiotech and industrial biotech/manufacturing
7. Build a strong international conference in the UK dedicated to life science investment
8. Support very early stage companies with matching funding for e.g. EIS private investment
9. Support philanthropic groups to invest in disease-specific projects
10. Offer tax incentives to UK-based pharmaceutical research by larger companies.

And finally

2013 offers an opportunity to move out of the gloom of the last five years and into a period of growth for the industry. We need to be positive and work like never before, but it can happen!

KBK joins LBIC

Akio Hanaki explains how new Japanese client Kyokuto Boeki Kaisha (KBK) can help with worldwide distribution of products and services.

KBK is a leading marketer and distributor of industrial systems in Japan and mainland Asia, North and South America and Europe. The company has served key industries, such as steel, material, and resource development, for over 60 years, offering value-added trading by providing services and solutions according to clients' needs.

Throughout KBK's history we have been introducing emerging technologies and products to the Japanese marketplace and we always strive to offer the latest solutions.

Instruments and clean-tech

Our current focus is scientific instruments and clean technologies. We are presently marketing fellow LBIC tenant deltaDOT's analytical instrument, which, with its innovative data processing software, has many industrial and research applications. We are finding clients and partners for deltaDOT's technology in Japan and in future will promote this product in other Asian countries where KBK is represented.

Looking for partners

We are marketing state-of-the-art solutions across our organisations. One of our reasons for joining LBIC is to find other technologies, products and services that can benefit our clients.

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From *The Apprentice* to the LBIC Business Support Network

Joel Dudley interviews Ricky Martin, the 2012 winner of the BBC's *The Apprentice*. Ricky is the founder and managing director of Hyper Recruitment Solutions (HRS), which is a member of the LBIC Business Support Network.

HRS is a specialist recruitment consultancy dedicated to the science and technology sector. Alan Sugar has a 50 per cent stake in the company, which was established following *The Apprentice*.

Ricky has a degree in biochemistry and is a member of the Royal Society of Chemistry. He gained several years' experience in scientific recruitment before establishing HRS. As well as providing recruitment solutions within the scientific and technology fields, Ricky is interested in promoting the sector. As a former professional wrestler, he has a great deal of energy and enthusiasm, which can only be a good thing for the industry.

Why did you join LBIC's Business Support Network and what makes it valuable to you?

Each of our employees comes from a science background and has the ambition to represent innovative and ambitious science companies with the highest level of professionalism and credibility. HRS was delighted to become a member of LBIC's Business Support Network. LBIC is an inspiring community of innovative science and technology companies and therefore to work with them gives the opportunity to work with like-minded businesses.

Both you and Lord Sugar clearly recognise the strength of the life sciences sector. How healthy do you feel the sector is at the moment and what challenges and opportunities do you

envisage will be significant for it in the year or so ahead?

In my opinion the life sciences industry is not promoted and celebrated enough in Britain. UK science has had a tough few years, with so many companies downsizing and outsourcing, which has taken the bulk of the publicity. Although this is a reality, many new ideas and steps forward in the standards of quality, discovery and development have also happened. I feel these should be celebrated and promoted.

From a recruitment perspective a key challenge will be keeping those

As you look to the future what do you think has the greatest potential as a growth area?

There is a lot of talk around the biosimilar market, which I think could be interesting to keep an eye on over the next year. If somebody can make a serious breakthrough here then who knows how everybody else will follow.

What aspirations do you and HRS have for the year ahead?

Over the next 12 months I intend to position HRS as a company with high levels of professional standards and credibility in the science and life science community. I do not intend to be working with every company possible but rather a number of



professionals who have been affected by company changes highly motivated. We don't want people to lose their passion for science and therefore leave the sector. This would have a knock-on effect on the industry as, if we have a depleted pool of highly qualified talent, it could have a serious impact on the future of ideas and therapeutics being brought to market.

partners who share our values and we can really add value to.

I am very passionate about HRS and in all of our business activities I want to show the science community that we can be a real outsourced partner to their HR processes. And that – even though the last few years have been challenging times – when it comes to staffing we can make this a successful and hassle-free service.

Focus on IPRIS

Sophie Brayne from IP Pragmatics discusses reducing the rising patent maintenance costs.

To effectively protect valuable core technologies and early-stage innovation, the majority of businesses rely on the expertise, vision and knowledge of a skilled patent attorney. Building a successful relationship with an experienced attorney is an integral part of a robust intellectual

IPRIS

property strategy for any technology business. With this in mind, the drafting and prosecution of a patent application is an area where businesses will rightly invest heavy resource.

A conflicting tension, however, is the ever-mounting budget strain faced by small to medium-sized organisations globally. Increasingly, management teams are being asked to streamline patent costs wherever

possible. This requires carefully selected country filing choices, as well as support from legislative adaptations such as the introduction of the Patent Box incentives and the pending Unified European Patent system.

Whilst this suite of changes is likely to benefit SMEs in future, the ongoing maintenance fee payments over the lifetime of a patent family create continual frustration. By example, a single family filed in the big five European countries (Great Britain, Germany, France, Spain and Ireland) is likely to incur around £60,000 of renewal fees across its 20-year lifespan. This is a figure which neglects to include the estimated initial £10,000 country filing charges or mounting renewal fees from North America, China and Australasia.

The coordination and payment of these

interventions in the form of better diagnostics and screening tools, novel therapeutic agents and better means of characterising and delivering those agents.

The invention and subsequent innovation of novel technologies opens up manifold opportunities for better research and healthcare solutions. The emergence of high throughput and high content differential display technologies – for example in single cell imaging, genome analysis and next generation sequencing – are all contributing to a better knowledge platform to identify and modulate disease processes.

Improvements in analytical techniques, such as capillary electrophoresis, have enabled developers and regulators to push QC/QA boundaries when it comes to characterising therapeutic agents. Finally, improvements in formulation and drug delivery technologies have afforded

global patent renewal fees, however, need not require expensive attorney time to execute. Having understood the challenges which SMEs, universities and government



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technology transfer departments face, IPRIS founded a patent renewals service dedicated to serving these organisations, which works in unison with a client's existing patent attorney. Competitive fee structures create significant savings and are combined with hands-on expert support

from the IPRIS team of IP experts. In addition, the service offers complete control of your renewal instructions and costs via a personalised online interface.

For further details or to receive a quote please contact Sophie Brayne: renewals@ip-pragmatics.com

Technology waves

One Nucleus' Tony Jones discusses the evolution of key technologies for dissecting biological processes and creating therapeutic interventions.

OUR increasing ability to dissect cellular and physiological pathways, and hence their pathophysiological counterparts, at the molecular level in the post-'omics' era, raises the aspiration of finding better treatments based on a more informed and efficient drug development process.

Greater understanding of the erroneous physiologies of disease and natural ageing processes can serve as the foundation on which to develop effective new

efficiency to the technological and economic aspects of drug development.

The utopian ideal of truly personalised medicine – where health problems are detected early and managed effectively with all patients receiving the right treatment at the right time and at the right dose – are some distance away. However, advances in our technological ability to gain understanding, develop interventions and monitor their effect at an individual level offer grounds for optimism we are on the correct course.

A future based on an effective and affordable approach to managing animal and human disorders will rely on all stakeholders being able to collectively integrate leading-edge scientific understanding into deployed surveillance, diagnostic and therapeutic strategies.

Cloud computing in life science

– by Malcolm Newdick at Riverbank IT Management

The cloud is already an essential part of many people's private lives – they think nothing of communicating with friends via Facebook, putting photos on Flickr and their data in iCloud and Dropbox.

In the life sciences, it's not quite the same. Security is a major requirement, so you won't be inclined to put all your intellectual property onto some web-based system where you don't know who has access to it.

It doesn't have to be like that though and many Riverbank clients are discovering the benefits of working in 'the cloud'.

The attraction of cloud computing

Many new businesses are being born in the cloud, attracted by low initial cost and predictable running costs combined with

flexibility, scalability, rapid deployment and guaranteed up-time.

Objections to cloud computing

The two major objections to cloud computing are: dependence on a single internet connection and security.

Dependence on the internet: The internet connection can be a single point of failure – if the internet goes down, business stops. In fact you may well have more resilience with a cloud-based service. If your company's internet connection fails, staff can do some of their work elsewhere.

Security: Choose your provider carefully. Using a service backed by a company like Microsoft or Amazon is likely to be a safe bet. You know they will have good security systems, recruit good people, and so on.

Using a business-quality service is also likely to give you better protection. While I might trust my holiday pictures to something like Dropbox, I certainly wouldn't store my patent application documents there.

In the end it's all down to trust. A decade ago we worried about the security of internet banking but now we don't give it a second thought. We have learnt that the system works and is secure. In terms of cloud computing it's up to you to weigh up the perceived risks against the competitive benefits you could get – to jump or to wait.

Find out more about cloud computing at the LBIC Cloud event and lunch on 8th May

www.riverbank.co.uk

Oxford Labs helps businesses cut costs and reduce environmental impact

Very few businesses are immune to an economic downturn, but by finding cost savings and reducing their environmental impact, organisations can not only weather the storm but also emerge better positioned to achieve long-term sustainable growth.

Oxford Labs is a specialist online marketplace that connects buyers and sellers of used laboratory equipment. It is rapidly becoming Europe's most comprehensive online marketplace for scientific equipment, allowing businesses to maximise worktop space, realise hidden cash and reduce their carbon footprint.

Since being established in 2010, more than 1,000 items, with a total value of £1.6m, have been sold through the Oxford Labs website.

Maximising efficiency

Greg Sutcliffe, a director of Oxford Labs, explained: "We're not a retailer, we're an independent organisation that connects buyers and sellers, enabling surplus lab equipment to be redistributed in order to maximise lab efficiency."

The website is updated daily with equipment for sale. Prospective buyers can also place free 'wanted' adverts if they can't



immediately find what they're looking for on the site. "This service offers a great way for start-ups wanting to kit out a lab on a tight

budget to find the equipment they need to get up and running", said Greg.

One site user, Raj Gill, a senior research associate at UCL's Faculty of Medical Sciences, commented: "I am delighted with Oxford Labs. I have been able to buy a great piece of lab equipment for much less than it would have cost new."

LBIC crucial to development

Oxford Labs have been at LBIC since November 2012 and the company has benefited greatly from LBIC's on-going support and its central London location. Greg said: "LBIC has been crucial to Oxford Labs' development, particularly in helping us achieve our aim of becoming Europe's number one online market place for scientific equipment."

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USA focus: LBIC clients' success

LBIC has proved an invaluable resource for US companies looking for a foothold in the UK market – but what are the opportunities for British biotech companies looking to break into the US? We examine the progress of two LBIC clients succeeding in North America.



The company has developed a label-free capillary electrophoresis instrument and has had numerous successful collaborations, particularly in the US. It was part of the US Defense Advanced Research Projects Agency's Accelerated Manufacture of Pharmaceuticals (AMP) consortium, recently nominated by BioProcess International for a 'Collaboration of the decade' award.

The AMP initiative led to the Blue Angel programme, producing over ten million doses of an H1N1 vaccine candidate in one month. The DARPA programme also led to the creation of the Caliber Biotherapeutics facility in Texas, which uses deltaDOT technology in delivering improved vaccines and biotherapeutics.

DeltaDOT is a member of the Texas A&M System Proposal Team, awarded a



The Caliber Biotherapeutics facility

\$285.6 million contract to develop one of three US Department of Health and Human Services Centres for Innovation in

Advanced Development and Manufacturing. The Centre will utilise innovative technologies to prepare for public health emergencies.

In addition, deltaDOT recently signed a collaboration agreement with an east coast diagnostics company that, enhanced by a further interaction with a Texas A&M University System entity, has the potential to completely change the way cardiovascular diagnostics are performed.

Q&A WITH STUART HASSARD, CSO

How did you first form the contact that led to your success in the USA?

In 2005 we attended a conference in California called PEPTalk and our CSO's talk was seen by scientists from DOW Pharma (now Pfenex). That one interaction led to all of the US DoD work we have engaged in over the subsequent seven years.

Was it difficult working with a different regulatory system?

We have had no problems with any aspect of US regulatory systems, and quality control work and experience gained at the initial CaliberBio installations has been applied subsequently with great success.

What advice would you have for other UK biotech companies looking to get started in the US?

Get a champion for your technology in your target market. At deltaDOT we are blessed with many such people in our US market and once we see that they *get* the technology and are prepared to take the risk to promote it internally we have gone from success to success. Having that local hero has made the difference in many cases but having a mature and proven technology is also a major help. Be ready before you enter the market with a product that, if not 100 per cent ready to go, has very strong proofs of principle.



Alacrita provides expert life science consultancy services, spearheaded by founders Anthony Walker and Rob Johnson. In the spring of 2012, Rob relocated to Boston to drive Alacrita's expansion in the US. The new office has already been named as one of the top 'five to follow' by Patricia Resende, managing editor of *Mass High Tech* (part of the online *Boston Business Journal*). The opening was also picked up by local TV channel New England Cable Network in a discussion of Boston's success in attracting international life science companies.

Rob explained: "To date, we have concentrated on serving our European clients. By expanding our presence to the heart of the world's leading life science cluster, we are better configured to serve our growing roster of US clients. Massachusetts is home to more than 500 biotech and pharma companies with about 1,000 drugs in development.

"Given the importance of the Boston super-cluster, all companies should be considering how to capitalise on the opportunities available in the region. Establishing a presence in the US signals real commitment to the market but must not be undertaken lightly. There are significant immigration, employment and tax considerations that need to be carefully thought through.

"Nevertheless, once British companies announce their presence in the US, they are likely to be warmly received. Massachusetts does more trade with Britain than any other country and Americans continue to hold British culture and scientific thinking in high regard."

LBIC: Where enterprise comes to succeed

The London BioScience Innovation Centre (LBIC) provides a focus for life sciences activity in the UK capital, offering laboratory, office and meeting room facilities of an exceptionally high standard and a professional front door that cannot fail to impress.



Lab and office space

LBIC's containment level II laboratories are designed for a variety of functions such as molecular biology, protein biochemistry and cell culture. Key features include class II safety cabinets, integrated gas piping, sterilisation services and access to offices and write-up suites.

Hot desks

LBIC's newly-launched hot desking facility means you can rent a permanent desk in a shared office, or simply pay by the hour as needed.

Virtual client offer

Virtual tenancy at LBIC is an excellent choice for companies looking for a low-cost

way to establish a presence in the UK capital. Virtual clients gain the advantage of a central London address and access to a range of benefits (see below).

Meeting rooms and conference facilities

LBIC offers a number of meeting rooms and conference facilities for client use or occasional hire by non-resident companies. Catering can be provided upon request.

Benefits

- Reception services
- Full business support package via the LBIC Business Support Network
- Regular invitations to events, training and seminars
- Complimentary 12 months' One Nucleus membership with access to its Purchasing Scheme
- Presence in LBIC marketing and communications
- Access to Royal Veterinary College services and equipment, including contract research, diagnostics and imaging

Contact **Janette Richardson** at jarichardson@rvc.ac.uk or
Tel: +44 (0) 207 691 2071 to see
how we can help.

Contact us

LBIC has been supporting life sciences companies since 2001. Today we host over 40 companies ranging from entrepreneurial start-ups to more established UK companies and overseas subsidiaries from Europe, North America and Asia Pacific. The Centre is owned



and operated by the prestigious Royal Veterinary College, one of the independent Colleges of the University of London.

The Centre is a 10-minute walk from St Pancras International for Eurostar services and the site of The Francis Crick Institute. For further information, or to enquire about our services, contact:

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Would you like to feature in our newsletter?

If you would like to contribute to a future issue of LBIC News, contact **Lucy Garnsworthy** on +44 (0) 207 691 0982 or email lgarnsworthy@rvc.ac.uk



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