
**Celebrating
UK bioscience –
drug discovery
and development**

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WITH THANKS TO:

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Muscular Dystrophy UK, Summit Therapeutics, Charmaine Twine

Antibiotic Research UK, Redx Pharma, Emily Morris

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INTRODUCTION

The Celebrating UK Bioscience campaign highlights the impact that our industry makes on delivering ground-breaking treatments to patients. From investing in and carrying out research and development, to getting drugs from the lab and into patients, UK bioscience plays a central role in developing the treatments needed for future generations here and around the globe.

Industry news often focuses on finance and regulation. However, it is vital to remember that the aim of the biotech companies in our membership is to come up with novel therapies and diagnostics that will help treat and manage conditions to enable people to lead normal lives.

This year, Celebrate has focused on five treatment areas: cancer, antimicrobial resistance, type one diabetes, dementia and Duchenne muscular dystrophy. We would like to thank the Association of Medical Research Charities for their help in linking us with charities in each of these therapeutic areas and to all of the patient case studies who spoke so openly about the conditions that they and their families have to live with every day. I hope that by showing the human impact of the conditions, readers will be able to better understand how important the work

of the industry is. The charities have also been a great help in giving their expert insight on how each of these conditions affects patients.

Alongside this publication there are videos linked to each of the subject areas and these really do offer a deeper insight into the patient impact and the research and development that is taking place in the UK to develop novel treatments. I would encourage you to watch them.

The BIA will continue to showcase the innovation being produced by our members and I would encourage all BIA members to come to us with your stories so that we can share them with as wide an audience as possible.

Steve Bates
BIA Chief Executive

Understanding UK bioscience

The aim of this project is to showcase the great work taking place in the sector – focusing on the potential human benefits of treatments that are currently in research and development – and to bring a greater understanding of the UK biotechnology sector to new audiences.

Biotechnology is technology based on biology, the science of life. Scientists in our sector work with living organisms to drive the development and manufacture of drug treatments, advanced therapies and diagnostic tests to support patients in the UK and beyond.

The BIA is the trade association for innovative healthcare companies rooted in the UK's bioscience base. The sector continues to evolve, investing in research and development activities, and translating research from the UK's world leading science base into medicines to treat patients.

There is great depth and breadth in UK biotechnology: from a strong and emerging regenerative medicine and cell therapy sector, to specialist biomanufacturing companies developing therapies for cancer treatment, to personalised treatments and new antimicrobials. Advances in technologies such as synthetic biology are impacting upon the development of new types of therapeutics and new production methods. UK bioscience is not only changing lives, but saving them. It is vital that the sector continues to get the support it needs to keep this essential research and development going, now and in the future. The infographic on the facing page shows how complex the drug discovery process is and the various steps that BIA member companies go through to get drugs to patients.

This campaign takes a look behind the scenes in the labs of some of our members to see what they are researching and developing and what the possible patient benefits these drugs and treatments could have in the future. The publication is divided into five treatment areas: cancer, antimicrobial resistance, type one diabetes, dementia and Duchenne muscular dystrophy. Most people will be familiar with cancer and dementia, but this project wanted to look at less understood areas such as type one diabetes and antimicrobial resistance, as well as a rare disease, Duchenne muscular dystrophy, to demonstrate the breadth of scientific research and development taking place in our sector.

A number of charities that took part in this project are directly funding research in BIA member companies. Collaborations between industry and medical research charities are increasingly recognised as a mutually beneficial relationship. This brings the patient perspective to companies and enables patients to access clinical trials or to stay informed about R&D, and even allows vital funds to be channelled into clinical research.

Alongside this booklet, there is a series of infographics and videos, which add further insight into each condition and what BIA members are doing to tackle them. You will hear first-hand from patients and their families who have shared their personal stories and what they hope UK biotech will be able to achieve. Go to www.bioindustry.org/newsandresources/celebrate to view them.

DRUG DISCOVERY

To develop ONE SUCCESSFUL MEDICINE, it can take:



the testing of up to 10,000 DRUG CANDIDATES

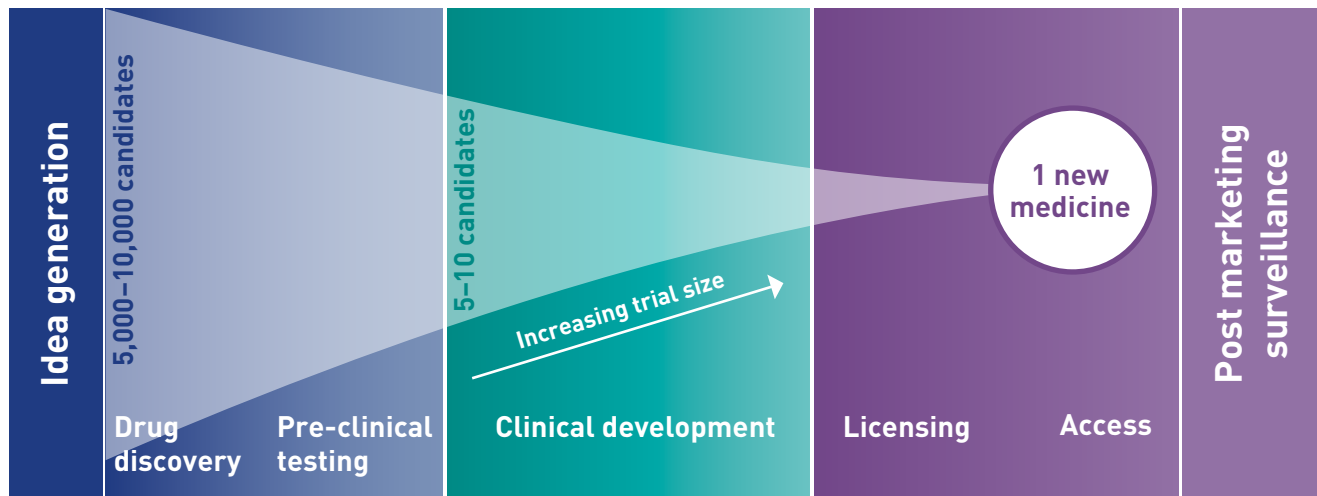
over A DECADE

and over \$1 BILLION

4–6 years

6–7 years

1–2 years and beyond



Drug discovery



Target identification and selection of a potential drug candidate to act on the target, resulting in a therapeutic effect

Pre-clinical testing

Safety evaluation of the potential drug candidate, using animal, cell and computer models

Clinical development



The candidate is first tested in humans

Clinical trials start with a small number of healthy volunteers and/or patients to evaluate safety (referred to as Phase I)

Subsequently the candidate is tested in a larger number of patients to evaluate how well it works (referred to as Phase II)

The number of patients is increased further to generate data to apply for a license and place the medicine on the market (referred to as Phase III)

Licensing



Data compiled from clinical trials is submitted to the regulatory agencies so they can evaluate the medicine's safety, quality and efficacy

Access

The medicine is approved for use in the NHS, subject to clinical and cost-effectiveness assessment

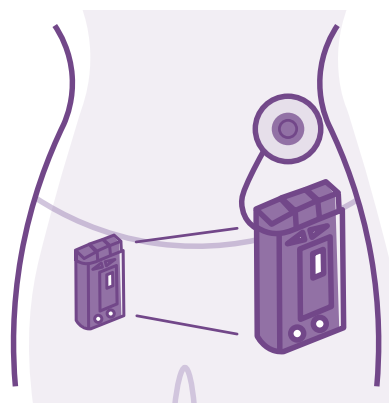
Type One Diabetes

Type one diabetes is a chronic, life threatening condition that has a life-long impact on those diagnosed and their families. In type one diabetes, the body's own immune system attacks cells in the pancreas that produces insulin. It is not caused by anything a child or parents did or didn't do and cannot be prevented; it is not linked to being overweight, lack of exercise or other lifestyle factors.

The condition often strikes in childhood and stays with people for the rest of their lives. Type one diabetes affects 400,000 people in the UK, including over 29,000 children. Long-term complications of type one diabetes include heart disease, stroke, blindness, kidney failure and limb amputation. On average the life expectancy of a person with the condition is shortened by 10–15 years.

Many people with type one diabetes rely on insulin injections and up to 10–12 finger prick tests every day just to stay alive, but people are increasingly using insulin pumps rather than injections to deliver insulin and flash or glucose monitors to keep track of glucose levels. Next-generation device technology such as wearable, continuous administration patch pumps and implants are critical developments for people living with diabetes. They help improve control over the levels of glucose in the blood and they could help reduce adverse states such as hypoglycaemia (low blood sugar) and diabetic ketoacidosis (DKA), as well as overall complications and mortality.

Cambridge based Arecor are working on concentrating insulin 5- to 10-fold so that the pump technology that delivers insulin can be made smaller. The smaller the pump, the more concentrated the dose of insulin needs to be.



Pumps could be made smaller with concentrated insulin

Concentrating insulin is a challenging process as aggregation can take place when the proteins and peptides within the insulin start to stick to each other during the concentration process. This changes the makeup of the insulin and can mean that it no longer works when it is used.



Aggregation – the proteins and peptides can stick to each other changing the form of the insulin

Type one diabetes charity JDRF will provide Arecor with up to \$900,000 in milestone funding over 12 months to complete product development of a stable concentrated insulin.

Angela Wipperman, Research Communications Senior Manager, JDRF:

“With careful management, people with type one can live long and healthy lives. With treatments, we are trying to replicate a complex biological process and so it is inevitable that people with type one will spend some time with higher blood glucose levels. Over time these high levels can cause damage to a number of important tissues including the kidneys, the nerves, the eyes and it can also cause cardiovascular problems.

“Even small improvements to existing technology can really improve the quality of life for people with type one diabetes – something like making pumps smaller could mean that wearing them becomes easier and going about day-to-day life is made simpler.”

Dr Jan Jezek, Chief Scientific Officer, Arecor:

“Insulin therapy remains the key treatment for Type one diabetes that allows control of blood glucose level. Both the quantity and the timing of the insulin delivery are critical to ensure that glucose levels are as close as possible to what the healthy human body would do.

“Significant progress has been made in the last two decades in delivery devices that improve the patient’s convenience and control. Insulin is increasingly administered via pumps that are attached to the body. The pump allows delivery of the required amount of insulin either by pressing a button or via a pre-programmed daily schedule. In some cases, the pump can even be implanted in the body.

“Current insulin pumps can be intrusive and cumbersome which can put people off using them, so it makes sense for these pumps to be as small as possible. The only way to achieve this is by using very concentrated insulin.

“Concentrating insulin presents a number of significant challenges. Firstly, it slows down its onset of action in the body and it is vital that the insulin starts to work as quickly as possible

upon injection to maintain good control of blood glucose levels. Secondly, it becomes more unstable where the insulin tends to aggregate much more readily, which has significant impact on efficacy and immunogenicity and hence will not work as effectively.

“Areacor’s technologies and expertise are perfectly suited to develop an insulin product that is sufficiently concentrated to enable the next generation of miniaturised pumps and meets all stability criteria required by the regulatory authorities. By working with clinical and regulatory experts, as well as miniaturised device engineers, we are working toward a diabetes treatment that can significantly improve the lives of people living with diabetes around the world.”

Simon Vinnicombe, ambassador for JDRF whose son George has type one diabetes:

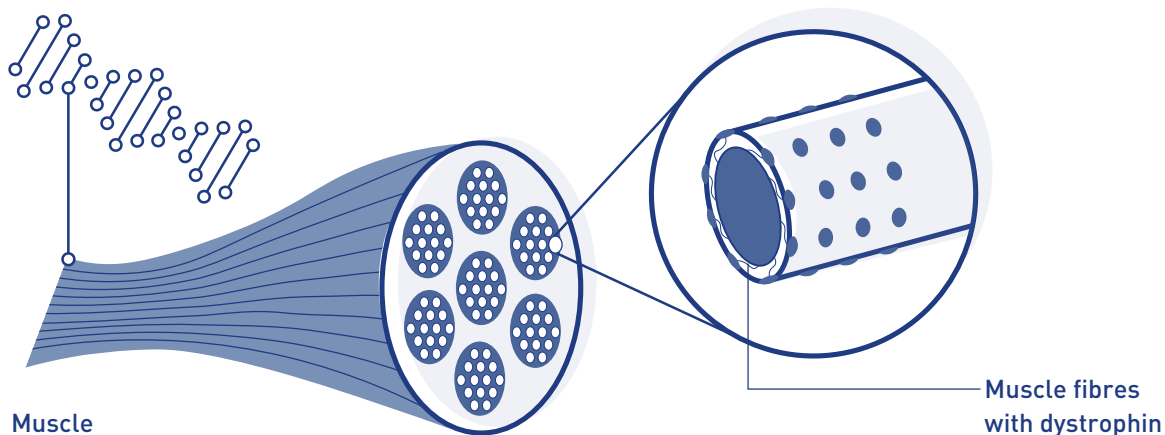
“I’m blown away by some of the science and some of the developments that I’ve seen in the short time that George has had type one diabetes. We are relying solely on these companies to make these breakthroughs so that he no longer stands out and so he gets his freedom back.

“George is constantly aware that he is dealing with a condition that is life and death. He needs insulin 24 hours a day and he has a pump that is attached to him. A pump is an extraordinary thing as it can constantly deliver insulin – the idea of giving fewer doses and more effective insulin would give you tighter control and better long term prospects – it sounds like a small jump but it’s actually enormous.

“Having a smaller pump would be marvellous. We underestimate the psychological impact but he has a pump, which is like a large mobile phone, attached to him the whole time and that makes you stand out and makes you different, which is everything that a child doesn’t want.”

Watch the case study video here: <http://bia.me/Type1video>

Duchenne Muscular Dystrophy



Duchenne muscular dystrophy (DMD) is a fatal muscle-wasting condition, caused by the lack of a protein called dystrophin.

Dystrophin acts as a molecular shock-absorber for muscle fibres. Without it, muscle fibres break down and are replaced by fibrous and/or fatty tissue causing the muscle to weaken gradually. Not only does the condition impact on muscles used for movement, but also on the heart and respiratory muscles. There is currently no cure for the disease, which affects around 2,500 people in the UK. The average life expectancy is around 30 years old.

DMD is a genetic condition that can be caused by a range of mutations in the dystrophin gene, located on the X chromosome. Females have two copies of the X chromosome, while males have an X and a Y. This means the condition primarily affects males, but women can be carriers of the disease with one affected X chromosome. Usually female carriers do not show signs of the disease because they have a second X chromosome that can compensate by producing the dystrophin protein that the body needs.

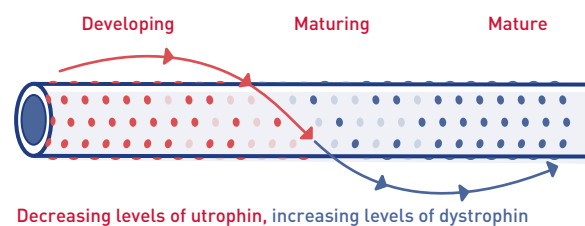
Up to one third of new cases of DMD arise in patients with no familial history due to spontaneous mutations in their dystrophin gene.

Summit Therapeutics, a biotechnology company based in Oxfordshire is developing a potential treatment approach, known as utrophin modulation, to slow or stop disease progression.

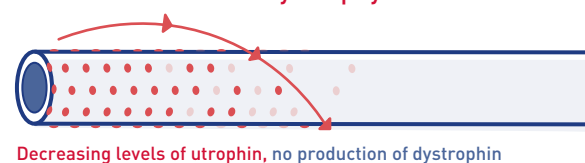
Utrophin is a naturally occurring protein that is functionally and structurally similar to dystrophin. Utrophin is produced during the early stages of

muscle fibre development but is switched off in maturing muscle fibres, at which point dystrophin is produced to perform the same functional role.

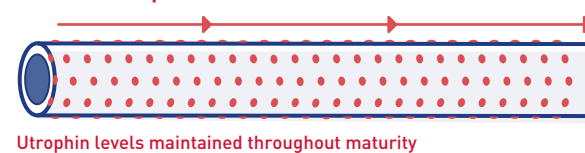
Normal



Duchenne Muscular Dystrophy



DMD + utrophin modulator



Summit Therapeutics aim to modulate, or change, how utrophin is produced in boys and men with DMD. The approach aims to use small molecule drugs to maintain the production of utrophin to compensate for the absence of dystrophin in order to maintain and protect healthy muscle function.

Jenny Sharpe, Research Communications Officer, Muscular Dystrophy UK:

“There’s a lot going on in the industry and it’s a very positive time – there’s one approach that we have been funding for over 25 years from where it started in the lab called utrophin modulation therapy. Summit have collaborated with Professor Kay Davies who originally put this idea together. And it just shows the positive impact that the pharma company can have in driving this forward in order to get it from the bench side to the clinic.”

Jon Tinsley, Chief Scientific Officer for DMD, Summit Therapeutics plc:

“DMD is a progressive muscle wasting disease, it’s a lethal disease, there’s no cure. It’s caused by mutations in a large structural gene called dystrophin, which is found on the X chromosome and it’s the protein from the dystrophin gene, which prevents muscles from being damaged when they are contracting and relaxing.

“The effect on muscle if you take dystrophin away is that it loses its ability to contract and relax without damaging itself. Dystrophin is like a molecular shock absorber. It links the internal workings of each of the myofibers to the glue that keeps the myofibers together. When you take this away then every time you contract and relax the muscle you actually start to tear the membrane of the fibres. This means that the muscle can’t function as it should be able to.

“Utrophin is normally expressed in early developing muscle in the foetus where there is no dystrophin. As muscle matures you have dystrophin in the muscle, utrophin is still there but it’s in specialist places. DMD boys who have no dystrophin still have a normal functioning utrophin gene and the approach we have gone for is to find a small molecule that can essentially trick the gene to be turned back on or maintained so that it’s able to replace the dystrophin.

Charmaine Twine, ambassador for MDUK whose two sons Josh and Ethan have DMD:

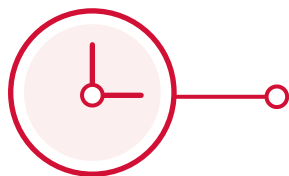
“When we found out about Duchenne I was devastated – I like to plan things and that got taken away. I was planning what they were going to do in the future, walking down the aisle getting married, having children and all of that has just been taken away.

“Josh’s day-to-day life is difficult, he has to have physio every day, he can’t run with the other children, can’t throw a ball. His life is not brilliant – it’s hard for him. The way he manages his condition is that he is on steroids but there isn’t anything else for him. Unfortunately the steroids affect him as well making him bigger and making his face swell. Ethan is still very active, he plays football and has no understanding of the condition and that really scares me. I try to talk to them about it but Josh says we will talk about it in a year and Ethan just doesn’t understand. He understands he has it and goes to a doctor – he understands it as a word, but doesn’t understand the condition.

“I never knew it existed. I’m over the moon that there are people out there that are trying to find a cure because it is so bad and it takes children away too soon. Even though they might not find a cure while Josh and Ethan are still here, it’s so important for the next generation of children that they find a cure as no family deserves to lose a child.”

Watch the case study video here: <http://bia.me/DMDvideo>

Dementia



7 years

Median survival time between diagnosis and death, similar to cancer

Dementia is a global health challenge, expected to affect more than 132 million people worldwide by 2050, and the UK is leading the way in tackling the challenge.

The Dementia Discovery Fund (DDF) was created by the UK Department of Health, Alzheimer's Research UK, alongside major global pharmaceutical companies Biogen, GlaxoSmithKline, Johnson & Johnson, Lilly, Pfizer and Takeda who have invested \$100 million into a fund to support the discovery and development of novel dementia treatments.

The fund is managed by SV Life Sciences, who are working to identify and support the development of novel therapeutic approaches. A world-class Scientific Advisory Board, with representatives from the DDF's strategic investors and world-leading international academics

has been set up to share expertise, expand the DDF's collaborative networks and advise the investment team.

Current treatments for dementia only help to ease the symptoms of the condition for a limited time but do not address the underlying cause. The aim of the fund is to boost innovation in research and development to deliver new drug approaches for dementia by 2025 to diagnose and intervene early to modify the course of disease while improving symptoms, which will lay the foundations for effective therapies.

The DDF is working collaboratively with universities, academic institutes and the biotechnology and pharmaceutical industry internationally to identify novel dementia research projects and nurture these through the pre-clinical phase, enabling further development in clinical trials.

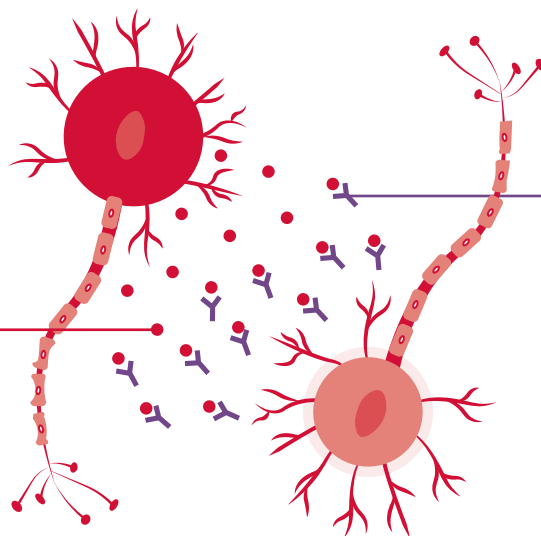
Cambridge based Gen2 is the first UK investment by DDF: Gen2 is a seed company engaged in the discovery and development of novel treatments for dementia targeting abnormal forms of the essential extra cellular protein tau.

GEN 2

the first UK investment by DDF

Dementia spreads through the brain from affected neurons to surrounding healthy neurons

Abnormal forms of tau protein spread between neurons



Gen 2 is working to identify and target these abnormal forms, blocking their spread

Dr Matt Norton, Head of Policy and Public Affairs, Alzheimer’s Research UK:

“In the beginning dementia starts to manifest in terms of thinking and memory skills declining as well as spatial awareness declining and then, over time, symptoms become more and more severe to the point where you need care to navigate round the house. You become incredibly forgetful and you lose the person that you once were – it is ultimately fatal. We have no treatments that can modify the disease. Something that alters the course of the disease would be a first in dementia – a real breakthrough.”

Joy Watson, dementia patient and ARUK ambassador:

“My dementia has quite a big impact on how I go about my daily life. I think the impact on family life is one of the areas I struggle with the most because I don’t feel confident any more in looking after my two grandchildren. I think it’s vital that research is ongoing, not just for me but for future generations – having the research there does give a lot of hope – to just to know that we are moving in the right direction.”

Kate Bingham, Managing Partner SV life Sciences (Dementia Discovery Fund):

“The Dementia Discovery Fund was formed in October 2015 to spearhead a paradigm shift in the way new drugs to treat dementia are discovered and developed.

“What’s outstanding about the Dementia Discovery Fund is the fact that we have six pharmaceutical companies that have come together to cooperate to try and find new treatments for dementia. They are working together alongside the UK Department for Health and the charity Alzheimer’s Research UK to pool their expertise to develop new hypotheses for how we might intervene in the treatment of dementia. This is highly unusual and nothing has been done like this anywhere in the world, in any sector, companies coming together without commercial rights to anything that we develop.”

Dr Rick Livesey, CEO, Gen2:

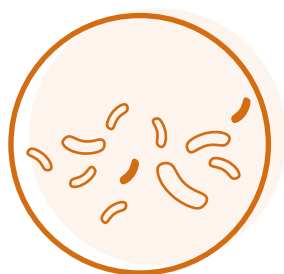
“Because of the breadth of their strategic vision within the dementia space, the Dementia Discovery Fund can be really useful advisors. We bounce ideas off them and we work with them much more collaboratively than we would with a typical investor.

“A key part of dementia is that it spreads through the nervous system so it starts in one region of the brain and begins jumping from neuron to neuron – we’ve some understanding of how that happens and in particular we’ve some understanding of specific proteins that are involved in this spreading and making the next neuron sick. What Gen2 is involved in is developing specific therapies that actually block that spreading of what we call pathogenic, or abnormal proteins, that make the next neuron sick.”

Watch the case study video here: http://bia.me/DDF_video

Antimicrobial Resistance

How antimicrobial resistance happens



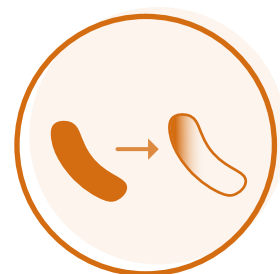
1. Lots of germs, a few are drug resistant



2. Antibiotics kill bacteria causing the illness, as well as good bacteria protecting the body



3. The drug-resistant bacteria are now allowed to grow and take over



4. Some bacteria pass their drug-resistance onto other bacteria

Antimicrobial resistance (AMR) is one of the greatest current threats to global health. Drug-resistant infections already kill hundreds of thousands of people globally every year, including at least 50,000 people across Europe and the US, and the trend is growing. It's estimated that by 2050, up to 10 million deaths a year could be attributable to antimicrobial resistance.

AMR is a natural process of evolution. Bacteria evolve to resist the action of the drugs trying to kill them, making them ineffective. The more microbes are exposed to an antibiotic, the more likely they are to develop resistance to its effects.

Resistance has progressively become a problem in recent years because of two main reasons. Antibiotic use has escalated dramatically over the past few decades, exposing microbes to a larger number and greater concentration of drugs, thus increasing their chances of developing resistance. Secondly, the pace at which we are discovering new antibiotics has slowed drastically.

The UK Government commissioned O'Neill Review on Antimicrobial Resistance demonstrated the UK's commitment to tackling AMR and recently published its 10 recommendations. The new market incentives identified by the Review are key for life science entrepreneurs to deliver the next generation of antibiotics.

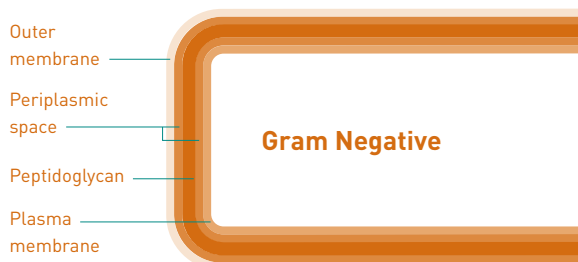
UK leadership has led to a landmark declaration at the United Nations General Assembly with 193 countries agreeing to combat antimicrobial resistance. It's led to the founding of the CARB-x fund to support the development of

the most innovative products that protect human health from serious bacterial threats.

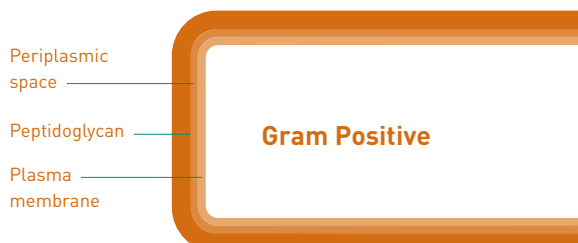
Alderley Park based Redx Pharma is working to develop new antibiotics.

Bacteria are typically split into two types: Gram negative and Gram positive. Due to their different cell wall structure, Gram negative bacteria are generally more resistant to antibiotics. Redx Pharma are primarily involved in the development of new antibiotics to treat Gram negative infections, such as pneumonia, where there is a greater unmet patient need. The company is also working on a Gram positive programme, partnered with the NHS, to treat hospital-born infections such as MRSA.

Gram negative – can cause pneumonia



Gram positive – such as MRSA



Emily Morris, Antibiotic Research UK ambassador and patient:

“When I first found out I was resistant, I didn’t really understand the full effects of it. We only found out the severity of it when I started going into hospital and going into isolation. When I fell pregnant and I had two attacks of superbugs, that was when I found it scariest because it wouldn’t just affect me, it could affect my son. I didn’t realise it was actually life threatening until that point.

“When I have an infection, I send off a urine sample through my GP. They then send it to the microbiology lab, where they grow the bacteria and test which antibiotics it’s sensitive to. So I have to wait three days for that chart to come back, and within those three days I obviously get worse because we can’t treat it because we don’t know how. If they start giving me an antibiotic, and I’m resistant, it’s just feeding it and it makes the whole thing worse.”

Dr Neil Murray, Chief Executive, Redx Pharma:

“The big challenge with antibiotics is that resistance development is a simple fact of evolution. The more that you expose bacteria to an antibiotic, the more rapidly they will develop a resistance to that antibiotic.

“A lot is going on in the industry to tackle this challenge. One of the major advances that we’ve seen in the UK has been the O’Neill Review that the government put in place, led by Jim O’Neill, a prominent economist. He’s come up with ten recommendations that both industry, payers and healthcare systems around the world should be adopting – and indeed patients – in order to ensure that we have a sustainable future for antibiotic therapy.”

Dr Richard Armer, Chief Scientific Officer, Redx Pharma:

“Historically bacteria have been split into two classes: Gram positive and Gram negative. Gram negative infections are typically those which infect the lungs, urinary tract infections and intra-abdominal infections. With Gram positive you’re typically looking at skin structure infections.

“Gram negative bacteria tend to be more resistant to antibiotic treatment. They have a different cell wall structure, which makes it more difficult for drugs to get into the bacteria and they have more mechanisms to pump the antibiotics out of the bacteria as well. So for me, the biggest challenge in the industry at the moment is to find drugs to treat Gram negative bacteria. That’s really where our focus is, where there’s a much higher unmet medical need.

“You’re looking at around 8 years but more typically a 12 year timescale to get a drug to market. There’s a lot of attrition in there of course, so a lot of things fall by the by before one actually makes it to the market.”

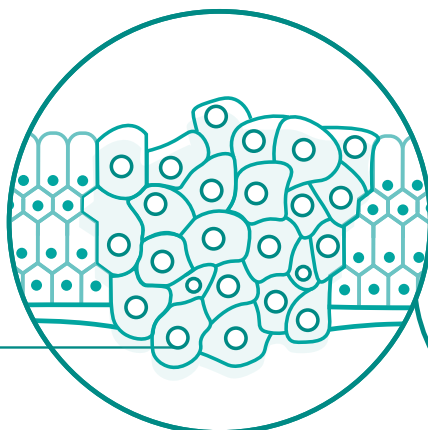
Professor Colin Garner, Chief Executive, Antibiotic Research UK

“Antimicrobial resistance (AMR) is a major threat to modern healthcare and urgent action must be taken to secure the future of antibiotics. Without them, everything from routine surgical procedures to cancer chemotherapy, and even childbirth, will become increasingly dangerous, and the risks posed by even minor infections will increase exponentially. If there were no new antibiotics, then any infections become untreatable. The failure to develop new antibiotics is of great concern. Antibiotic resistance is life-threatening, with the young and old being most at risk of resistant infections. This is because these two groups have low immunity, making them more susceptible to infection. Antibiotic Research UK is working as part of the UK biotech ecosystem to address this challenge through research, public engagement and patient support.”

Watch the case study video here: <http://bia.me/AMRcel>

Cancer

Cancer starts when gene changes cause a cell to grow and multiply too much



200+
different types

Cancer starts when cells change abnormally. Gene changes cause a cell or cells to begin to grow and multiply too much, which can lead to the formation of a tumour. One in two people in the UK will get cancer in their lifetime. There are over 200 different types of cancer and many different approaches to treatment.

In September 2015, a new laboratory was opened in Cambridge to focus on the discovery and development of novel biologic cancer treatments and diagnostics. The state-of-the-art Cancer Research UK- MedImmune Alliance Laboratory (CMAL) is an innovative collaboration between charity Cancer Research UK and MedImmune, the global biologics research and development arm of AstraZeneca.

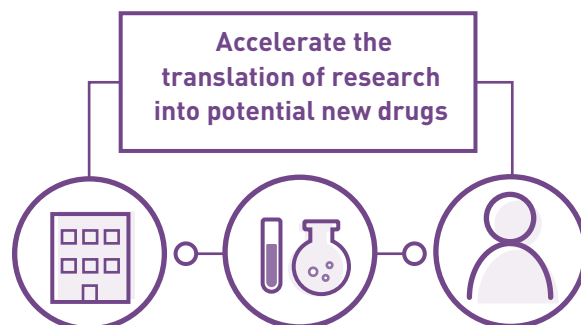
In this important partnership, scientists from both organisations work together in the laboratory and collaborate closely to share knowledge and expertise to accelerate the discovery and development of novel biologics to treat and diagnose cancer. The CRUK-MEDI Alliance Laboratory is focussing on rare and hard to treat cancers, including cervical, pancreatic and leukaemia.

The alliance brings together Cancer Research UK's cancer biology expertise with MedImmune's world-class human antibody drug discovery expertise. Cancer Research UK provided set up and operational funding for the laboratory as well as contributing a portfolio of novel drug targets together with a team of scientists. MedImmune oversees the laboratory activities and provides

access to its human antibody phage display libraries and established antibody engineering technologies.

Phage display allows researchers to quickly scan through millions upon millions of randomly generated antibodies (a special type of protein normally produced by our immune cells) to find ones that recognise important molecules involved in cancer or other diseases. First developed in the 1980s by Cambridge scientists, phage display is an immensely powerful research tool that has already led to the discovery of a ground breaking treatment for auto-immune conditions including rheumatoid arthritis and Crohn's disease called adalimumab.

The CRUK-MEDI Alliance Laboratory will accelerate the translation of research into potential new drugs. Opened in 2015, the lab is on track to have its first candidate ready for clinical trials in 2019.



The CMAL opened in 2015 and is on schedule to have its first candidate ready for clinical trials in 2019

Tony Selman, patient and CRUK ambassador:

“The cost of research to the industry and to people like Cancer Research UK is astronomical. I think it’s particularly important that the general public acknowledges the scale of work that is going on.

“Having seen what goes on from the inside, I probably have a rather different attitude to the general public at large who see the media reports of battles between the Department for Health and the pharma industry and develops, for better or for worse, the view that the pharma industry is a bit greedy. Having worked in the sector I know how expensive research is and how long it takes and I have a different attitude – I work on the basis that it will take however how much money it takes to develop these treatments.”

Maria Groves, Associate Director, Head of the CRUK-MEDI Alliance Laboratory:

“The Alliance Lab was created because we believe that if we brought together MedImmune’s antibody drug discovery technology with Cancer Research UK’s oncology biology expertise in a more formal collaboration, we can get the scientists within those two organisations working side-by-side to accelerate the discovery of novel diagnostic and therapeutic antibodies.”

Sarah Holt, Deputy Laboratory Head, CRUK-MEDI Alliance Laboratory:

“The immune system recognises anything that’s foreign in the body. If you have a common cold or any bacteria or virus it essentially focuses to get rid of it and get it out of the body to make sure that you don’t become more ill. Cancer cells should be recognised by the body as foreign objects and eliminated, but somehow tumours are very smart and they engineer ways in which they can prevent the body’s immune system from targeting them and, by doing this, cancer cells are just allowed to keep producing and replicating. Therefore all the body’s defence mechanisms of trying to get a foreign object away or kill these cells is just completely overrun.”

Maria Groves added:

“We know that cancer cells have the ability to prevent a patient’s immune system from working and what we want to do is block the effects of those cancer cells and restore the patient’s immune cells so that they continue to fight cancer. This type of approach is called cancer immunotherapy.”

Sarah Holt added:

“The power an organisation like Cancer Research UK has when brought together with the power house of a drug discovery organisation that has world class expertise in antibody drug discovery such as MedImmune, allows the access to the potential novel targets and the expertise of all the academic researchers and clinicians. That’s why it’s really key that by working together we will be able to provide novel oncology drugs into the clinic more rapidly.”

Watch the case study video here: <http://bia.me/CMALvideo>



Established over 25 years ago at the infancy of biotechnology, the BioIndustry Association (BIA) is the trade association for innovative enterprises involved in UK bioscience. Members include emerging and more established bioscience companies; pharmaceutical companies; academic, research and philanthropic organisations; and service providers to the bioscience sector.

The BIA represents the interests of its members to a broad section of stakeholders, from government and regulators to patient groups and the media. Our goal is to secure the UK's position as a global hub and as the best location for innovative research and commercialisation, enabling our world-leading research base to deliver healthcare solutions that can truly make a difference to people's lives.

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