Going public
The unexpected benefits of open science

Exposing the silent killer
A new test that doubles ovarian cancer detection rates
Industry and academia have a symbiotic relationship. Discoveries made in universities and MRC institutes where scientists have the freedom to pursue fundamental research questions feed into the pipeline of pharma and biotech companies. And precious few new treatments and diagnostics would ever reach patients without industry’s expertise, facilities and financial muscle, which are needed to take a potential new treatment through the rigours of clinical trials and regulatory approval. Working together is critical to our shared aim of improving human health.

The MRC has a long track record of working with industry. AstraZeneca were pioneers in the first innovative compound collaboration project with the MRC in 2012. Our Stratified medicine programme involves over 50 companies and a further six companies are involved in the MRC-led Dementia Platform UK.

We’ve just announced our latest industry partnership: project EMINENT with GlaxoSmithKline. This is another innovation in terms of how academic scientists can work effectively with industry partners; a network of academic and industry researchers within which ideas and new knowledge can be freely and quickly exchanged and discoveries with commercial potential can be taken forward.

Read more about EMINENT on page 3.

John Savill
MRC Chief Executive
Academic-industry network to find new treatments

Five universities have joined forces with GlaxoSmithKline in an MRC-funded network to study the underlying causes of common diseases for which there are no - or very few - treatments.

The Experimental Medicine Initiative to Explore New Therapies (EMINENT) brings together the Universities of Cambridge, Glasgow, Imperial College, Newcastle, and University College London with pharmaceutical company GlaxoSmithKline (GSK). The network of researchers will carry out experimental medicine studies to improve understanding of the fundamental mechanisms of chronic obstructive pulmonary disease, immune inflammation, respiratory disease and fibrosis and develop new treatment strategies.

These diseases blight the lives of millions of people worldwide and are a leading cause of deaths, but they stubbornly continue to have few or no treatment options despite the progress made in other disease areas over the past 20 years.

The MRC has invested £5 million up front with the possibility of a further £3m in future, depending on a review of the project’s early outcomes. The MRC funding will support the academic costs of up to ten focused projects over the next five years through grant-like awards to the universities.

Training opportunities will be provided for both early-career and established researchers within the network to help build a legacy of expertise in translational and experimental human research. GSK will openly collaborate to grant access to their expertise, drug portfolio and facilities, allowing information and new knowledge to flow freely and promptly through the network, maximising the impact of research discoveries.

Find out more at www.mrc.ac.uk/news-events/news

New resource for developmental biologists

A new website for researchers has been launched, bringing together data on the genes responsible for developmental diseases.

The website collates 3D imaging, tissue histology and immunochemistry data, as well as embryonic or placental structural abnormalities from mice for each ‘knocked out’ gene. The data are from the Wellcome Trust-funded ‘Deciphering the Mechanisms of Developmental Disorders’ (DMDD) research programme which has been running since 2013, coordinated by former MRC National Institute for Medical Research scientists who now work at the Francis Crick Institute.

Set up to discover genes required for embryonic development, DMDD’s goal is to find candidate genes involved in developmental disease, and kick-start study of why these mutations have such profound effects on embryo development and survival.

Visit the website at http://dmdd.org.uk
UK population cohorts now online

A new online directory of the UK’s largest population cohorts has been created by the MRC to help researchers and policy-makers to find and use them more easily.

These large-scale studies of healthy people are a valuable UK asset; currently one in 30 people in the UK population are cohort study members.

The directory provides a brief profile of each cohort and a high level overview of the information it collects. Users can filter their searches by gender, age range, sample size at recruitment and variables collected such as physical, cognitive, lifestyle and socioeconomic measures and biological samples.

It currently holds information on the UK’s largest population cohorts but ultimately this will be expanded to include a broader range of cohort studies.

Professor Jill Pell, Director of the Institute of Health and Wellbeing at the University of Glasgow, has also written a post for the MRC’s blog about the value of cohort studies. She comments: “As a researcher, I think this directory will be invaluable in improving awareness and use of these valuable resources, and I encourage the rest of the research community to take full advantage of this exciting development.”

You can find the directory at: www.mrc.ac.uk/cohort-directory

Read Jill’s full post at http://mrc.io/1JYMBjX

Updated guidance on animal research

Those applying for funding to carry out research involving animals will now need to provide more information under revised guidance from the major UK research funders.

Guidelines produced by the UK research councils and the major charitable funding bodies were reviewed and updated in April so that animal research applications can be more robustly evaluated.

All proposals using animals now need to explain not only why the use of animals is justified and the ethical implications of the planned experiments, but also clearly describe how the design of experiments will give robust results. That includes outlining how the number of animals to be used was decided, how experimental bias will be minimised and providing information on the statistical aspects of the study.

The animal research section on the Joint Electronic Submission System (Je-S) has been altered to reflect these changes and all applicants for research council funding involving animals should read the new guidance, along with the NC3Rs’ ARRIVE guidelines, before starting their application.

Download the documents at: http://mrc.io/1HHfXC5
http://mrc.io/1G2ADPq
Lab-grown organs to liver tests: a look back at our successes in 2013-14

A review of some of the MRC’s successes in 2013/14 can now be found on our website, featuring interviews with scientists behind a selection of our most interesting and important discoveries.

Professor Giovanna Mallucci of the MRC Toxicology Unit in Leicester, who has discovered a way to prevent neurodegeneration in mice.

Professor Clare Blackburn at the MRC Centre for Regenerative Medicine at the University of Edinburgh tells us how she and her team have grown the first ever fully functional organ from cells in the lab – a thymus gland – which could ultimately provide a new way to boost immunity in those who most need it, such as leukemia patients and the elderly.

Neurodegenerative diseases such as dementia are one of the biggest challenges our society faces as the number of elderly people in the population grows. At the MRC Toxicology Unit in Leicester, Professor Giovanna Mallucci has discovered a way to stop neurodegeneration in its tracks in mice – pointing the way to possible new preventative treatments for dementia.

MRC research doesn’t just benefit our health and society; it generates innovative technologies, drugs and diagnostics which create jobs and help boost the UK economy. At the University of Oxford, Professor Stefan Neubauer explains how his MRC-supported research ultimately led to him and a group of colleagues establishing a new company to develop and market their new test for chronic liver disease.

The test could cut diagnosis time from weeks to a single day and has potential to be used across the globe.

For 102 years, the MRC has targeted the world’s biggest health problems, funded the very best scientists and ideas to discover answers to those problems, and used these discoveries to transform our lives. The review includes a selection of success stories from the past two years which add to our long story of improving human health, benefiting society and supporting economic growth.

www.mrc.ac.uk/annualreview13-14
Gaming technology solves twitchy patient problem

MRC-funded researchers plan to use video game technology to solve the problem of blurry brain scan images which happen when patients move their heads while inside the scanner.

Many patients, particularly those with dementia, find it hard or impossible to keep completely still during scans carried out as part of their diagnosis or during research studies. The blurring effects caused by this movement leads to wasted or inaccurate data, which is costly and inefficient.

Researchers from imaging sciences centre Imanova, in partnership with Imperial College London, think they have the answer. They plan to integrate Microsoft’s Kinect V2 video game technology into positron emission tomography (PET) imaging so that motion can be monitored in real time and accounted for when images are reconstructed after the scan.

The researchers will use Microsoft’s Kinect camera which detects gamers’ movements in three dimensions without the use of a controller. By combining this with the latest advances in computer vision algorithms they will make a low cost, accurate and user-friendly system that integrates with PET scanners and can be widely used for diagnosis and research. No special lighting is needed and patients don’t need to wear any equipment.

Imperial College’s Professor Roger Gunn explains: “This is an innovative way of capitalising on multi-billion dollar investments in the home entertainment industry and applying it to develop an accurate and low cost solution in the medical sector. This technology will benefit the recently announced Dementia Platform UK that is establishing a UK-wide network of imaging capabilities for early and differential diagnosis of neuro-degenerative pathology enabling improved disease research, stratification, and more efficient early phase clinical trials.

Following the money

MRC-supported researchers helped the research councils to track the impact of more than £17 billion in public spending last year.

The 2014 Researchfish data collection exercise saw around 4,800 MRC researchers submit information on the outputs and outcomes of their research.

Dr Ian Viney, the MRC’s Director of Strategic Evaluation and Impact, said: “We use these data continually to develop our strategy and research policies so we are grateful to our researchers for their time and attention. This evidence is ever more important this year as the MRC, alongside the other research councils, prepares for the Government’s expected comprehensive spending review.”

2014 was the first year that all seven councils collected data using Researchfish, following a project to align output information from all research disciplines. More than 18,000 principal investigators used the system to report on work relating to everything from archaeology to zoology. The RCUK dataset now contains around one million output reports, which are publicly available on the Gateway to Research.

The MRC will continue to work on making the system more user-friendly in 2015/16, as well as simplifying funder requests for
Eye test app as good as traditional charts

An app to test eyesight easily and affordably using a smartphone is as accurate as traditional charts, according to a recent study carried out in Kenya.

Tests in 233 patients’ homes found that Peek Acuity, which was developed with MRC funding at the London School of Hygiene & Tropical Medicine, produced results clinically equivalent to the much larger and more expensive standard chart, which depends on a local electricity supply.

Dr Andrew Bastawrous, who led development of the app, said: "With most of the world’s blind people living in low-income countries, it is vital we develop new tools to increase early detection and appropriate referral for treatment. Mobile phone use is now so widespread that it seemed to be an ideal platform.

“Our ultimate hope is that the accuracy and easy to use features of Peek will lead to more people receiving timely and appropriate treatment and be given the chance to see clearly again.”

Find out more about Peek at www.peekvision.org

http://gtr.rcuk.ac.uk

A researcher displays the Peek app alongside a conventional vision chart (top), a patient being tested.
New government and medical research: who’s who?

Following the May General Election, here is a guide to new government appointments of particular relevance to medical research:

Secretary of State for Business, Innovation and Skills: Mr Sajid Javid
Formerly a senior manager at Deutsche Bank who specialised in building the business in developing countries. Mr Javid became an MP in 2010, and formerly held the position of Culture Secretary.

Universities and Science Minister: Mr Jo Johnson
Member of Parliament since May 2010 General election. Mr Johnson also previously worked as an investment banker at Deutsche Bank before joining the Financial Times in 1997, working as Paris correspondent and later South East Asia bureau chief. He is Boris Johnson’s younger brother.

Life Sciences Minister: Mr George Freeman
Mr Freeman continues as Life Sciences Minister, having been appointed in 2014. He formerly served as Parliamentary Private Secretary to the Minister of State for Climate Change, government adviser on Life Sciences and Prime Minister’s UK Trade Envoy. Before being elected to Parliament, he had a 15 year career across the life sciences sector.

Secretary of State for Health: Mr Jeremy Hunt
Mr Hunt continues as Secretary of State for Health, a position he has held since 2012. He was previously Secretary of State for Culture, Olympics, Media and Sport. Before his election as an MP, Mr Hunt ran his own educational publishing business, Hotcourses, and also set up a charity to help AIDS orphans in Africa.
Obituary: Alan Hall (1952-2015)

Professor Alan Hall, director of the MRC Laboratory for Molecular Cell Biology from 2000-2006, died suddenly on Sunday 3 May in New York City.

Alan was an outstanding researcher, teacher and colleague. In the 1980s, he was one of a small group of molecular biologists who first uncovered how genetic changes could cause cancer. Then, in truly pioneering studies, he discovered mechanisms through which cells control and change their shape and movement. He remained, to his death, one of the world’s leading cell biologists and a committed mentor to generations of young scientists.

Alan studied chemistry at Oxford and biochemistry at Harvard, before taking up molecular biology during postdoctoral training in Edinburgh and Zurich. In 1981, he joined the Institute of Cancer Research in London and moved to the newly-formed MRC Laboratory for Molecular Cell Biology (LMCB) at University College London, in 1993. He was one of the LMCB’s first group leaders and played a key role in the institute’s early years. In 2000, Alan became director of the LMCB and oversaw the establishment of the MRC Cell Biology Unit, ensuring ongoing MRC support and continuing LMCB success. Alan was an exceptional director, leading by example through the excellence of his science, his good humour, strong moral code and mentorship skills.

In 2005, Alan took up the Chair of Cell Biology at Memorial Sloan Kettering Cancer Centre in New York, but continued to mentor many at the LMCB where he is sorely missed. Alan was a Fellow of the Royal Society and the Academy of Medical Sciences and a member of the European Molecular Biology Organisation. His awards include the Feldberg Foundation Prize, the Novartis Medal, the Gairdner International Award and the Louis Jeantet Prize for Medicine. He was also Editor-in-Chief of the Journal of Cell Biology.

Mark Marsh and Alison Lloyd
MRC Laboratory for Molecular Cell Biology

AMS fellowships

Eight scientists closely connected with the MRC were amongst the 48 distinguished medical researchers elected as Fellows of the Academy of Medical Sciences on 1 July:

Professor Diana Kuh, Professor of Life Course Epidemiology and MRC Director, MRC Unit for Lifelong Health and Ageing at University College London (UCL)

Professor Fiona Gribble, acting Director of the MRC Metabolic Diseases Unit, Professor of Endocrine Physiology, University of Cambridge

Dr Ruth McKerrnan, Chief Executive, Innovate UK, and MRC Council member

Professor Massimo Palmarini, Professor of Virology and Director of the MRC-University of Glasgow Centre for Virus Research

Dr Menelas Pangalos, Executive Vice President and Global Head, AstraZeneca and MRC Council member

Dr Charles Swanton, Senior Group Leader, Francis Crick Institute and Chair in Cancer Medicine, University College London Hospitals and Cancer Institute

Professor Michael Way, Senior Group Leader, Francis Crick Institute, Lincoln’s Inn Fields Laboratory; Professor of Virology, Imperial College London

For the full list of new Fellows visit: www.acmedsci.ac.uk/more/news/new-fellows-2015/
Medical research in numbers

Some facts and figures you may not know about the MRC – and a look at how we fit into the overall picture of medical research funding in the UK.

176,000 people employed by life sciences companies in the UK

To date 31 MRC-funded scientists have received the Nobel Prize

The life sciences industry generates a trade surplus of £5bn for the UK per year

Improving Human Health

MRC researchers collaborate with scientists in more than 100 countries

MRC research has resulted in more than 850 published or granted patents between 2006 and 2013

Investment in medical research returns around 40p each year

In 2013/14 the MRC spent £1 on research

More than 31 MRC-fund products or interventions were being developed as a result of their research

Between 2006 and 2013 MRC researchers reported that more than 850 new or improved products or interventions were being developed as a result of their research.
To date 31 scientists have received the Nobel Prize. MRC-funded MRC research has resulted in more than 1,000 published or granted patents between 2006 and 2013. Researchers collaborate with scientists in more than 40 countries.

In 2013/14 the MRC spent £845.3m on research. More than 49,000 scientific papers originated from MRC research between 2006 and 2013. Between 2006 and 2013 MRC researchers reported that more than 800 products or interventions were being developed as a result of their research.

* England funding only. Please see references for devolved funding details.

MRC figures taken from the MRC Annual Report and Accounts 2013/14. Full references available at mrc.io/1R4pp8A.
Life expectancy to rise but rich-poor gap will widen

By 2030, people in England and Wales can expect to live to their mid-80s and the life expectancy gap between men and women will narrow, according to MRC-funded research. However, the gap in life expectancy between the most affluent and deprived areas is forecast to further widen.

The researchers analysed mortality and population data from the Office for National Statistics for 375 local authority districts in England and Wales between 1981 and 2012 and then used advanced statistical methods to forecast life expectancy for each district.

By 2030, men were predicted to live to 85.7 and women to 87.6 years, narrowing the male-female gap from six years in 1981 to just under two by 2030.

The research also showed that the gap between districts with the highest and lowest life expectancies (the city of London and urban north England, respectively) will continue rising, from 6.1 years in 2012 to 8.3 years in 2030 in men, and from 5.6 years to 8.3 years in women.

Senior author Professor Majid Ezzati from Imperial College London commented: “Our national forecasts of life expectancy in 2030 are higher than official figures from the Office for National Statistics, meaning that pensions will have larger pay-outs than planned, and health and social services will have to serve an even older population than currently planned.”

Childhood obesity risk has trebled since 1946

Children born since 1990 are up to three times more likely than older generations to be overweight or obese by age 10 according to a new study.

Researchers from CLOSER, a consortium of leading UK longitudinal studies funded by the MRC and the Economic and Social Research Council, looked at the body mass index of more than 56,000 people born in the UK from 1946 to 2001. They found that around one in ten children born in 1946 were overweight or obese by age 11, compared to roughly one in four 11-year-olds today. Younger generations are also putting on weight more rapidly.

It’s estimated that the obesity ‘epidemic’ will cost the NHS £22.9 billion per year by 2050. Since 1946, every generation has been heavier than the last – and the most overweight people are becoming even heavier.

Study author Professor Rebecca Hardy, a programme leader at the MRC Unit for Lifelong Health and Ageing at University College London, comments: “While other research has shown that losing weight at any point in adulthood can help reduce the risk, this study indicates that the UK needs to target its public health interventions at younger and younger ages in order to stem the spread of the obesity epidemic.”

Published online at www.thelancet.com, 29 April 2015

Published at www.plos.org, 19 May 2015
Screening method doubles ovarian cancer detection

A new screening method picks up nearly twice as many women with ovarian cancer as conventional strategies, according to the latest results from a major clinical trial.

Ovarian cancer is often not detected until it has spread and become incurable. But there’s no national screening programme for the disease, as to date there’s not been enough evidence that any one method would improve early detection.

The new method uses a statistical calculation to interpret changing levels in women’s blood of a protein called CA125, which is linked to ovarian cancer. This gives a more accurate prediction of a woman’s individual risk of developing cancer, compared to the usual screening method which simply measures CA125 levels and has a fixed ‘cut-off point’.

The new method detected cancer in 86 per cent of women with invasive epithelial ovarian cancer, whereas the conventional test used in clinical practice would have identified only 48 per cent.

The results come from the UK Collaborative Trial of Ovarian Cancer Screening (UKCTOCS), the world’s largest ovarian cancer screening trial involving over 200,000 women which is part-funded by the MRC.

Trial lead Professor Ian Jacobs of the University of New South Wales, explains: “What’s normal for one woman may not be so for another. It is the change in levels of CA125 that’s important. My hope is that when the results of UKCTOCS are available this approach will prove capable of detecting ovarian cancer early enough to save lives.”

Published online at www.jco.ascopubs.org, 11 May 2015

Paracetamol in pregnancy linked with male fertility problems

Prolonged paracetamol use by pregnant women may reduce testosterone production in unborn baby boys, researchers at the MRC Centre for Reproductive Health at the University of Edinburgh have found.

The study tested the effect of the drug on testosterone production in mice that carried grafts of human testicular tissue, which mimic how the developing testes grow and function during pregnancy.

The mice were given the equivalent of a typical daily dose of paracetamol over either 24 hours or seven days. The scientists measured the amount of testosterone produced by the human tissue an hour after the final dose.

No effect was found after 24 hours, but after seven days testosterone was reduced by 45 per cent. More research will be needed to understand how the drug has this effect.

Paracetamol is the main medicine used for treating pain and fever during pregnancy. Reduced exposure to testosterone in male fetuses in the womb has been linked to higher risk of infertility, testicular cancer and undescended testicles, so these findings could have important implications.

Study author Dr Rod Mitchell explained: “This study adds to existing evidence that prolonged use of paracetamol in pregnancy may increase the risk of reproductive disorders in male babies. We’d advise that pregnant women should follow current guidance that the painkiller be taken at the lowest effective dose for the shortest possible time.”

Science Translational Medicine, Vol. 7 (288), pp288
The MRC has recently invested over £170m in high tech kit and technologies for clinical research. MRC Programme Manager Dr James Horswill explains how this funding is not only boosting the UK’s ability to carry out leading edge research but is also getting the very best value for money.

The MRC awarded funding to 23 proposals from across the UK in 2014 through its Clinical Research Infrastructure (CRI) scheme. Supported projects included new imaging technology such as an ultra-high-field 7-Tesla MRI scanner and a revolutionary new type of machine combining the latest radiotherapy with magnetic resonance imaging (MRI), allowing a tumour to be tracked and treated with radiation in real time. Research into dementias was another of the scheme’s priorities, which will benefit from the latest technological innovations, such as new MRI systems and next generation DNA sequencing.

This major investment underpins the MRC’s strategy to gain new insights into human disease, and find new therapeutic and diagnostic targets and approaches. But it doesn’t end there. The MRC and universities intend collectively to seize opportunities to help maximise impact and value for money.

An important contribution that universities can already make is to assess the way they manage their own research infrastructure. For example, through its Technology Directorate (TD), the University of Liverpool has established a series of Shared Research Facilities (SRFs), and is supporting them with capital investment, staff posts and a loan facility. The TD, led by Professor Rob Beynon, responds to academic need through business models that aim to make the SRFs sustainable. They also place specialist staff holding secure contracts in the SRFs to retain essential technological know-how. This model not only benefits the university, but also reassures funders that their investments are being used to their full potential.

The TD at Liverpool has also been able to help maximise value for money more directly. Through CRI, seven universities were awarded mass cytometers (CyTOF) – flow enabled mass spectrometers capable of analysing up to 40 different biomarkers at the single cell level. Coordinated by the University of Liverpool, all seven universities worked together to negotiate a favourable deal with the main supplier. This includes a common discounted pricing structure, elevated service provision, and costs towards user-group network meetings. Of course, the suppliers also get a favourable deal; more of their instruments will be located at world-leading institutions where cutting-edge research will help refine and advance the technology.

Coordination between universities also allows expertise to be shared and networked training to be carried out; factors that are vital for driving scientific impact.

Professor Beynon says: “It is surprisingly challenging to create an environment to support joint negotiation, but the barriers seemed to be more procedural than reflecting any lack of enthusiasm to realise best value for money. We worked together collegiately, with academics and procurement specialists from each university pooling knowledge and expertise to come to a solution that also allowed each centre to nuance their contract with the supplier and in the timing of each installation.”

In an era when science funding is under enormous pressure, strategies to procure and manage infrastructure in organised ways like these are key in ensuring that the UK gets top value from its science budget.
For the latest information on MRC funding opportunities, visit www.mrc.ac.uk/funding

Find out more about the University of Liverpool’s shared research facilities at: www.liv.ac.uk/technology-directorate
Throughout my medical training I always felt I wanted to do something with a focus on preventative medicine, impacting more people at a time rather than only individual patients every day. I realised this played an important role in solving health challenges in Sub Saharan Africa.

After graduating I did some research and found that The Gambia had done well with their immunisation programmes for a very small West African country. This led me to MRG Unit, The Gambia, in 2010, where I have been ever since.

I coordinate clinical trials involving new vaccines for children. My role spans the whole clinical trial lifecycle. When we’re preparing to start a trial I recruit staff and ensure that ethical and regulatory approvals, protocols and procedures are in place. We prepare information for participants including consent forms, audio books in local languages and information sheets.

During the study I coordinate day-to-day activities in the field. For example I ensure that clinics are properly set up, there’s appropriate storage of vaccines in freezer rooms, and delivery of on-going training for staff. I talk with sponsors, ethics and regulatory committees and make sure that monitoring activities go smoothly. As the trial wraps up it’s also my job to ensure we archive the essential documents and write up study reports and outputs.

We’ve recently completed a multi-dose vial pneumococcal conjugate vaccine trial, sponsored by biopharmaceutical company Pfizer. The vaccine, PCV13, was developed by Pfizer following an agreement with Gavi, an international public-private alliance which aims to create equal access to new and underused vaccines for children living low income countries. The vaccine protects against 13 of more than 90 pneumococcal serotypes of the disease [serotypes are variations within a species of a bacterium or virus]. Pneumococcal disease – including pneumonia and meningitis – is predominantly caused by the Streptococcus pneumoniae bacteria. It mainly affects children under the age of five and is a leading cause of death and disease.

PCV13 is already used in the Gambian Expanded Programme for Immunisation (EPI) but the multi-dose vial has an added preservative not present in the single-dose vial syringe. There are also four doses of the vaccine in one vial as opposed to one in a pre-filled syringe/vial. Although we do not expect these two vaccines to perform differently, the safety of the multi-dose vial needs to be established before it can be licensed.

The study has gone well, it’s been a great team effort. Our results are exciting and show that the new preparation is as safe and as immunogenic as the single-dose syringe. We recently presented this data at the European Society for Paediatric Infectious Diseases Annual Meeting.

We hope the multi-dose vial vaccine will drive down supply chain costs for storage, and ultimately reduce overall cost because it’s a very expensive vaccine for EPI programmes. The supply of PCV13 to low-income countries is currently primarily funded by Gavi, but over time support will be withdrawn. We need to find a way to ensure that vaccine use is sustainable across the region.

Vaccine manufacturing to licensing and introduction usually takes between 15-20 years. In this case, because it’s a vaccine which is already in use, we hope that it will be licensed relatively quickly. If introduced into routine EPI schedules, hopefully The Gambia will be one of the first countries to get the new preparation of the vaccine since it was involved with the clinical trials.

One of the things I enjoy most about working at the unit is the team spirit. Staff here are really invested in their work. Everybody rallies together to achieve their endpoint and that makes it fun, enjoyable and worthwhile. I’ve been blessed with great mentors, as well as a very supportive family, who have made my working life possible. Another good thing is for 10-15 per cent of my time I can still do clinical paediatrics. I provide on-call support and clinical care to patients at the MRC ward and give lectures and bedside teaching to medical students from the University of The Gambia on their paediatric rotations.

I also enjoy the fact I’m able to see impact from the work that’s being done. It was a real joy to see the meningococcal A conjugate vaccine (MenAfriVac) introduced into the region within 10 years of its development. The region has suffered epidemics of meningitis and in the short time that MenAfriVac has been introduced there’s already notable
impact. Epidemics caused by the serogroup in the vaccine are on the decline and the vaccine is currently provided at a lower cost than other available meningococcal vaccines. Introduction in The Gambia was accelerated because the country participated in some initial trials held at the unit. Being able to see the impact, knowing that you’re part of something meaningful, makes it worthwhile.

I’m now trying to do some of my own research, pursuing ideas I have thought of in the process of working on multiple vaccine trials. This job has really become a passion of mine and I probably wouldn’t be here if I wasn’t that passionate about it – the hours can get crazy!

Interview by Isabel Baker

Find out more about vaccine research at MRC Unit, The Gambia at: www.mrc.gm

Information about the future direction of MRC vaccine research is available at: http://mrc.io/vaccines-research-review-2014
Going public with your research

The Open Science movement encourages scientists to make their materials, data and publications freely available for the good of everyone. Professor Marcus Munafò of the MRC Integrative Epidemiology Unit at the University of Bristol tells us why his group has started to ‘go public’ with their research – and about some of the unexpected benefits that it can bring.

“Once you achieve a cultural change like this it becomes self-sustaining.”
Adopting an Open Science approach has been a gradual thing for us. We thought it was the right thing to do because our work is publicly funded and therefore should be made widely available as soon as possible. Sharing data also means that science can, in principle, progress more efficiently. After all, you may not need to collect new data if you can answer a question by using information that’s already out there.

Our work includes clinical trials, so we were familiar with the idea of pre-registering our study protocols and making them public. However, much of our work is human laboratory research, and it’s relatively unusual for this to be pre-registered.

For these studies the first step was to ensure we had detailed protocols in a standard format. We gradually started to use repositories that exist for clinical trials (eg www.isrctn.com) or published the protocol in a journal that supports this.

However we’re now archiving our protocols on an online platform called the Open Science Framework* (OSF) supported by the Centre for Open Science, a not-for-profit, US-based organisation. The website allows you to put materials, data and protocols online, which are then locked, date stamped, and made available for anyone to view.

We started with grant-funded projects, followed by PhD projects. Now, for everything we do involving collection of new data (including undergraduate projects), we register or publish the protocol in advance. This makes it transparent which analyses were pre-planned and which weren’t.

We don’t use the OSF for data files because Bristol has its own data repository. A description of the project is available for anyone to access and if the data are made open then anyone can download them. There are also restricted levels of access.

These levels of access are useful because as we started to move towards making our data open we realised we were going to have to change our informed consent procedures. Formerly we asked for study participants’ consent to make their anonymised data available to other researchers. Now we ask for their consent to make these data open. If researchers want to access data from studies that used our old consent procedures they have to put in a request which we screen to make sure it complies with the relevant consent procedures.

One thing that we quickly realised was that when you know your research is going to be publicly available, you add another level of checking to the whole process – another level of quality control that we hadn’t anticipated, but which made perfect sense.

There is considerable discussion at the moment around issues of research reproducibility. I think Open Science can improve reproducibility by increasing quality at each stage of the research process. Going public with our research hasn’t impacted on our productivity – it’s simply reshuffled the research process, for example writing detailed study protocols and analysis plans before data collection starts.

We’ve certainly found it a healthy and worthwhile thing to do. It shines a light on our work, makes us more accountable, and encourages us to slow down slightly and check everything one extra time. There’s been a positive reaction to it within my group. I think once you achieve a cultural change like this then it becomes self-sustaining.

Recently our first paper with a linked dataset was published. We tweeted the data repository link to the data file together with the link to the paper. Whenever people come to us to collaborate, we talk about the fact that we would like to apply the same principles. That’s not always our decision to make but we like to be clear about why we think it’s a good model.

I don’t think it’s a one-size-fits-all solution. Some people have concerns and reservations about different aspects of the Open Science model, such as issues of participant confidentiality and intellectual property, and these need to be respected and discussed. Having said that I hope that over time it becomes the norm – it’s certainly something that we feel has benefitted our work, and something we’ll carry on doing.

Professor Marcus Munafò leads the Tobacco and Alcohol Research Group, part of the MRC Integrative Epidemiology Unit (IEU) at the University of Bristol. He is Professor of Biological Psychology in the university’s School of Experimental Psychology.

Further information
Read the MRC’s guidance on MRC data sharing and open access policies at: www.mrc.ac.uk/research/research-policy-ethics

Download the Royal Society’s 2012 report, ‘Science as an open enterprise’ at http://mrc.io/1QNvga

*https://osf.io
Network is for anyone who has an interest in the work of the MRC, including scientists, doctors and health professionals involved in medical research, government departments and parliamentarians, and university staff and students. The aim is to provide a quick, easy-to-read summary of activities across the MRC, from research news through to funding, grant schemes and policy issues, with pointers to more in-depth information on websites and in other publications.

We are keen to receive feedback on Network and suggestions for new features from our readers. So if you have any comments, please email network@headoffice.mrc.ac.uk.

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Medical Research Council (Swindon office)
2nd Floor David Phillips Building
Polaris House
North Star Avenue
Swindon
SN2 1FL

Medical Research Council (London office)
14th Floor
One Kemble Street
London
WC2B 4AN

Phone: +44 (0)1793 416200
www.mrc.ac.uk