

The challengers

The North of England, it seems, was recognised as a potential powerhouse in life sciences long before George Osborne devised his plan to rebalance the UK economy by offering the often-overlooked region what appears to be a good commercial deal.

With more than 1,000 Northern life sciences companies, the sector is now challenging the dominance of what has long been known as the “golden triangle” of Oxford, Cambridge and London.

In this issue of Super North, we look at the organisation that is emerging as the voice of the region’s life sciences business sector – Bionow – along with its member companies, whose innovations are giving us a better quality of life with breakthroughs such as early detection of osteoporosis and relief of post-operative pain.

We also check out the Northern Health Science Alliance (NHSA), a group ensuring that the medical breakthroughs being achieved will reach patients in the shortest possible timescale.

Finally, we move to the North East to report on Newcastle Academic Health Partners, whose work currently involves stimulating co-operation between life sciences businesses and the local university and NHSA Trusts to achieve breakthroughs in areas such as psoriasis and chronic fatigue.

Also in the North East, we examine the groundbreaking work that Northumbria University is achieving in provision of a healthy diet and helping throat cancer victims to eat after successful treatment. It appears, then, that the North is not only set to get wealthier, but healthier too.

Inside

**SUPER
NORTH**

Forum: on life sciences
Funding concerns addressed
Pages 4-5

Benefits of collaboration
Featuring eight Northern cities
Pages 7-8

How to grow globally
Crawford Healthcare’s rapid rise
Page 10

To be kept up to date about all SuperNorth events and supplements please register your name, title and business with robert@supernorth.co.uk

If you want to know more about Super North, call 07735 999037 or contact guy.griffiths@supernorth.co.uk [@thesupernorth](https://www.facebook.com/thesupernorth)

Bionow Awards

And the winner is... the people’s health

Medical breakthroughs win deserved recognition for three top Northern firms, reports **Mike Cowley**

It remains to be seen, but history may judge that the work being carried out in the booming life sciences sector in the North of England will eventually eclipse even the region’s contribution to the Industrial Revolution, due to its impact on something critical to all of us: our health.

A method of early detection for the potential killer osteoporosis, less painful post-operative recovery and a way of repairing chronic wounds such as serious leg ulcers in the elderly – these were just three of the medical breakthroughs from Northern companies singled out for commendation in 2015.

Each of these medical advances was judged outstanding as part of the annual awards from Bionow, the key regional umbrella membership organisation which is helping the Northern sector to write a new and healthier chapter at a time when austerity appears to threaten even the NHS.

All of this is happening in the context of what has become an increasingly vicious circle, namely that as we prolong life, so the need for treatments increases exponentially in line with the demands of an ever-ageing population – a situation known in health circles as the silver tsunami.

Dr Anthony Holmes of Cheadle Hulme-based Optasia Medical is



In the front line: Dr Anthony Holmes

well aware of this, as he finds himself in the front line in the battle against osteoporosis, a bone disease which is treatable if caught early enough but which can, if not, lead to broken thighs and an early death or significant reduction in quality of life for the elderly. In statistical terms, 10 per cent of patients die in hospital after their hip repair, 20 per cent

die within a year and up to half are unable to walk independently afterwards.

In collaboration with the University of Manchester and the Central Manchester NHS Foundation Trust, the specialist imaging company of which Dr Holmes is chief executive has developed a system which potentially offers mass early detection for a disease that will affect half of women and one in five men over the age of 50 in the UK. (It is worth noting that men tend to think of osteoporosis as a woman’s disease.)

In fact, one in 12 of all women over the age of 50 have osteoporosis without being aware of it. Once discovered, patients can be offered low-cost treatments which will reduce risk by between 50 and 70 per cent, thus lowering the number of future costly fractures.

Simple wrist fractures in older people can suggest osteoporosis, but hard-pressed NHS staff have little or no time to investigate underlying conditions. It has been estimated that, worldwide, approximately 80 per cent of osteoporosis patients are never assessed for the disease, hence missing the opportunity for it to be managed.

Optasia won the Bionow healthcare project of the year award for coming up with a detection method to identify and analyse vertebral fragility fractures of the spine – the most common form of osteoporosis and one which tends to go unnoticed because there is often no pain involved.

The fractures can be seen in specialist DEXA (dual energy x-ray absorptiometry) bone scans used to diagnose osteoporosis, but the signs are also there in thousands of x-rays and CT (computerised tomography) scans requested each year from radiographers for a range of other conditions where the spine is also in the image.

Building on its existing work in DEXA scans, Optasia has developed a software system which uses computer algorithms to monitor a hospital’s database of relevant images for anything suspicious.

After completing development, Optasia will apply for regulatory clearance for the system to be used in hospitals. “It was actually the idea of offering the software as part of a service to hospitals that won us the award,” says Dr Holmes, “in that radiographers are simply too busy to pull up another piece of software – plus the fact it can be done anonymously. Once we have that, then it will be a game-changer.”

Another potential game-changer – this time in terms of significantly reducing post-operative pain – comes from Winsford-based Advanced Medical Solutions (AMS), manufacturer of world-leading wound care and wound closure products.

The company won the Bionow product of the year award with a device for hernia repair, an operation that involves areas known to surgeons as the “triangle of

doom” and the “triangle of pain”, names that give a clear indication of what some patients might expect following the repair. There is also significant potential for the device to be used in areas such as orthopaedics and gynaecology.

What it offers is a replacement for the staples and tacks traditionally used to hold surgical mesh in place, instead attaching it directly to the sensitive areas where nerves can be found by using non-toxic superglue. Although such glue has been around for a couple of decades, it is the delivery method developed by AMS which has achieved the breakthrough.

Surgical superglue, like its better-known commercial cousin, can stick anything together and is therefore potentially dangerous when used internally. However, AMS has developed a formulation of glue and a surgical instrument which enables the surgeon to safely spot-weld using dabs of glue during keyhole surgery.

“That last thing surgeons want is sticking the wrong parts together,” says



Giving surgeons control: Chris Meredith

Chris Meredith, the AMS chief executive. “Ours is the first device to give surgeons complete precision and control, thereby avoiding the much higher-risk practice of drawing glue up into a syringe and injecting it down a tube.” All this is a long way from the time when industrial glue was used to close wounds, often with disastrous results along the lines of an episode of M*A*S*H.

Launched in Europe in January 2015, the AMS Liquiband Fix8 has already been used in 5,000 surgical procedures. Mr Meredith and his team are now planning to make progress in the US, which has the potential to at least double the company’s market for the product. This is likely to take three years and several million dollars, as it requires Food and Drug Administration (FDA) approval for what will be a unique product.

Another significant breakthrough – this time in relation to repairing complex chronic wounds such as leg ulcers in the elderly – saw York-based Neotherix named as Bionow project of the year. Neotherix is a regenerative medicine company working

Bionow Awards

as part of a consortium of five partners, and its RegeniTherix Wound Theranostic System involves building a polymer scaffold over a wound to enable the healing process.

Ordinarily, wounds heal from the outside edges inwards – but polymer structures made up of components less than one-hundredth of the thickness of a human hair can be used to support the migration of cells making collagen and elastin, which then combine to make healthy tissue across the full area of the wound.

Seen as an alternative to skin grafts and expensive specialised products, the ability of the RegeniTherix scaffolds to improve the healing process will prove a major boon to the NHS which is struggling to cope with an increase in diabetic foot ulcers and leg ulcers in an ageing population. Dealing with these and other wounds currently costs the NHS in excess of £5 billion, around 3 per cent of its total budget.

Not only do the scaffolds aid the healing process, but the cosmetic result is also much improved, an important factor for patients after the excision of skin cancers from the face and neck (in this case via



All together now: Winners celebrate at Bionow awards ceremony

thy, chief executive of Neotherix, who has spent almost three decades in the chronic-wound field, starting with skin grafts for burns victims. It is also a continuation of his work at Smith & Nephew in York, from where he spun out his current venture.

Overall, it has taken a decade to reach the clinical trial stage – not unusual for a life sciences company developing medical treatments – but Dr Raxworthy would have liked this to have been achieved earlier in order to help his 85-year-old father who has had a number of skin cancers removed and so would have been an ideal patient for the system.

The chief executives of all three of these award-winning companies readily admit that their membership of Bionow has helped smooth the path to where they are today, as the life sciences membership organisation has been instrumental in developing an ecosystem in the North which is helping companies compete with their better-known peers in the “golden triangle” of Oxford, Cambridge and London.

The most successful parts of this ecosystem were also recognised in the Bionow presentations – now in their fourteenth year – with ten awards being sponsored, respectively, by Waters Corporation, North West

Coast Academic Health Science Network, NHS Trustech, Cheshire East Council, the Royal Society of Medicine, Seqirus, Sci-Tech Daresbury, QIAGEN Manchester, UL EduNeering and AstraZeneca.

The increasingly important BioHub at Alderley Park, which itself provides an ecosystem of innovation, incubation and business support for small and medium-sized enterprises (SMEs) in the life sciences sector, won the business services award. In just over two years, the BioHub has supported 147 companies and 475 employees at the Cheshire site, where the Bio-Entrepreneur Boot Camp programme increases the chances of survival and success for start-ups.

Support for the sector in the North has also been increased with investment in Manchester by Intertek Pharmaceutical Services, considered of such significance that it picked up the Bionow technical service of the year award. The new facility will deliver world-class scientific services to support the growing pipeline of biologic medicines being developed globally. Intertek's new Centre of Excellence for Biologics is a facility of national importance and supports the growth of the North as a significant region for UK scientific innovation.

The Northern ecosystem is creating a successful new wave of start-ups – and one

of these, ChiroChem Ltd, won the Bionow start-up of the year award. The Liverpool-based company has licensed a process that enables the commercial production of chemicals which serve as building blocks in discovering and producing new drugs, with the first 40 products having already appeared.

Not that such success is simply the domain of start-ups, however. Well-established Cyprotex won the Bionow company of the year award, having successfully expanded into the US courtesy of its method of understanding drug toxicity and how a drug substance is absorbed, distributed, metabolised and excreted. Cyprotex has its headquarters in Macclesfield, but operates laboratories in Watertown, Massachusetts and Kalamazoo, Michigan.

The raising of funds – critical to any sector – has benefited from the increasingly high profile of the North thanks to Bionow, and this was reflected in two companies sharing the investment deal of the year award. Sky Medical Technology completed a £3 million equity investment from a Japanese multinational which will market and distribute its products.

Redx Pharma plc shared the award after having been admitted to the Alternative Investment Market (AIM) of the London Stock Exchange. The deal resulted in a £15m initial public offering (IPO) fundraise at a market capitalisation of £55.2m, and in just five years Redx has created 170 jobs across the North West, establishing a portfolio of 13 proprietary, patent-protected drug programs.

None of these success stories could have been achieved without the new breed of Northern life sciences people. Of these, Dr David Brough – a lecturer at the University of Manchester and an inventor and innovator – was singled out in the Bionow awards as the most promising technologist. Dr Brough has spent seven years leading a research programme to uncover the biological mechanisms that control the inflammatory response and its implication in diseases as wide-ranging as psoriasis, stroke and Alzheimer's.

Overall, therefore, the future success of the life sciences sector in the North – and its role in the Northern powerhouse – seems to be in good hands.



Another milestone: Dr Mike Raxworthy

another Neotherix product, EktoTherix). The scaffolds themselves dissolve after their human reconstruction work is complete, so there is no need for removal.

Having won the Bionow project of the year award, RegeniTherix is due to go into a clinical trial involving diabetic foot ulcers shortly. This will be another milestone in the career of Dr Mike Raxwor-

“None of these success stories could have been achieved without the new breed of Northern life sciences people”

He's 'creating jobs and passing on the knowledge'

The life sciences sector is often regarded as a new part of the Northern economy, whereas in reality its roots run deep with pharmaceutical companies having emerged from the long-established chemicals sector – and it has produced at least one outstanding pioneer in the form of Dr Peter Jackson, who has held senior positions with ICI, Zeneca and Avecia.

ICI first entered the field with a pharmaceuticals division at Alderley Park in the late 1950s, then transformed into Zeneca when it was spun off and went on to become AstraZeneca – which made the North a force to be reckoned with in the field.

Since then, Dr Jackson has been instrumental in helping to build what is now regarded as the Bionow cluster in the North, an achievement duly recognised when he won the membership organisation's

outstanding contribution award late last year.

When asked what motivates him, Dr Jackson says simply: “Creating jobs and passing on the knowledge”, and it is a well-based claim, given that he has created more than 200 highly skilled scientific jobs over the past 15 years.

Working with investor groups, high-net-worth individuals, institutional investors and Government inward investment agencies, Dr Jackson has been responsible for the launch of some of the most innovative small and medium-sized enterprises (SMEs) within the Northern cluster, having championed Reaxa (2005), Bradford Pharma (2007) – which became Redx Pharma in 2010 – ADC Biotechnology (2010) and YProTech (2011).

The eventual Redx Pharma started with two scientists in a laboratory in



Facing up to funding: Dr Peter Jackson

Liverpool and went on to raise £27 million in equity funding, creating more than 170 jobs in the cancer and infection research divisions in

Liverpool and at Alderley Park, culminating in a successful flotation on the Alternative Investment Market.

Most of those hired were in their first jobs after leaving university, and this marked a transformation from when Dr Jackson first arrived on the scene. Graduates were now joining innovative SMEs in the Northern cluster rather than feeling they had to head for corporate giants such as AstraZeneca or relocate to the “golden triangle” of Cambridge, Oxford and London.

As someone who has launched a clutch of successful SMEs in the North, Dr Jackson believes that a “regional grant mentality” may be handicapping the ambition of many potential start-ups. He sees this in part as a hangover from the 2007-08 crash, when the only money available to the sector came in the form of grants.

He is also convinced that funding for life sciences projects could be transformed if the Government extended its tax relief for high-net-worth individuals to more of a retail offering which could sit alongside ISAs.

Dr Jackson argues that the sector in the North needs to look increasingly to the private sector for funds, “as there is a wealth of money out there which could be leveraged”. Despite constrained public funds, however, he is convinced that the Government “is listening to and values the sector”, as shown by its treatment in the recent Spending Review.

“We have now got an industry voice that stretches from North Wales to Newcastle and which can articulate our needs,” Dr Jackson says – confirming that this noted player in the Northern life sciences sector believes firmly that recent progress and success is due, at least in part, to Bionow.