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## MINISTERIAL FOREWORD

Minister of Enterprise, Trade and Investment Nigel Dodds, OBE, MP, MLA

Northern Ireland has come a long way in the past ten years towards the development of a competitive knowledge-based economy. However we are still faced with major challenges in creating a vibrant and sustainable economic future.

One of the greatest challenges our economy is facing, is that of the continued impact that globalisation is having through increased competition in terms of lower wage economies moving up the value-added chain. Northern Ireland must therefore ensure that it is in a position to increasingly compete against other countries and regions who are well-educated and who have significantly lower labour costs.

These challenges present opportunities to move Northern Ireland's economy to a new level. If we are to remain competitive it must be on the basis of adding value. The commercialisation of our key technological strengths and the exploitation of our R&D and knowledge base is therefore vital.

This is why MATRIX's intervention is extremely timely. MATRIX must use its business networks and commercialisation expertise to identify

the key areas of science, technology and innovation in which we have a lead over our competitors. MATRIX can then advise on the policies necessary to exploit these strengths and deliver economic success.

In the Draft Programme for Government, the Northern Ireland Executive's top priority is to build a dynamic and innovation-driven economy. With this in mind, I welcome the committed and enthusiastic way in which so many of our leading high-tech companies, experts and entrepreneurs have given of their time to assist MATRIX (through its HORIZON panels) in taking this important work forward.

My thanks go to all involved and I have no doubt that these efforts will provide the basis from which we can enhance the growth of our future knowledge-based economy. I therefore await the receipt of the first round of recommendations from MATRIX in Spring 2008.

# WELCOME

Welcome to the first edition of the MATRIX Newsletter in which we aim to provide our readers with an understanding of the work of MATRIX and the people behind it, as well as an insight into the opportunities and challenges which exist within Northern Ireland's science, technology and R&D fields.

In this first edition of the MATRIX Newsletter, we have focused on the Agrifood and Life & Health Sciences HORIZON panels, featuring individuals and organisations within those sectors who have a track record in the commercial exploitation of science, technology and R&D in Northern Ireland. Future editions will feature other HORIZON panels and their Chairs.

This edition also provides a brief introduction to each of the HORIZON Panels (on pages 6&7) with views from the Panel Chairs on the role of MATRIX in exploiting the opportunities that exist within each of the HORIZON sectors.

This Newsletter expresses the views of those who are directly involved in MATRIX, but we are keen to create an ongoing forum for debate on the key issues facing Northern Ireland in the commercial development of its science, technology and R&D resources. Please feel free to contact us with your views or questions (contact details are provided on the back cover).

## HOW DOES MATRIX WORK?

MATRIX has been developed to ensure that Northern Ireland is equipped to compete in the global economy of the future by improving the region's ability to maximise its commercial return from the exploitation of the excellence in its science, technology and R&D base. Modelled on the concept of the Regional Science Industry Councils (RSICs), MATRIX is designed to advise DETI and the DETI Minister on the policies necessary to ensure economic growth and wealth creation through the commercial exploitation of R&D, science and technology.

MATRIX is in essence a high-technology business led panel which brings together experts with a proven track record in the commercial exploitation of science, technology and R&D. Among its 12 members MATRIX has: senior high-technology industrialists; pro-vice chancellors from both QUB and UU; senior representation from the Association of Northern Ireland Colleges (ANIC); the Chairman of the Economic Development Forum Innovation Group; and 4 members of the Invest NI Board. It is supported by a dedicated secretariat based within DETI.

MATRIX's first major undertaking has been to launch an ambitious and unique analysis of strengths and weaknesses across the full range of science and technology sectors in Northern Ireland. The findings of this "Technology Capabilities & Market Opportunities Study" will be mapped against actual and potential commercialisation opportunities to assist MATRIX and DETI in assessing how well Northern Ireland is performing across the R&D, science and technology spectrum and how it is

responding to current market opportunities. This is, in effect, a "now-sight" exercise which will give MATRIX a clear understanding of where Northern Ireland presently stands as a knowledge based and R&D exploitation driven economy.

The Technology Capabilities & Market Opportunities Study will feed into the MATRIX flagship HORIZON Programme - a focused and time-bound horizon scanning / technology & market foresight initiative. The first round of the HORIZON Programme is based around 5 expert panels, each chaired by a member of MATRIX. These HORIZON panels will bring proposals to MATRIX on how best to position Northern Ireland for competitive advantage over the short, medium and longer terms (spanning periods between 5, 10 and 15 years). The panels selected for the first round of HORIZON are:

- Advanced Engineering (Transport)
- Advanced Materials
- Agrifood
- ICT
- Life & Health Sciences

## NEWS IN BRIEF

### GOVERNMENT PLEDGES TO INCREASE NUMBER OF PHD STUDENTS AND BOOST PRIVATE SECTOR INVESTMENT IN R&D

The recently announced Programme for Government was strongly focused on growing the NI economy. As part of the Programme, the Government has announced its aim to increase the number of PhD research students at local universities by 300 by the year 2010. In addition they will introduce a new programme to increase the commercialisation of university and college research by 2010. The Programme states: "Our workforce needs to be better qualified and more flexible; our companies must become more innovative and invest more in research and development; and a culture of enterprise and business growth has to be encouraged."

### CLINICIANS AND BUSINESSES JOIN FORCES TO PROMOTE INNOVATION IN LIFE & HEALTH SCIENCES

On 17 October, BioBusiness NI signed a Memorandum of Understanding (MOU) with HSC Innovations and HSC R&D Office. The MOU recognises the potential for co-operation between the Life and Health Technologies industry in Northern Ireland and the clinical base within Health and Social Care (HSC). The partnership will help realise an aspiration for an innovative, globally competitive economy whose population has access to best quality health & social care utilising the latest technologies and support tools.

### WRIGHTBUS HELPS TO CLEAN UP LONDON

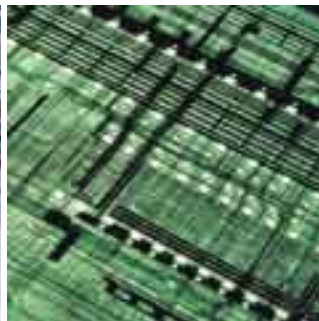
A contract to provide ten hydrogen powered buses for the City of London has been awarded to Wrightbus, the Northern Ireland bus manufacturer, in partnership with California's ISE Corporation. The agreement, which will see the buses in operational service by 2010, is part of the on-going London Hydrogen Partnership which aims to create a healthier and greener environment in the city by introducing hydrogen fuel cells to provide cleaner energy. The buses will be powered by a hybrid-electric drive system, which means that no carbon monoxide, carbon dioxide or particulate emissions are produced from the vehicles. They also have the additional benefit of being exceptionally quiet.

### BELFAST BECOMES INTERNATIONAL LEADER IN BATTLE AGAINST CANCER

A new £25m cancer research centre was recently opened at Queen's University by Chancellor Senator George Mitchell. The Centre for Cancer Research and Cell Biology (CCRCB) will focus on the prevention, diagnosis and treatment of cancer and other diseases. The centre will employ over 300 researchers from around the globe and, together with the new Northern Ireland Clinical Cancer Centre at Belfast City Hospital, makes Belfast a leader in Europe in the battle against cancer. Central to all of the Centre's research programmes will be a collaborative interaction between clinical and laboratory research experts from a variety of Queen's departments, including Chemistry, Mathematics, Clinical Trials, Immunology, Virology, Pharmacy and Cell Biology.

# CREATING WEALTH AND PROFIT FROM SCIENCE

Damien McDonnell, Chairman Of Matrix



I am honoured to have been asked by DETI Minister to serve as the first Chairman of 'MATRIX: The Northern Ireland Science Industry Panel' and delighted to have the opportunity to work with such a prestigious group of talented and committed professional people.

We live in a world of unprecedented technological innovations and in a global economy driven by scientific and technical knowledge. The evidence is now overwhelming that to compete in the modern world we must raise our game in harnessing science and technical skills into greater value addition and productivity in all that we do.

MATRIX has a single focus for Northern Ireland - namely to advise Government on how we can realise our full potential in scientific and technological innovation - creating wealth and profit from science. Our HORIZON Programme of Technology Foresight Panels are playing a key guiding role to business, directing them to better exploitation of our Science, Engineering and Technology, with all the rewards that this will bring in terms of:

- increased profits;
- more rapid company growth;
- increased opportunities for overseas;
- partnerships & investments; and
- more and better value added employment.

In this, our first Newsletter, we feature two of our panels - Agrifood and Life & Health Sciences - both of which are hugely significant to our personal health and wellbeing as well as to our economy.

It will take real understanding, talent and knowledge to realise our ambition. Within MATRIX we have created a forum to give leadership, encouragement and to promote new approaches to profiting from science - but we know we will need the engagement of the whole community to bring about real and continuous change.

We want our newsletter to be a two way dialogue with the community so I encourage you to work with us and give us your feedback on these important issues which affect us all.

**'Getting what we know to where we need to know it' is our collective challenge.**



## AGRI-FOOD PANEL AN INTERVIEW WITH THE CHAIR CLARE PASSMORE, CONSULTANT

Clare Passmore is currently a freelance Research Advisor. Previous private sector employment includes a posting as the Research and Development Manager of Gendel and, before that, as Director of Scientific Affairs for Galen. She has also served in the academic sector having been employed by Queens University of Belfast as a Research Fellow in the Departments of General Practice and Pharmacy. Her professional interests are in the fields of Health and Industrial Science and Technology. Clare served as a Member of the Industrial Research and Technology Unit Advisory Board from 1997 until 2002 and the NI Council for the Curriculum Examinations and Assessment Board from 1996 to 1999.

## AGRI-FOOD PANEL MEMBERS

**Clare Passmore**  
Chair

**Chris Gibson**  
Foyle Food Group

**John Gilliland**  
Chair & Director  
Rural Generation Ltd

**John McLenaghan**  
Farm Producer

**Maurice Johnston**  
Dale Farm

**Rotha Johnston**  
Invest NI Board Member

**Ken Baird**  
Moy Park

**Mike Mills**  
Jigsaw Tree

**Jon Woolven**  
IGD

**Observers**  
**Sydney Neill**  
AFBI

**John Speers**  
DARD

**Joyce Rutherford**  
DARD

**Sam Kinghan**  
Invest NI

**Q. What do you think are the main goals and priorities for MATRIX and the HORIZON Programme?**

A. Our primary aim is to identify the key areas of science and technology where Northern Ireland needs to engage, and where it can play, in order to ensure that we can grow a globally competitive economy. We also have a responsibility to promote awareness of the role of science in our society to our future workforce thereby ensuring access to world class science and technology.

**Q. Do you believe that the time is right for MATRIX and the HORIZON Programme?**

A. Absolutely, for a number of reasons, given the current snapshot both here in N Ireland and globally. There is evidence that Northern Ireland's small economy is becoming increasingly vulnerable to global competition. Within our capability, we need to ensure that we are able to punch above our weight in terms of adding value to our industrial output. From a MATRIX perspective, investing in, acquiring and embedding the relevant knowledge is a key driver. Looking at it from a Northern Ireland point of view, with our newly devolved administration, we've got a collective imperative to get it right, now.

**Q. What do you see as the main challenges for MATRIX in achieving its goals?**

A. A main challenge is to keep the momentum going. Science, technology and business opportunities are constantly changing and we need to ensure that we are sufficiently dynamic and flexible to keep up with the changes. It is important that we are moving forward at pace if we want to be competitive with our local and international neighbours, as well as maximise opportunities to take part in collaborative research in the future. We also need to have the culture, infrastructure and skills in place to make the necessary changes going forward.

**Q. How do you feel that your panel is equipped to contribute to the overall work of MATRIX and the HORIZON panel?**

A. Our panel has been formed rather timely, following publication of Vision 20:20, the Food Strategy Implementation Partnership commissioned foresight exercise. We've therefore been able to build on a programme that had received recent endorsement by the industry, our academic and agrifood research institutions. Our panel is an extrapolation of those involved in Vision 20:20. It is representative of the various branches of the food and non-food agriculture industry, from farm to marketplace and of the leaders involved day to day in the sector and those responsible for its R&D.

**Q. How do you see your panel contributing to the development of key recommendations for the DETI minister next March?**

A. Northern Ireland's agri-food sector has historically built a unique offering in terms of the quality of its produce and we believe that, using science and technology to build on current strengths and capabilities, there are opportunities for us to become a significant player in niche areas. The panel also believes that access to and collaboration with science and technology research outside that traditionally associated with agrifood offers solutions and opportunity for the industry's future.

Current global trends are creating further market openings for the sector, for example in the areas of health and diet, environment and climate change. This suggests opportunities within and overlaps with the output from other HORIZON panels such as Life & Health Sciences Industries. To that extent, there is a natural symbiosis between the work of our HORIZON Panel and MATRIX. I am therefore predicting a strengthened, holistic Northern Ireland industrial application, making recommendations to the minister about the role of innovative Science and Technology in the economic future for the region.



## DR KEN BAIRD

Technical Director, Moy Park

### Q. When was the company established?

A. The company started as Moygashel in 1943, with interests in many aspects of farming - dairying, potatoes and egg production being amongst them. It is now Northern Ireland's largest food processing company and one of Europe's leading poultry businesses with over 7,000 employees and operations based in Northern Ireland, Great Britain and France.

### Q. Is the company privately owned?

A. Moy Park is privately owned. The parent company is OSI Group LLC which has Headquarters in Chicago, USA.

### Q. What areas of research is your company currently working on?

A. We are constantly working on both product and process development in order to enhance product value for the customer. We are involved in many areas of R&D, including renewable energy; waste minimization; chilled supply chain; chicken flavour; traceability; forming technology; sliced chicken meat and snack development. Other areas included market research (we are one of the most intensive users of EPOS data); animal welfare and productivity; nutrition and feed formulation/efficiency.

### Q. How many people are involved in research?

A. It is difficult to enumerate as research and development is part of many individuals remit but is not actually a full time job.

### Q. How qualified are they?

A. Our researchers are qualified up to PhD level and there are some with over 20 years service in the industry.

### Q. Do you export your products and to where?

A. Principally across Europe; but we also export a few raw materials as far as China.

### Q. Do you envisage increasing your investment in research over the next five years? If yes by how much in real percentage terms?

A. Research, product and process development and innovation are key to the future success and development of the business but it is difficult to quantify in this fast changing business environment.

### Q. What would you like to see coming out of the MATRIX panel?

A. A framework and infrastructure which supports, encourages and develops businesses which are world-class in what they do, and which encourages cross-sector co-operation where universities and academics become much more involved in local business and industry. In addition, a mechanism to provide seed funding of such.

### Q. Do you work collaboratively with other companies in Northern Ireland, Ireland or GB?

A. We work collaboratively in all three jurisdictions but to limited degrees. We are willing to work collaboratively with competitors in areas where we do not compete, throughout the supply chain. This can be either directly or through independent research organisations. We have been collaborating with companies for many years but to a limited degree.

### Q. Have you had any spin offs from your own company?

A. Yes, TraceAssured, a food traceability service. In addition, a patented on-line maturation process for poultry carcasses, which substitutes for carcass ageing, and is now sold to 3rd parties.

## FRUITFUL SMOOTHIES



It may have seemed that there was no room for another smoothie brand on the supermarket shelves, but by using a superior high-pressure process to maintain the nutritional value of her ingredients, Rosemary Cowan was able to give her Puro Fruit smoothies a unique selling point that has seen her company, Barefruit Products, go from strength to strength.

In February 2006, Rosemary Cowan, a senior financial services manager, began paving the way for an unlikely career change. Initially she had the idea of starting her own smoothie bar, but later realised that she could reach a larger market by manufacturing smoothies instead. Her idea of offering customers a freshly-made smoothie using superior quality ingredients remained the driving force behind the development of Puro Fruits.

Having approached Invest NI with her idea, Rosemary was put in contact with the Agri-Food and Biosciences Institute (AFBI) who introduced her to a high-pressure process which would give her products a competitive edge. The process, which involves submerging the bottled fruit drinks in ambient water in a high pressure processing machine, allows for the high retention of the fruits' Vitamin C content. It also enables the product to stay fresh with a shelf life of over 21 days.

This gave Rosemary's Purofruit products a real competitive edge against established competitors. Through her research she had discovered that, in order to prolong the shelf-life of their products, the majority of smoothie manufacturers were using a pasteurization technique which can destroy up to 30% of Vitamin C content.

Rosemary's business, now approaching its second year anniversary, has since achieved significant success. Barefruit Products has gone from producing 500 bottles of Puro Fruit a week to over 5,000 and now has major contracts with both Sainsbury's and Tesco. The business is growing so fast that the 2,000sq ft premises in Dundonald Enterprise Park is being doubled, new recruits have been taken on, and new machinery is being purchased, including a high pressurisation machine which means that the manufacturing process will be completed on site. It is also hoped that the award-winning Puro Fruit Smoothies will soon be appearing on supermarket shelves in the Republic of Ireland and the UK.



# MATRIX

## THE NORTHERN IRELAND SCIENCE INDUSTRY PANEL

MATRIX is key to the development of Northern Ireland's future knowledge-based economy and will play a key advisory role in the formulation of R&D and Innovation policies.

A key objective for MATRIX is the successful development and implementation of HORIZON it's flagship programme tasked with carrying out focussed foresight exercises.

# AND HORIZON PANELS



Colin Elliott, Chair

## ADVANCED ENGINEERING (TRANSPORT)

Rumours of the decline of Northern Irish engineering have been greatly exaggerated. We still have considerable strengths in terms of Advanced Engineering and it will be one of the most important sectors for the future of the Northern Ireland economy. There are currently around 25,000 employees in more than 130 companies with a combined turnover in excess of £3.4 billion per annum. And crucially, if we get our strategy for Advanced Engineering right, the majority of future employment in this sector will be at the higher value added end of the engineering spectrum, not only in terms of the design of innovative new products, but also making sure that we adopt state of the art manufacturing processes, making full use of automation and robotics to improve the efficiency and performance of the sector as a whole. This might ultimately mean fewer numbers than in the past, but they will be in specific niche sectors and sub-sectors where Northern Ireland leads the world - thus delivering increasingly well paid and sustainable jobs to the region's economy.



Professor Jim McLaughlin, Chair

## ADVANCED MATERIALS

For Northern Ireland the successful exploitation of our world class expertise in the Advanced Materials sector will underpin future product development and innovation in practically every other sector. Capability in Advanced Materials, therefore, is a prerequisite of the future economic growth of Northern Ireland as a knowledge economy. And it is increasingly evident that Advanced Materials is a real strength sector for Northern Ireland. Across our business and academic communities we have quite considerable world class Advanced Materials R&D, ranging from emerging nanotechnologies to the development and application of composites, polymers, ceramics and many others. There are more than 50 firms directly engaged in the Advanced Materials sector, employing more than 7,000 people in what many consider the highest of value added employment, and these firms are already turning over in excess of £850 million per annum. This is, without question, a major strength for a region as small as this one.



Clare Passmore, Chair

## AGRI-FOOD

The production and processing of food plays a vital role in our economy. The sector employs 12% of the private sector workforce. It generates £2.4 billion in sales per annum and is responsible for 2.2% of the region's GVA. Agrifood is also a major contributor to Northern Ireland's balance of trade as it is a net exporter of finished meat products and milk. This is further supported by the contribution of distribution, packaging and retail to the regional economy. In fact, while the sector employs 19,000 processing jobs with 32,000 farming jobs, ancillary services employ in the region of some 64,000 people across Northern Ireland.

We will set out to identify the role that Northern Ireland can secure for itself as a specialist player with unique strategic and niche strengths in the global agrifood market. We will bring forward recommendations which are aimed at ensuring that the future of the agrifood sector continues to draw value from its considerable legacy, but with a firm focus on the medium to long term future with its evolution in and contribution to the knowledge economy.



Ed Vernon, Chair

## ICT

The ICT sector in Northern Ireland employs some 11,000 people and retains significant future growth potential. However, evidence indicates that these employees are spread thinly across about 750 businesses suggesting that the majority of companies in the region remain small and primarily centred on selling products and services to the Northern Ireland public sector. There is no doubt that we lag behind other leading ICT regions in several respects. But ICT in Northern Ireland is now in a state of transition, moving away from low cost competitiveness towards specific niche and strategic capabilities and the development of higher value added products and services. It is a dynamic sector - we shouldn't lose sight of the fact that Northern Ireland's ICT firms have overcome marked disadvantages in terms of geography and size to become net exporters. This is quite a significant achievement, and suggests that there is genuine scope to build in Northern Ireland an ICT economic entity which - if focused on our real niche strengths and capabilities - can compete with the best anywhere in the UK, Ireland or across Europe.



Bernie Hannigan &amp; Albert Sherrard, Joint Chairs

## LIFE & HEALTH SCIENCES

Northern Ireland's Life & Health Sciences sector consists of around 60 companies, which had a combined turnover in 2005 of £400 million. These businesses create wealth through products as diverse as medical devices and diagnostics, pharmaceuticals and biopharmaceuticals and medical disposals, as well as biotechnology-based services and clinical trials. The whole sector employs approximately 4,000 staff, many in genuinely sustainable, high-value jobs. 28 of the Life & Health Sciences companies in the region are R&D active (some very intensively so) and in 2005 they spent some £33 million on R&D, directly employing 600 R&D staff in the process. It is no secret that some of Northern Ireland's most notable commercial success stories in recent years have come from within this sector.

This is, in our opinion, a sector full of commercial opportunities and if we can set out, support and implement the right strategic approach, the Life & Health Sciences will make a key contribution to developing the knowledge economy of Northern Ireland.

# LIFE & HEALTH SCIENCES PANEL

## AN INTERVIEW WITH THE JOINT CHAIRS



### ALBERT SHERRARD, OBE

In a career with Tyco International spanning almost thirty four years, Albert Sherrard held a succession of increasingly senior appointments in the Tyco Healthcare division, culminating in that of Vice President Manufacturing Europe with responsibility for seventeen plants in ten countries. Albert received an OBE in the Queen's Birthday Honour's List in June 1996. Since his retirement in 2004, he acts as consultant to the medical device industry. Recently he was a member of the Invest NI International Life Sciences Panel and in October 2006 became Chairman of BioBusiness Northern Ireland, a business association for the biotechnology and health technology sector in the Province. He is a non executive Director of HeartSine Technologies Inc.



### PROFESSOR BERNIE HANNIGAN

Bernie graduated from Trinity College Dublin and completed her PhD in the Department of Biochemistry, Royal College of Surgeons in Ireland. She joined the University of Ulster in 1983. Prior to her current appointment Professor Hannigan was Dean of the Faculty of Life and Health Sciences, the largest of the University's five faculties and was previously Head of School of Biomedical Sciences which achieved 5\* in the 1996 and 2001 Research Assessment Exercises and an Excellent grade in Subject Review. Her own expertise is in Immunology, most particularly in understanding the relationship between nutrition and immune responses. Professor Hannigan represents the University on many local and national bodies. She is a member of the Board of Invest Northern Ireland.

### Q. Why do you believe that the time is right for MATRIX and the HORIZON Programme?

**Albert.** The UK government is currently looking at ways that the role of Science and innovation can play in enabling the country to compete against low wage emerging economies. So it is only right that NI should also be involved in this process to ensure we stay ahead in the future. Our future success lies in our ability to create and sustain a high value added, internationally competitive, export led economy. We must also utilise the window of opportunity that the new era of political accommodation has given to improve the profile of NI. The Health and Life Sciences sector, which I am particularly involved in, is one of the most innovative sectors in NI and is very important to the NI economy and society in general.

**Bernie.** Northern Ireland now has its primary focus on the economy. The development of the economy requires the implementation of all possible resources that we have in Northern Ireland and the identification of the global opportunities to which these resources can be directed.

### Q. What is different about this initiative in comparison with past exercises like NI Foresight or previous sectoral reports?

**Albert.** I was not specifically involved in the NI Foresight or previous sectoral reports so I cannot comment. However I can say that this time round we have taken on board a very robust and systemic process. We have built a strong foundation and created a real focal point that can make a difference to the NI economy.

**Bernie.** This has never really been done on a comprehensive basis previously. From my perspective, the difference this time is that we have government, small and large businesses and academia all working together.



**Q. As the Chairs of the HORIZON Panel for your sector, what do you see as the challenges and opportunities we will face as a regional economy in the future?**

**Albert.** Firstly, there is a real imbalance between with public and private sectors with an over dependence on the public sector, so strengthening the private sector is an economic imperative. We must also build on the window of opportunity the Peace process has given us and the forthcoming International Finance Conference will hopefully help us to do that. We have great people, excellent skills, a good education system and work ethic. We also have two excellent universities with world class research talent, who with continuing support from Government will ensure we stay to the forefront of delivery and innovation locally. NI is small enough to fully connect and large enough to make a difference as long as we focus or prioritise.

**Bernie.** The major challenge to all economies is access to sufficient numbers of highly skilled individuals and to ensure that we have the structures and processes to allow those individuals to build businesses and to seize opportunities.

**Q. How is the Panel you Chair equipped to address the challenges ahead and capture the opportunities etc?**

**Albert.** Our Health & Life Sciences panel is widely constituted consisting of academics, business and clinical professionals and we work well together as a team. Several of the Panel have previously been involved in the Capability Study, Gap Analysis and Collaborative Network Assessment commissioned by INI and BioBusiness NI. Our Panel have a good process in place and we debate on facts not opinions and our outputs focus on practical forward thinking proposals that will make a difference in the future.

**Bernie.** The composition of the panel was deliberately chosen to ensure that we have representatives of the top performing companies in the sector, as well as representatives from the health service. The health service in Northern Ireland has enormous potential to support economic development. We have worked extremely well as a team.

**Q. How will your panel contribute to the overall work of MATRIX and the development of key recommendations for the DETI Minister by March?**

**Albert.** We hope to finalise our first set of outputs before the year end. We have also identified several key areas for interface with other panels particularly Agri-foods, ICT and Advanced Materials and have highlighted other areas for subsequent exploitation. We have commenced engaging with key decision makers and stakeholders to get buy in and build momentum to the Panels recommendations'.

**Bernie.** At this stage we have gone through a very thorough process to arrive at a small number of major recommendations to MATRIX. There is unanimity across the whole panel around the benefits that can accrue from supporting these major initiatives.

**Q. Finally, what do you see as a practical vision for the future success of the NI economy?**

**Albert.** To deliver a successful NI economy we must ensure that we are joined up locally and remain focused on priority success areas which will allow us to compete and connect to global markets.

**Bernie.** Again it is collaboration between academia, business and government so that approval processes by government would become a lot less bureaucratic and begin to work on the same type of timescales as we see in our competitor regions.

## LIFE & HEALTH SCIENCES PANEL

**Albert Sherrard**

(Joint Chair) Management Consultant and Chair of BioBusiness NI

**Bernie Hannigan**

(Joint Chair) University of Ulster

**Peter Donnelly**

BioBusiness NI

**David Brownlee**

HSC Innovations

**Michael Neely**

HSC R&D Office

**Stephen Barr**

Almac

**John Lamont**

Randox

**Bert Rima**

Queen's University Belfast

**Alan Stitt**

Queen's University Belfast

**Werner Dubitzky**

University of Ulster

**Tony Bjourson**

University of Ulster

**Neville McClenaghan**

University of Ulster & Diabetica Ltd

**Henrietta Campbell**

Former Chief Medical Officer for Northern Ireland

**Observers**

**Suzanne Emerson**

Invest NI





## SUCCESSFUL SPINOUT FOR DIABETICA

Obesity and diabetes are on the rise and represent two of the world's most serious healthcare problems. Diabetica, a spinout company from University of Ulster specialize in this area and have discovered a number of ground-breaking diabetes therapies and diagnostics. Last year one molecule won Diabetica a promising licensing agreement with a world leader in this sector. With a number of other projects in the pipeline, Diabetica's success has increased recognition of the Northern Ireland biotech sector and promises to be a worthwhile long term investment for the University of Ulster.

It has been reported that the number of diabetes cases worldwide, currently 180 million, is set to double by 2030 (WHO), a statistic which is all the more worrying when you take into account that this rising epidemic currently consumes some 10% of Western healthcare budgets and contributes to around 2.9 million deaths per year. Meanwhile, the continuing rise of obesity (in 2005 the WHO reported 1.6 billion overweight adults) poses a major risk of related chronic conditions including cardiovascular disease and type 2 diabetes.

As a result of these trends, the bio-pharmaceutical industry is investing heavily in the development and acquisition of novel anti-diabetic and anti-obesity drugs, with the global retail sales of diabetes-related drugs, currently at some US\$15bn, projected to grow annually by 12% through 2011.

This market trend has created significant opportunities for Diabetica, a biotechnology company established in 2004 to commercialize discoveries at the Diabetes Research Group (DRG) at the University of Ulster, under the leadership of scientific co-founders Professor Peter Flatt, Dr Neville McClenaghan and Professor Finbarr O'Harte.

One of the company's most advanced products, insulin stimulating GIP agonists, last year led to Diabetica winning an agreement with a long term potential value of US\$41 million. The agreement provides a worldwide exclusive out-licence of Diabetica's intellectual property around GIP agonists.

The ultimate value of the contract depends on the commercial success of GIP Agonists and success in meeting certain development, regulatory approval and revenue-based milestones. In line with the norm for pre-clinical transactions in this industry, it will be some years before the great majority of the financial benefit will be realized by Diabetica. However, in addition to the benefits of industry recognition, an initial upfront payment has enabled Diabetica to continue with the development of its other principal products.

The company also has an agreement with a Big Pharma diagnostics leader to provide funding for the co-development of its novel biomarker for the early prediction of pre-diabetes/diabetes. Winning more of these outlicensing contracts with world leaders is an important part of Diabetica's

strategy, enabling Diabetica to focus on its core expertise of drug discovery and early stage development.

Matt O'Driscoll, Diabetica CEO and co-founder explains, "About seven years of clinical and regulatory hurdles, and expenditure of around US\$1bn are required to take one of our drugs from its current stage to market. Then, in addition to manufacturing facilities, you need a large specialist sales force to compete and distribute in highly competitive regulated markets around the world.

"Accordingly, it can make sense for a company like Diabetica to outlicense new drugs to large industry leaders. They have the financial resources and other infrastructure already in place to get new drugs to patients as quickly as possible and they also have the sales strengths to ensure market success."

It is still early days for Diabetica but it has achieved significant initial commercial success with its groundbreaking diabetes therapies. Ongoing success could in turn provide funding for future projects, as well as a boost to the commercialization of high quality R&D now being generated in Northern Ireland.





## DR STEPHEN BARR MANAGING DIRECTOR, ALMAC

### Q. When was the company established?

A. Almac was established in 2001.

### Q. Is it privately owned? If no what is the ownership structure?

A. It is a private company owned by Sir Allen McClay. Almac Group consists of five divisions: Diagnostics, Sciences, Clinical Services, Clinical Technologies and Pharma Services.

### Q. What areas of research is your company currently working on?

A. The company provides a wide range of services supporting the discovery, development and manufacture of pharmaceutical (drug) products. We conduct research on behalf of a range of clients globally (600). These customers normally operate within the pharmaceutical or biotech sectors. We also conduct our own R&D programmes and these activities are normally performed within the Almac Sciences and Almac Diagnostics divisions.

Our research areas include:

- Translational genomics with specific focus in cancer research - currently colorectal, breast, ovarian and small cell lung with a view to moving to other disease states;
- Biopharmaceutical products with a specific focus on peptide and protein research aimed at the development of platform synthetic technologies and the development of new peptide and protein therapeutics.

### Q. What will these new products/services do?

A. Our general service area is in the development of new or enhanced pharmaceutical products. Our offering allows companies to outsource and expedite significant parts of the drug development process to us which in turn accelerates speed to market and ultimately return on investment.

Our own research within the genomics area is initially aimed at the development of clinical diagnostic tests. As an example the company has registered a test with the FDA for approval for stage II colorectal cancer. In summary, all cancer

patients require surgery, however this new test will indicate which patients will require the additional chemotherapy. It is hoped similar tests will be extended into other cancer treatment areas in the not too distant future.

The peptide research is focussed on the development of new enhanced methods for the synthesis and modification of peptides and proteins used both within research and as therapeutics. The development of new protein therapeutics as pharmaceuticals is a massive growth area at present globally.

### Q. How many people are involved in research?

A. The company employs 2000 staff globally. Approx 1300 are based in Craigavon with another 650 in the US and the rest in other parts of the UK. Approx 100 staff currently would be involved in our own research areas with this number expected to grow significantly.

### Q. How qualified are they?

A. Approx 50% of the total workforce are qualified to at least degree level. Within Sciences and Diagnostics the majority of staff have degrees and many of the scientists (>100) have PhD's. A number of Professors are also employed throughout the company.

### Q. Do you export your products and to where?

A. Products and services are exported/used worldwide with the main areas being the major pharmaceutical markets in the US, Europe and Japan.

### Q. Do you envisage increasing your investment in research over the next five years? If yes by how much in real percentage terms?

A. Investment in research is continually increasing and since the company's foundation, there has been a year on year increase. We expect this to continue with significant emphasis now being placed on internal R&D.

### Q. What would you like to see coming out of the MATRIX panel?

A. Ideally I would like to see the Life and Health Sciences sector being identified as an area of strength and focus within NI. Significant effort and investment should be focussed on the development of this sector with government led initiatives aimed at supporting education, the academic and industry sectors already existing and seeking to enhance inward investment. The development of a knowledge based economy is key and an area where NI can compete on a global stage.

### Q. Do you work collaboratively with other companies in Northern Ireland, Ireland or GB?

A. The company collaborates widely with many companies within NI, Ireland and GB. We have many collaborations with Irish/UK universities (QUB, UU, Cambridge, UCL, Glasgow, Edinburgh, Dundee etc) and globally within Europe and the US.

### Q. How long have you been collaborating with other companies?

A. Since the company's formation.

### Q. Have you had any spin offs from your own company?

A. There have been no spin-offs as such but Sir Allen McClay has invested significantly in the departments of chemistry and pharmacy within QUB through the McClay trust. Without this investment some of these may not have existed today. The McClay institute was created as part of the School of pharmacy to promote research within NI.

# SPOT PROFILE

## PETER DONNELLY: BIO BUSINESS



BioBusiness was set up in 2004 when Peter was working with a number of medical device companies as a consultant and recognised the opportunity for greater collaboration in the sector. "I had the chance to not only see the work that these companies were doing, but also some of the great potential they had and it seemed to me there were a lot of benefits to be gained from these companies talking to each other."

After organising a series of successful networking workshops, Peter established BioBusiness and received funding for the association by Invest NI. It now acts as a representative body for the life and health technology sector, supporting knowledge exchange and networking. Its programmes include BioMed Ireland, the first all Ireland biotechnology and health technology programme, and ABC Collaborations, an initiative which encourages and facilitates partnerships between academics, businesses and clinicians.

Peter firmly believes that in his sector, innovation does not only come from the universities, but also from clinicians who are essential for identifying real clinical needs. He is also a champion of the actual companies themselves: "There are over 300 new products under development in our sector and over 300 patents in Northern Ireland. That shows that it's a very dynamic and innovative sector."

Peter can take credit for some of that innovation and dynamism himself. Inspired by characters such as Frank Pantridge, the Northern Ireland inventor of the defibrillator, as well as his own earlier experiences of researching devices for reading multiple foetal heartbeats, Peter went on to develop his own inventions and set up Bluescope Medical Technologies, a manufacturer of respiratory

Dr Peter Donnelly is the founder and Director of BioBusiness NI, a business association for the life and health technology sector. He is also the Founding Director of Bluescope Medical Technologies. He holds patents for three different medical devices.

and cardiopulmonary monitoring devices for the hospital and home based market.

Peter sees the development of devices for homebased care for the elderly as one of the most exciting developments in his sector. "Everybody will be able to read their own heartbeat and see what their blood pressure is doing. It will address many problems for old people needing care, not least waiting lists at GP surgeries". However, he acknowledges that it also represents a huge challenge for the sector and will need significant funding in order for it to work.

Speaking on the work of MATRIX, Peter is passionate about the role it will play in exploiting Northern Ireland's science and R&D resources to the country's economic advantage. "My vision for Northern Ireland is to have a dynamic public sector which can support the industry, with the skills and people necessary to underpin that, as well as a very open and honest engagement between academics, business and government, and an appreciation that everyone stands to gain from this."

Peter's own career choice was influenced at an early age. "My father had always wanted to be an engineer, and while he didn't realise this dream for himself, he focused on achieving it for his children. He convinced me that this would pave the way for a good, professional career."



## GET IN TOUCH

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Former CEO, Defence Diversification Agency (DDA).

**Colin Elliott**  
Vice-President Bombardier Aerospace

**Albert Sherrard, OBE**  
Management Consultant and Chair of BioBusiness NI

**Professor Jim McLaughlin**  
Director Sensor Technology & Devices Ltd & Professor Advanced Functional Materials, University of Ulster

**Dr Clare Passmore**  
Freelance Research Advisor

**Dr Bryan Keating**  
Non-executive Chair of Andor Technology and Invest NI board member

**Ed Vernon**  
Chief Executive of Synetics Ltd and Invest NI board member

**Mrs Rotha Johnston**  
Venture Capitalist and Invest NI board member

**Professor Bernie Hannigan**  
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**Alan Blair**  
Representative of the Association of NI Colleges (ANIC)

**Frank Bryan**  
Chairman of the Economic Development Forum (EDF) Innovation Group